| 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. | | 100950 | 1 | 57 |

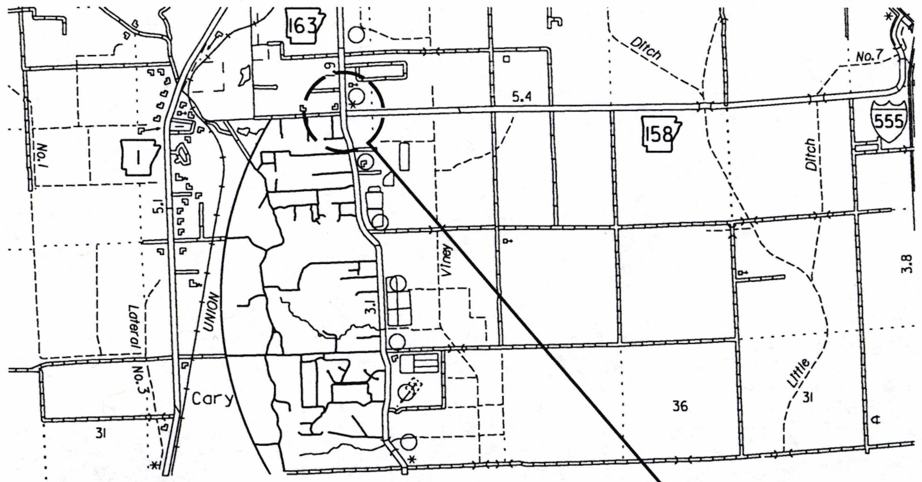
(2) HWY. 158/HWY. 163 INTERS. SAFETY IMPVTS. (S)

# ARKANSAS DEPARTMENT OF TRANSPORTATION
## CONSTRUCTION PLANS FOR STATE HIGHWAY

# HWY. 158/HWY. 163 INTERS. SAFETY IMPVTS. (S)

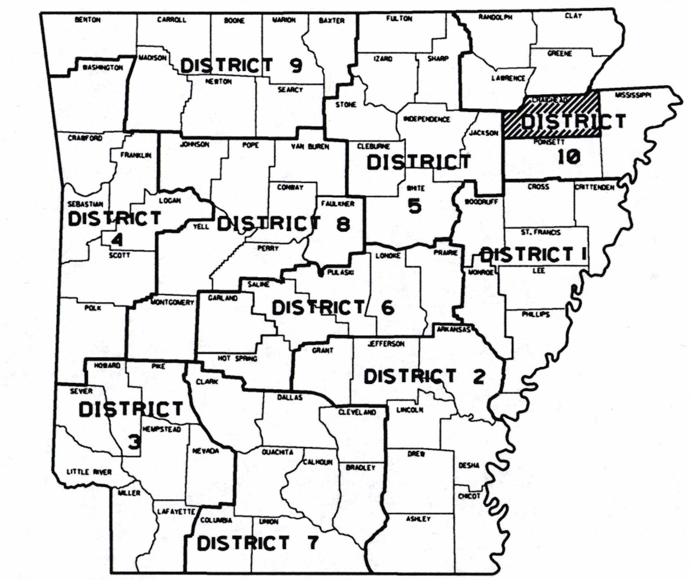
## CRAIGHEAD COUNTY
## ROUTE 163 SECTION 5
## ROUTE 158 SECTION 5
## FED. AID PROJ. NO. HSIP-0016(67)
# JOB 100950

NOT TO SCALE




VICINITY MAP

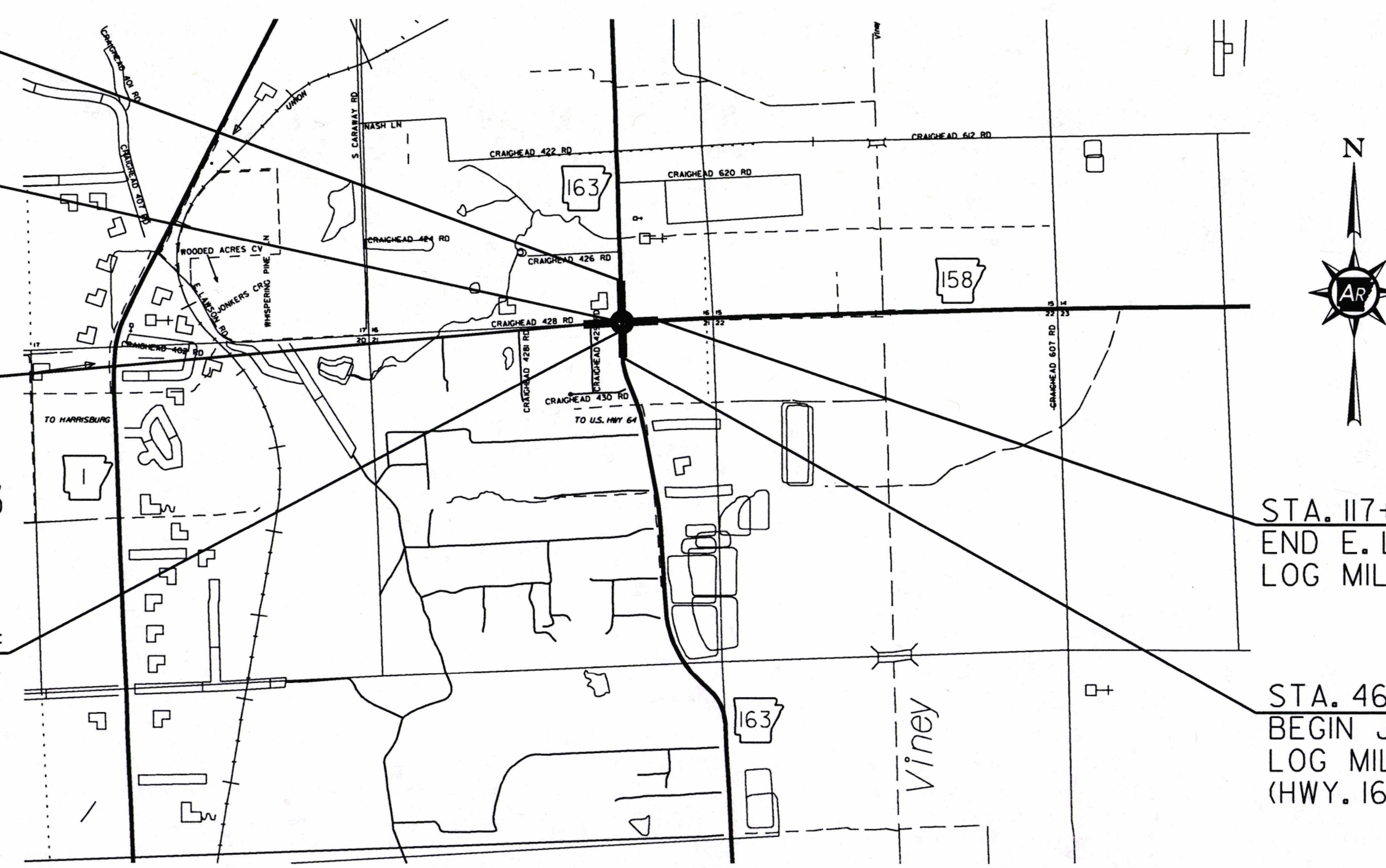
PROJECT LOCATION




**ARKANSAS HIGHWAY DISTRICT 10**

**• DESIGN TRAFFIC DATA •**

| | |
|---|---|
| DESIGN YEAR | 2039 |
| 2019 ADT | 1700 |
| 2039 ADT | 2100 |
| 2039 DHV | 231 |
| DIRECTIONAL DISTRIBUTION | 0.60 |
| TRUCKS | 9% |
| DESIGN SPEED | 20 MPH |




APPROVED

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 7656 M.E. BANKS

1-8-19

DEPUTY DIRECTOR AND CHIEF ENGINEER

PROJECT COORDINATES:

| | BEGIN | MID-POINT | END |
|---|---|---|---|
| LAT. | N35° 44' 50" | N35° 44' 55" | N35° 45' 01" |
| LON. | W90° 39' 58" | W90° 39' 58" | W90° 39' 57" |

| | | | | |
|---|---|---|---|---|
| GROSS | LENGTH OF PROJECT | 2094.00 FEET OR | 0.397 MILES |
| NET | " " ROADWAY | 2094.00 " " | 0.397 MILES |
| NET | " " BRIDGE | 0.00 " " | 0.000 MILES |
| NET | " " PROJECT | 2094.00 " " | 0.397 MILES |

1/2/2019

R100950.DGN

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

1-6-20

## INDEX OF SHEETS



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

## ROADWAY STANDARD DRAWINGS

| DRWG.NO. | TITLE | DATE |
|---|---|---|
| CDP-1 | CONCRETE DITCH PAVING | 12-08-16 |
| CG-1 | CURBING DETAILS | 11-29-07 |
| CPTJ-6A | TRANSVERSE & LONGITUDINAL JOINTS FOR CONCRETE PAVEMENT (NON-REINFORCED) | 11-07-19 |
| DR-1 | DETAILS OF DRIVEWAYS & ISLANDS | 11-07-19 |
| FES-1 | FLARED END SECTION | 10-18-96 |
| FES-2 | FLARED END SECTION | 10-18-96 |
| FPC-9 | DETAILS OF DROP INLETS & JUNCTION BOXES | 11-16-01 |
| FPC-9E | DETAILS OF DROP INLETS (TYPE C) | 08-22-02 |
| FPC-9M | DETAILS OF DROP INLET (TYPE MO) | 08-22-02 |
| MB-1 | MAILBOX DETAILS | 11-18-04 |
| PCC-1 | CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING | 02-27-14 |
| PCM-1 | METAL PIPE CULVERT FILL HEIGHTS & BEDDING | 02-27-14 |
| PCP-1 | PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE) | 02-27-14 |
| PCP-2 | PLASTIC PIPE CULVERT (PVC F949) | 02-27-14 |
| PCP-3 | PLASTIC PIPE CULVERT (POLYPROPYLENE) | 11-07-19 |
| PM-1 | PAVEMENT MARKING DETAILS | 06-01-17 |
| PU-1 | DETAILS OF PIPE UNDERDRAIN | 12-08-16 |
| SI-1 | DETAILS OF SPECIAL ITEMS | 10-25-18 |
| TC-1 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | 11-07-19 |
| TC-2 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | 11-07-19 |
| TC-3 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | 11-07-19 |
| TEC-1 | TEMPORARY EROSION CONTROL DEVICES | 11-16-17 |
| TEC-2 | TEMPORARY EROSION CONTROL DEVICES | 06-02-94 |
| TEC-3 | TEMPORARY EROSION CONTROL DEVICES | 11-03-94 |
| WF-4 | WIRE FENCE TYPE C AND D | 08-22-02 |

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
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② GOVERNING SPECIFICATIONS & GENERAL NOTES

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

1-23-2020

## 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 |
| 100-3 | CONTRACTOR'S LICENSE |
| 100-4 | DEPARTMENT NAME CHANGE |
| 102-2 | ISSUANCE OF PROPOSALS |
| 108-1 | LIQUIDATED DAMAGES |
| 108-2 | WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER |
| 110-1 | PROTECTION OF WATER QUALITY AND WETLANDS |
| 303-1 | AGGREGATE BASE COURSE |
| 306-1 | QUALITY CONTROL AND ACCEPTANCE |
| 400-1 | TACK COATS |
| 400-4 | DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES |
| 400-5 | PERCENT AIR VOIDS FOR ACHM MIX DESIGNS |
| 400-6 | LIQUID ANTI-STRIP ADDITIVE |
| 410-1 | CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES |
| 410-2 | DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS |
| 505-1 | PORTLAND CEMENT CONCRETE DRIVEWAY |
| 600-2 | INCIDENTAL CONSTRUCTION |
| 603-1 | LANE CLOSURE NOTIFICATION |
| 604-1 | RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES |
| 605-1 | CONCRETE DITCH PAVING |
| 606-1 | PIPE CULVERTS FOR SIDE DRAINS |
| 620-1 | MULCH COVER |
| 621-1 | FILTER SOCKS |
| 632-1 | CONCRETE ISLAND |
| 634-1 | CURBING |
| JOB 100950 | ANTI-THEFT CONCRETE PULL BOX |
| JOB 100950 | BIDDING REQUIREMENTS AND CONDITIONS |
| JOB 100950 | BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT |
| JOB 100950 | BROADBAND INTERNET SERVICE FOR FIELD OFFICE |
| JOB 100950 | CARGO PREFERENCE ACT REQUIREMENTS |
| JOB 100950 | CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE |
| JOB 100950 | DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES |
| JOB 100950 | ELECTRICAL CONDUCTORS-IN-CONDUIT |
| JOB 100950 | FLEXIBLE BEGINNING OF WORK |
| JOB 100950 | GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION |
| JOB 100950 | LED ROADWAY ILLUMINATION POLE |
| JOB 100950 | MANDATORY ELECTRONIC CONTRACT |
| JOB 100950 | MANDATORY ELECTRONIC DOCUMENT SUBMITTAL |
| JOB 100950 | PLASTIC PIPE |
| JOB 100950 | PRICE ADJUSTMENT FOR ASPHALT BINDER |
| JOB 100950 | SERVICE POINT ASSEMBLY |
| JOB 100950 | SHORING FOR CULVERTS |
| JOB 100950 | SOIL STABILIZATION |
| JOB 100950 | STORM WATER POLLUTION PREVENTION PLAN |
| JOB 100950 | SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS |
| JOB 100950 | THERMOPLASTIC PAVEMENT MARKING (YIELD LINE) |
| JOB 100950 | TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH) |
| JOB 100950 | UTILITY ADJUSTMENTS |
| JOB 100950 | WARM MIX ASPHALT |

## GENERAL NOTES

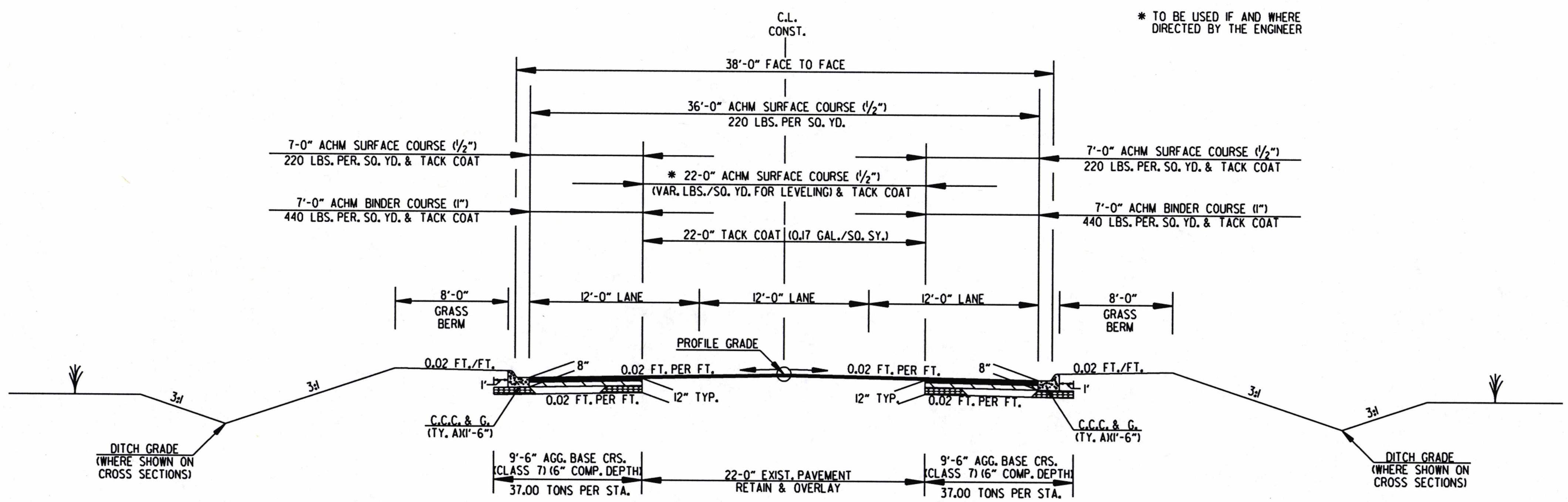
1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY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

GOVERNING SPECIFICATIONS AND GENERAL NOTES

R100950.DGN

1/23/2020

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-8-19




## TYPICAL SECTION OF IMPROVEMENT

HWY. 163
STA. 47+23.00 - STA. 51+30.86
STA. 53+10.85 - STA. 57+19.00
E. LAWSON RD./HWY. 158
STA. 107+01.00 - STA. 111+09.24
STA. 112+89.27 - STA. 116+98.00

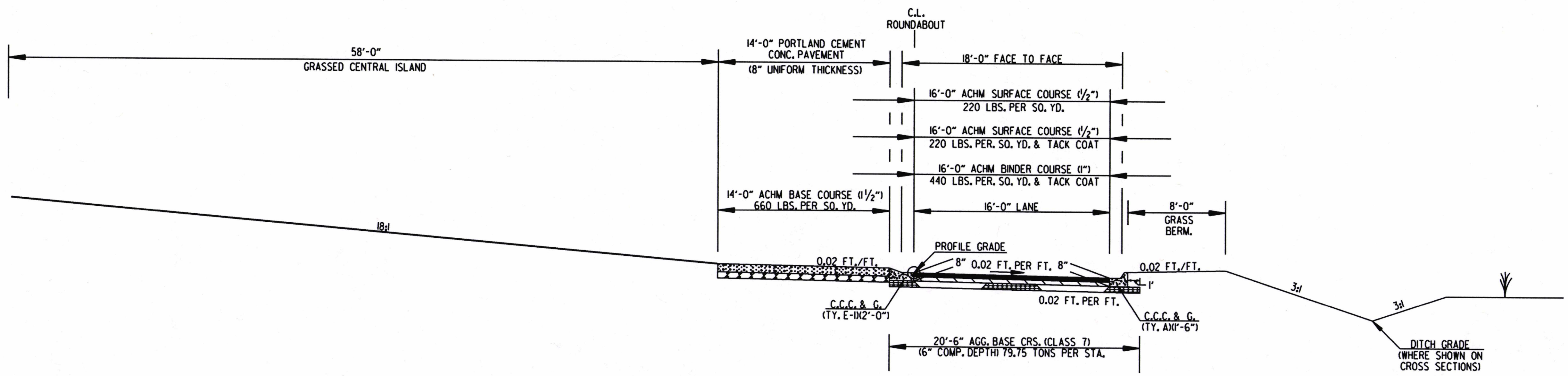
NOTES:
REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

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

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

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




## TYPICAL SECTION OF IMPROVEMENT

ROUNDABOUT

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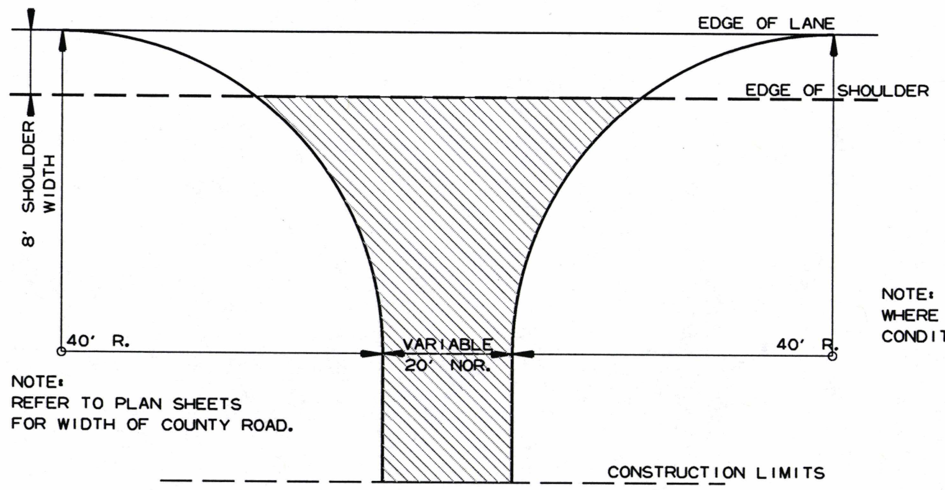
(2) SPECIAL DETAILS

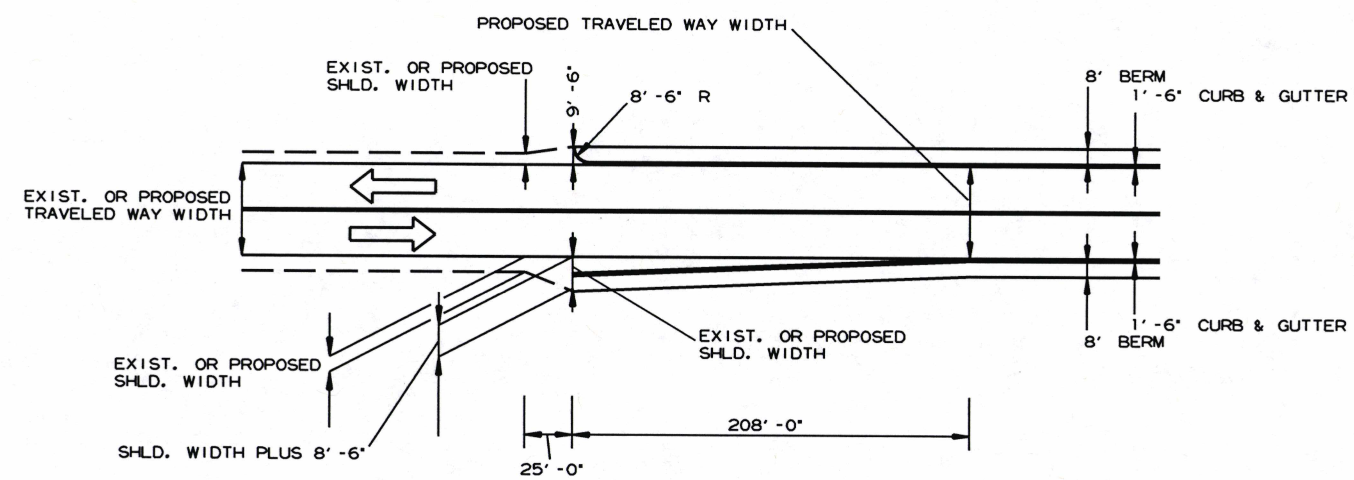
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-8-19



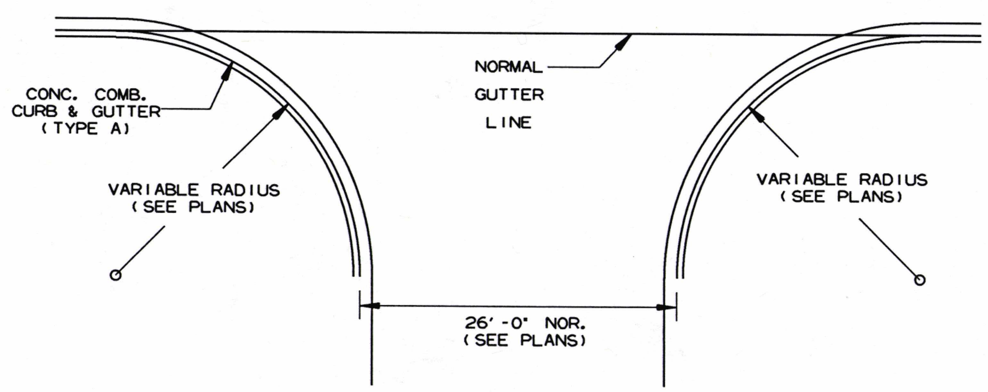

NOTE: TURNOUTS SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

ACHM SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH

DETAIL FOR COUNTY ROAD TURNOUTS
OPEN SHOULDER SECTION

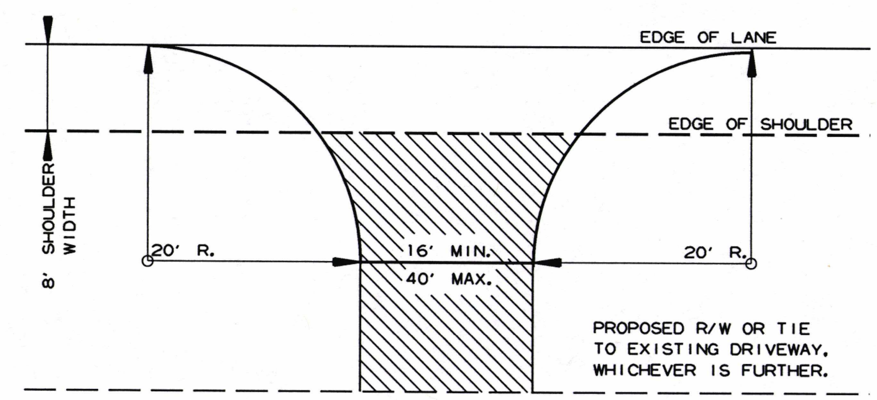



TRANSITION FROM OPEN SHOULDER
TO CURB & GUTTER SECTION




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

DETAIL OF TURNOUTS, ASPHALT STREETS,
COUNTY ROADS & STATE HIGHWAYS
CURB & GUTTER SECTION




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

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

DETAIL FOR DRIVEWAY TURNOUTS
OPEN SHOULDER SECTION
(ARTERIALS)

1/2/2019

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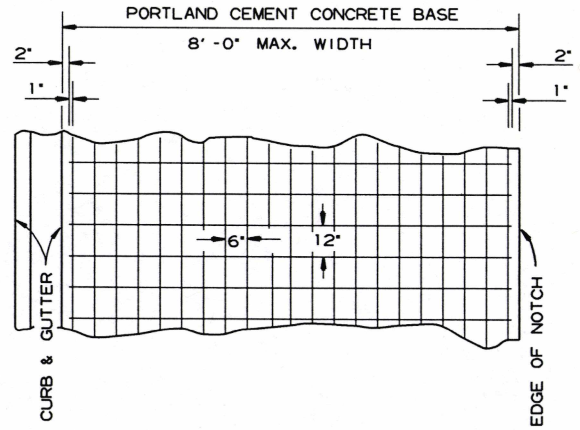
(2) SPECIAL DETAILS

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

1-8-19

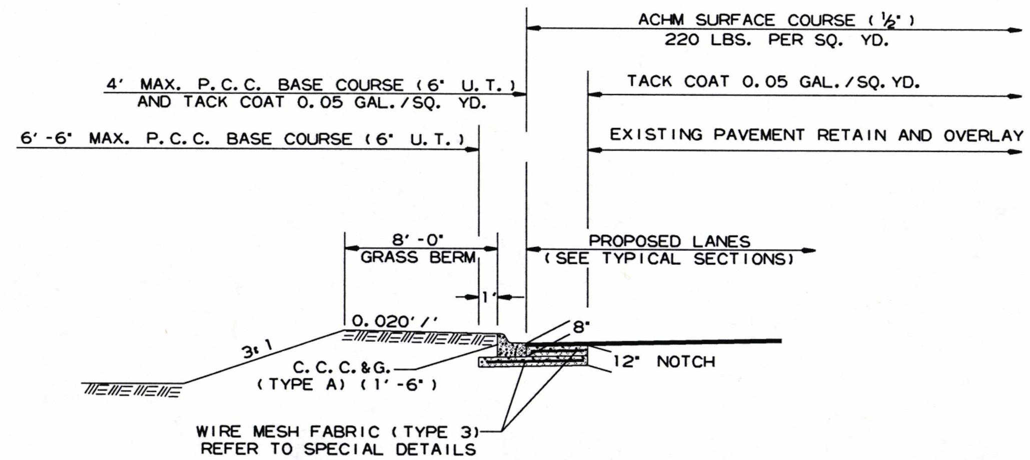



6" X 12" MESH FABRIC (TYPE 3) (W5.5 X W2.9) = 4.26 LBS./SQ. YD.

NOTES:

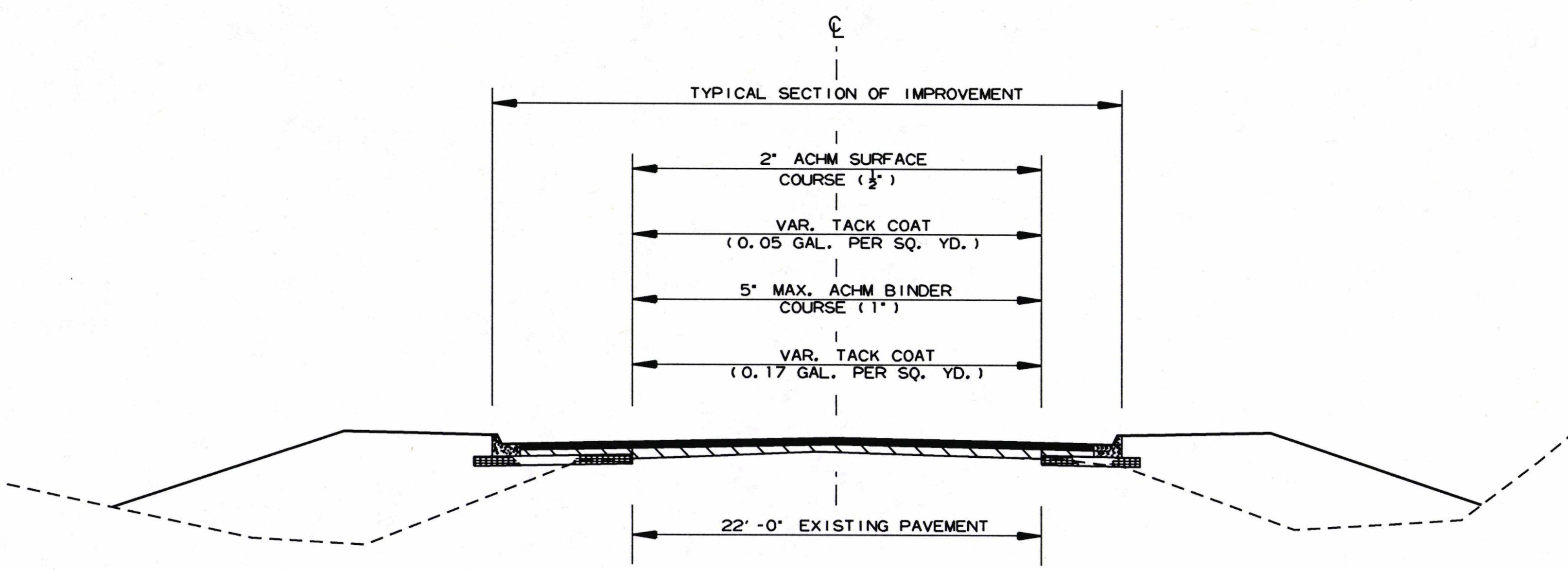
1. LAP MESH FABRIC MIN. 12" LONGITUDINALLY AND MIN. 6" TRANSVERSELY.
2. MESH FABRIC IS NOT REQUIRED WHEN WIDTH OF PORTLAND CEMENT CONCRETE BASE IS LESS THAN 12".
3. MESH FABRIC (TYPE 3) WILL NOT BE PAID FOR DIRECTLY, BUT FULL COMPENSATION THEREFORE WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE BID PER SQ. YD. FOR PORTLAND CEMENT CONCRETE BASE (10" U.T.)

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




## P.C.C. BASE WIDENING DETAIL

P.C.C. BASE WIDENING TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.



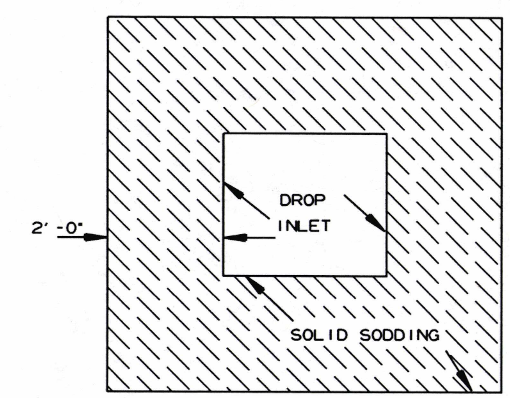

## METHOD OF RAISING GRADE

NOTES:

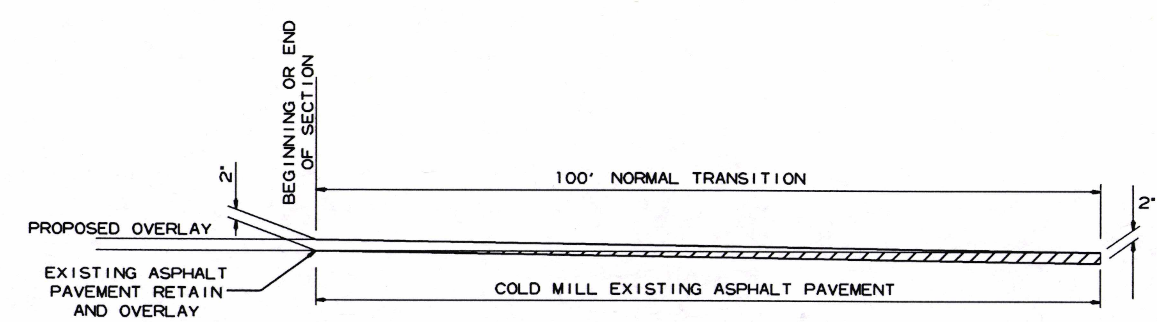
(1) THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.

(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.




## DETAIL FOR SOLID SODDING AROUND DROP INLETS




## DETAIL FOR TRANSITIONS

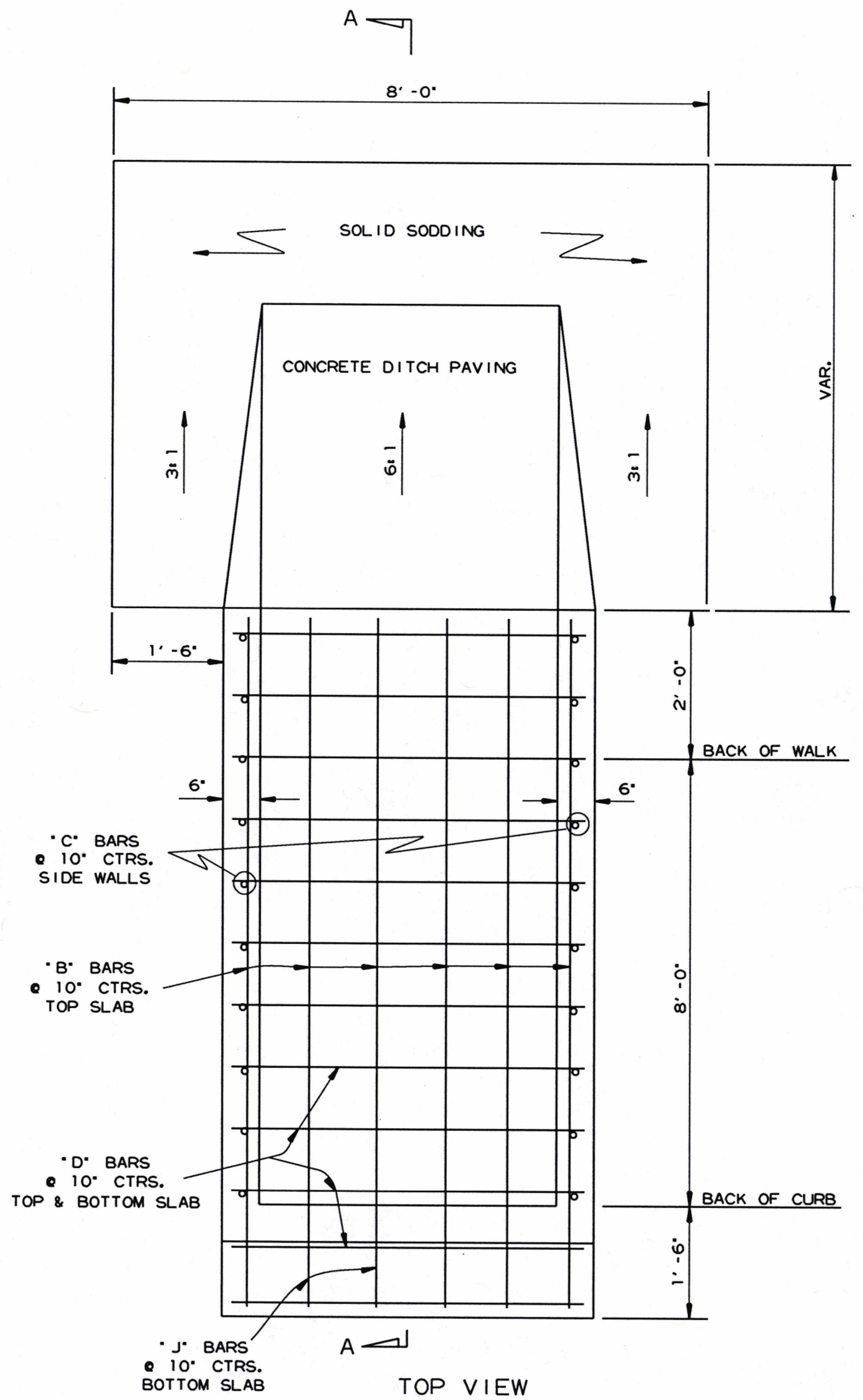
1/2/2019

R100950.DGN

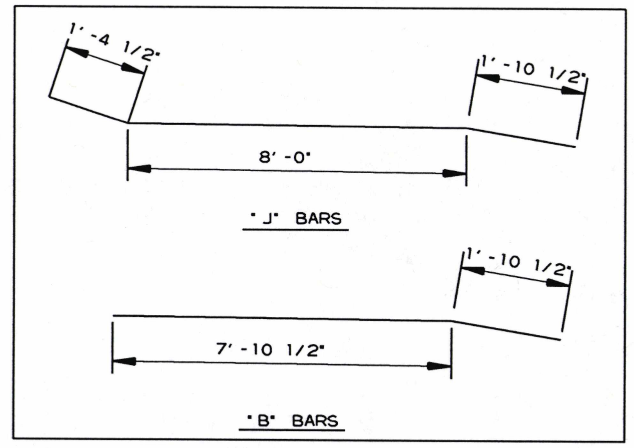
SPECIAL DETAILS

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

1-8-19

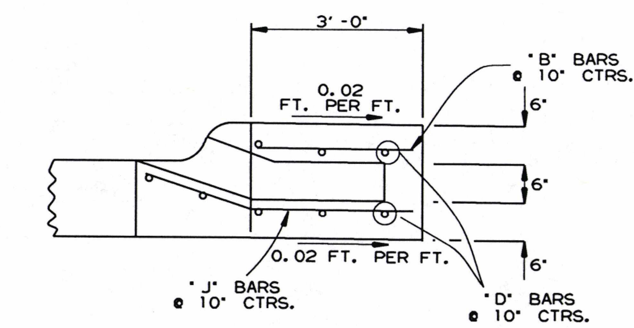



TOP VIEW

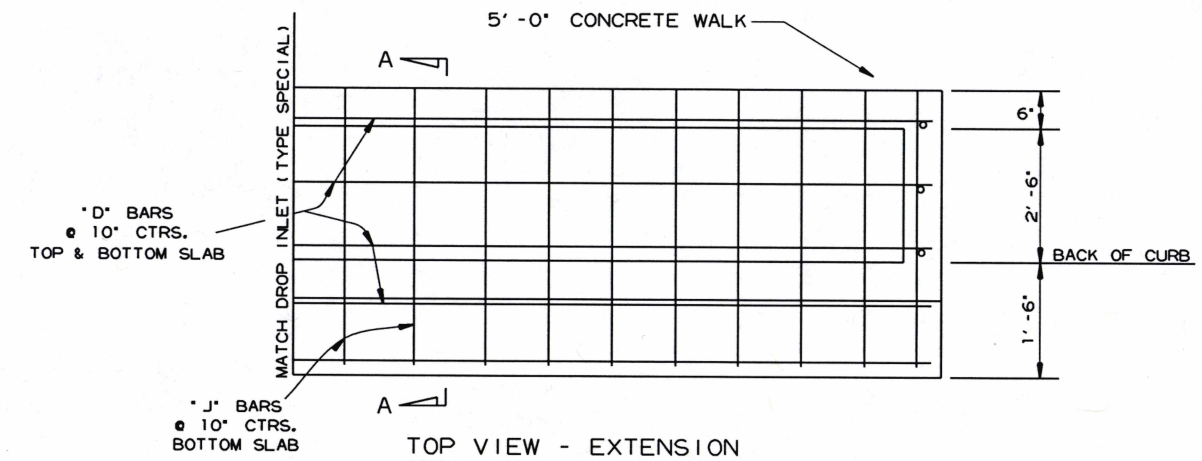



| CLASS A CONC. | REINF. STEEL-RDWY. GRADE 60 |
|---|---|
| CU. YDS. | POUND |
| 2.53 | 207 |

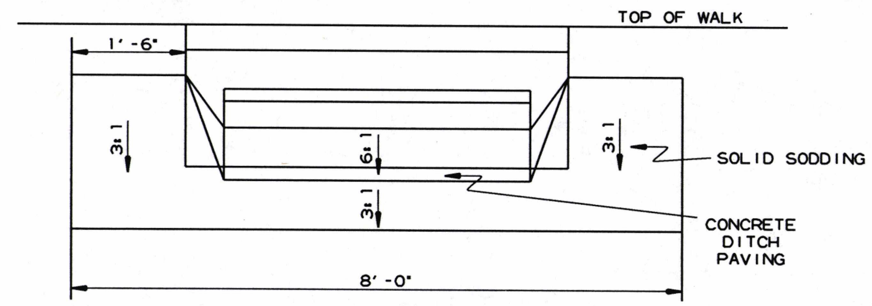
QUANTITIES FOR INFORMATION ONLY
DROP INLET (TYPE SPECIAL)



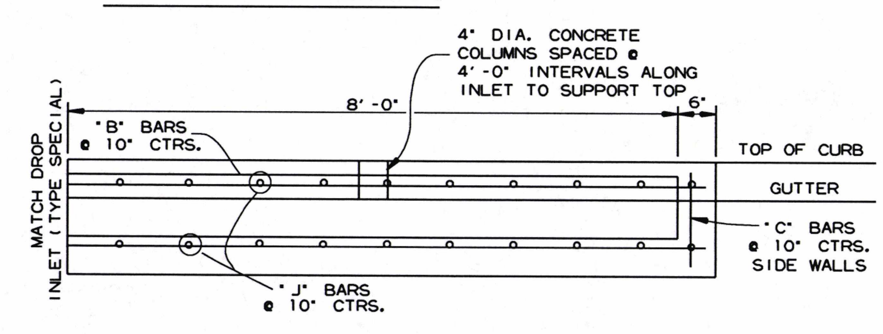

SECTION A-A - EXTENSION



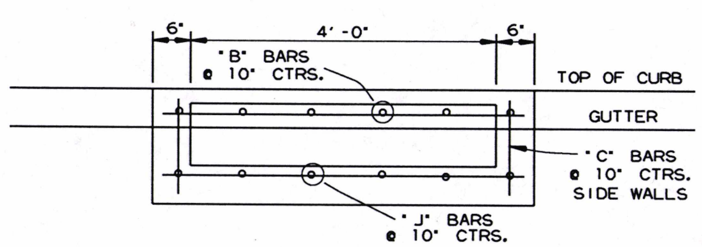

TOP VIEW - EXTENSION



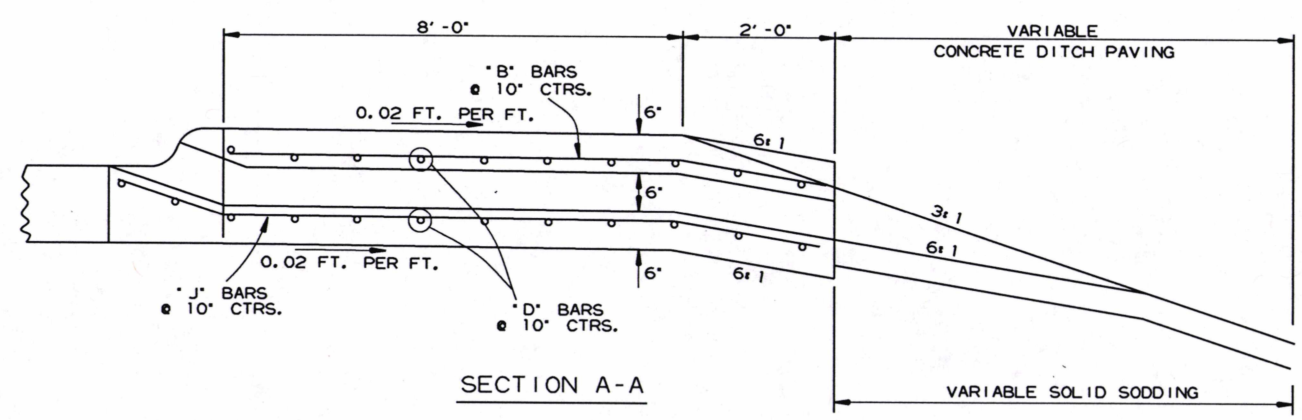

BACK VIEW




FRONT VIEW - EXTENSION




FRONT VIEW




SECTION A-A

GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. ALL REINF. BARS SHALL BE #4 AND HAVE 1 1/2" COVER.
3. DROP INLETS AND EXTENSIONS ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
4. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
5. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
6. CONCRETE DITCH PAVING & SOLID SODDING SHALL BE PAID FOR SEPARATELY.
7. CONSTRUCT EXTENSIONS UPSTREAM OF DROP INLET UNLESS OTHERWISE SPECIFIED.

# DROP INLET (TYPE SPECIAL)

# SPECIAL DETAILS

R100950.DGN

11/27/2018

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 8 | 57 |

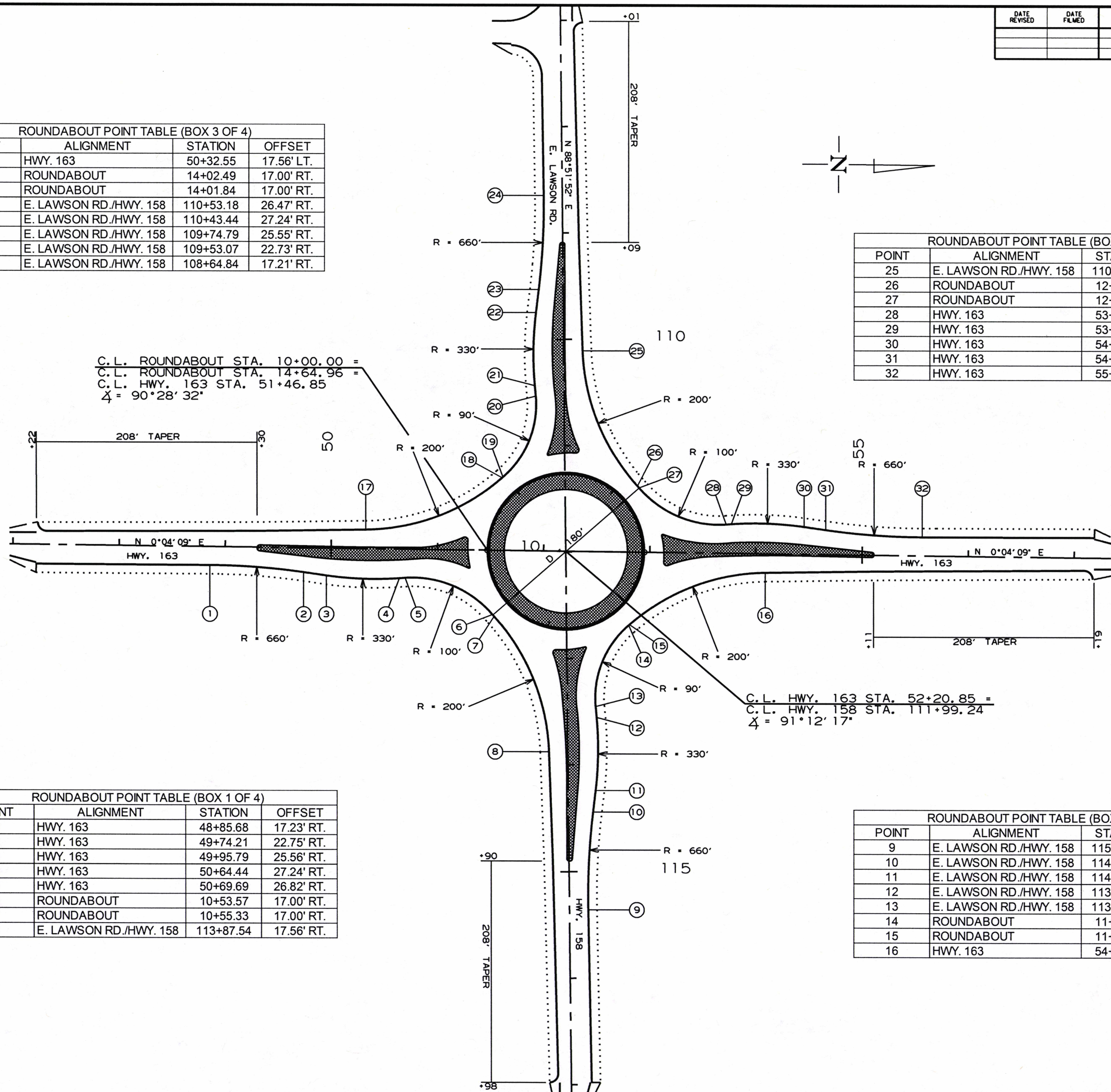
(2) SPECIAL DETAILS

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

1-8-19

ROUNDABOUT POINT TABLE (BOX 3 OF 4)

| POINT | ALIGNMENT | STATION | OFFSET |
|---|---|---|---|
| 17 | HWY. 163 | 50+32.55 | 17.56' LT. |
| 18 | ROUNDABOUT | 14+02.49 | 17.00' RT. |
| 19 | ROUNDABOUT | 14+01.84 | 17.00' RT. |
| 20 | E. LAWSON RD./HWY. 158 | 110+53.18 | 26.47' RT. |
| 21 | E. LAWSON RD./HWY. 158 | 110+43.44 | 27.24' RT. |
| 22 | E. LAWSON RD./HWY. 158 | 109+74.79 | 25.55' RT. |
| 23 | E. LAWSON RD./HWY. 158 | 109+53.07 | 22.73' RT. |
| 24 | E. LAWSON RD./HWY. 158 | 108+64.84 | 17.21' RT. |




ROUNDABOUT POINT TABLE (BOX 4 OF 4)

| POINT | ALIGNMENT | STATION | OFFSET |
|---|---|---|---|
| 25 | E. LAWSON RD./HWY. 158 | 110+10.92 | 17.55' LT. |
| 26 | ROUNDABOUT | 12+87.81 | 17.00' RT. |
| 27 | ROUNDABOUT | 12+86.07 | 17.00' RT. |
| 28 | HWY. 163 | 53+71.96 | 26.88' LT. |
| 29 | HWY. 163 | 53+76.56 | 27.25' LT. |
| 30 | HWY. 163 | 54+45.21 | 25.56' LT. |
| 31 | HWY. 163 | 54+65.58 | 22.90' LT. |
| 32 | HWY. 163 | 55+56.68 | 17.41' LT. |

ROUNDABOUT POINT TABLE (BOX 1 OF 4)

| POINT | ALIGNMENT | STATION | OFFSET |
|---|---|---|---|
| 1 | HWY. 163 | 48+85.68 | 17.23' RT. |
| 2 | HWY. 163 | 49+74.21 | 22.75' RT. |
| 3 | HWY. 163 | 49+95.79 | 25.56' RT. |
| 4 | HWY. 163 | 50+64.44 | 27.24' RT. |
| 5 | HWY. 163 | 50+69.69 | 26.82' RT. |
| 6 | ROUNDABOUT | 10+53.57 | 17.00' RT. |
| 7 | ROUNDABOUT | 10+55.33 | 17.00' RT. |
| 8 | E. LAWSON RD./HWY. 158 | 113+87.54 | 17.56' RT. |

ROUNDABOUT POINT TABLE (BOX 2 OF 4)

| POINT | ALIGNMENT | STATION | OFFSET |
|---|---|---|---|
| 9 | E. LAWSON RD./HWY. 158 | 115+35.92 | 17.44' LT. |
| 10 | E. LAWSON RD./HWY. 158 | 114+44.35 | 22.91' LT. |
| 11 | E. LAWSON RD./HWY. 158 | 114+24.21 | 25.55' LT. |
| 12 | E. LAWSON RD./HWY. 158 | 113+55.56 | 27.24' LT. |
| 13 | E. LAWSON RD./HWY. 158 | 113+45.33 | 26.43' LT. |
| 14 | ROUNDABOUT | 11+69.34 | 17.00' RT. |
| 15 | ROUNDABOUT | 11+70.02 | 17.00' RT. |
| 16 | HWY. 163 | 54+09.17 | 17.55' RT. |

ROUNDABOUT LAYOUT
SPECIAL DETAILS

11/27/2018

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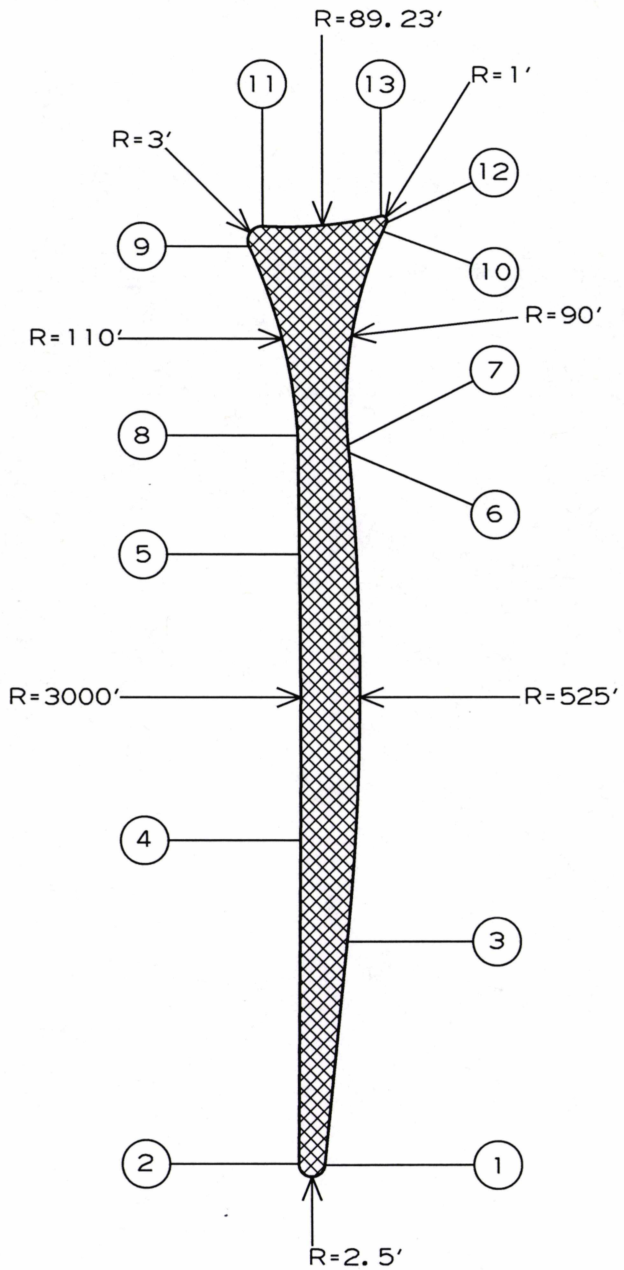
(2) SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-8-19

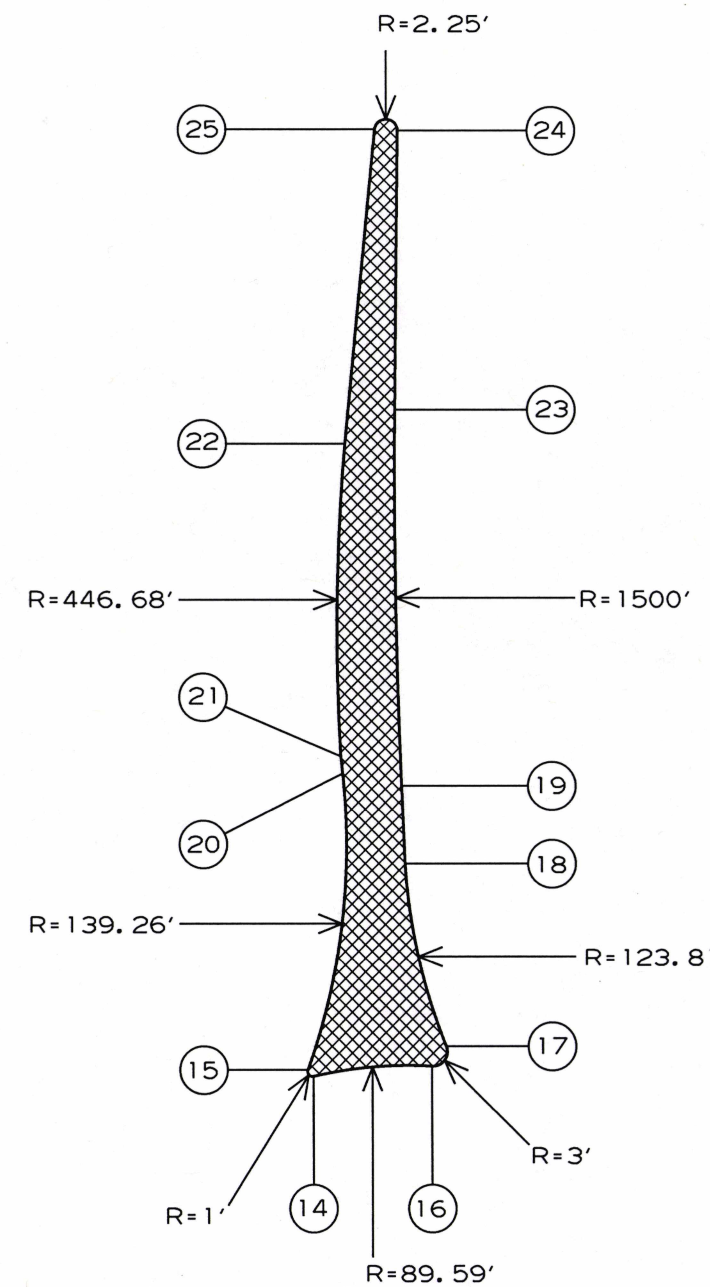



## SPLITTER ISLAND DETAIL

HWY. 163
STA. 49+30.00 - STA. 51+30.65

| HWY. 163 SPLITTER ISLAND POINT TABLE (BOX 1 OF 2) | | |
|---|---|---|
| POINT | STATION | OFFSET |
| 1 | 49+32.36 | 3.51' RT. |
| 2 | 49+32.65 | 1.97' LT. |
| 3 | 49+78.91 | 8.38' RT. |
| 4 | 50+00.14 | 1.35' LT. |
| 5 | 50+59.86 | 1.40' LT. |
| 6 | 50+81.15 | 9.07' RT. |
| 7 | 50+82.80 | 8.92' RT. |
| 8 | 50+84.71 | 1.66' LT. |
| 9 | 51+24.23 | 11.77' LT. |
| 10 | 51+27.41 | 16.27' RT. |
| 11 | 51+28.49 | 8.89' LT. |
| 12 | 51+29.27 | 17.09' RT. |
| 13 | 51+30.65 | 15.95' RT. |

NOTE: SPLITTER ISLAND POINTS BASED ON HWY. 163 ALIGNMENT




## SPLITTER ISLAND DETAIL

HWY. 163
STA. 53+11.07 - STA. 51+11.00

| HWY. 163 SPLITTER ISLAND POINT TABLE (BOX 2 OF 2) | | |
|---|---|---|
| POINT | STATION | OFFSET |
| 14 | 53+11.07 | 15.84' LT. |
| 15 | 53+12.38 | 17.00' LT. |
| 16 | 53+13.20 | 9.10' RT. |
| 17 | 53+17.31 | 12.05' RT. |
| 18 | 53+55.47 | 3.45' RT. |
| 19 | 53+71.74 | 2.75' RT. |
| 20 | 53+74.34 | 9.65' LT. |
| 21 | 53+77.91 | 10.02' LT. |
| 22 | 54+43.20 | 9.05' LT. |
| 23 | 54+50.29 | 1.43' RT. |
| 24 | 55+08.56 | 1.97' RT. |
| 25 | 55+08.92 | 2.77' RT. |

NOTE: SPLITTER ISLAND POINTS BASED ON HWY. 163 ALIGNMENT

| 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. | | | |
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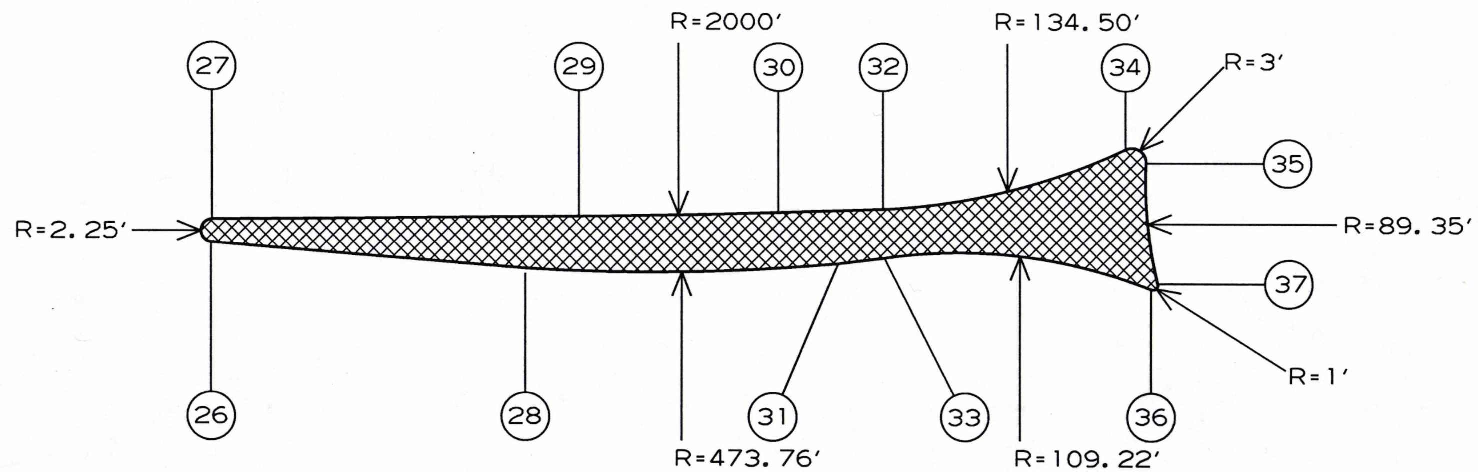
(2) SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-8-19



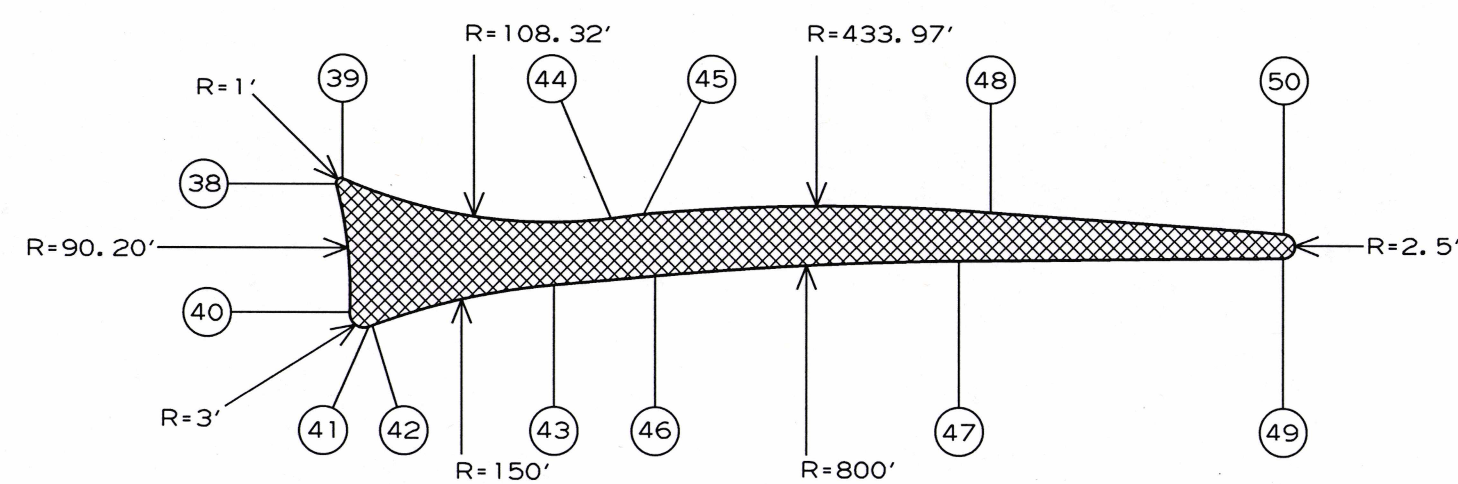

SPLITTER ISLAND DETAIL
E. LAWSON RD.
STA. 109+09.00 - STA. 111+08.90

| E. LAWSON RD. SPLITTER ISLAND POINT TABLE | | |
|---|---|---|
| POINT | STATION | OFFSET |
| 26 | 109+11.06 | 2.80' RT. |
| 27 | 109+11.32 | 1.97' LT. |
| 28 | 109+76.75 | 9.44' RT. |
| 29 | 109+88.12 | 1.24' LT. |
| 30 | 110+29.88 | 1.28' LT. |
| 31 | 110+42.11 | 9.68' RT. |
| 32 | 110+51.78 | 1.53' LT. |
| 33 | 110+51.84 | 8.70' RT. |
| 34 | 111+02.79 | 13.07' LT. |
| 35 | 111+07.00 | 10.13' LT. |
| 36 | 111+07.54 | 16.30' RT. |
| 37 | 111+08.90 | 15.16' RT. |

NOTE: SPLITTER ISLAND POINTS BASED ON
E. LAWSON RD./HWY. 158 ALIGNMENT

| HWY. 158 SPLITTER ISLAND POINT TABLE | | |
|---|---|---|
| POINT | STATION | OFFSET |
| 38 | 112+89.25 | 16.99' LT. |
| 39 | 112+90.64 | 18.13' LT. |
| 40 | 112+91.54 | 9.84' RT. |
| 41 | 112+95.51 | 12.87' RT. |
| 42 | 112+96.20 | 12.63' RT. |
| 43 | 113+34.47 | 4.83' RT. |
| 44 | 113+46.70 | 8.88' LT. |
| 45 | 113+53.55 | 9.65' LT. |
| 46 | 113+55.72 | 3.32' RT. |
| 47 | 114+19.49 | 1.35' RT. |
| 48 | 114+26.34 | 8.64' LT. |
| 49 | 114+87.49 | 1.97' RT. |
| 50 | 114+87.75 | 3.13' LT. |

NOTE: SPLITTER ISLAND POINTS BASED ON
E. LAWSON RD./HWY. 158 ALIGNMENT




SPLITTER ISLAND DETAIL
HWY. 158
STA. 112+89.25 - STA. 114+60.00

SPECIAL DETAILS

1/2/2019
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 11 | 57 |

(2) TEMPORARY EROSION CONTROL DETAILS

## REVISIONS

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

### LEGEND

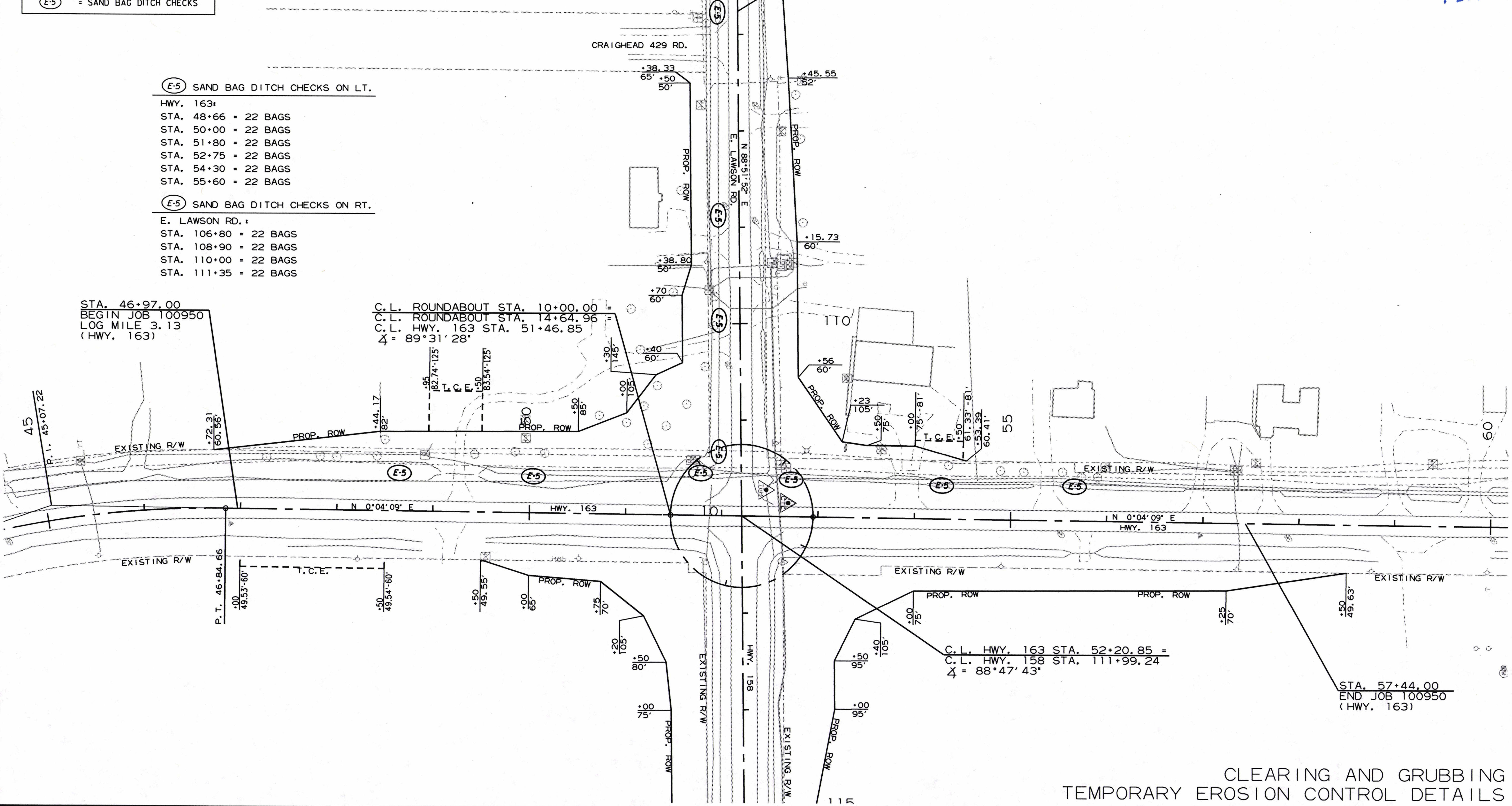
(E-5) = SAND BAG DITCH CHECKS

(E-5) SAND BAG DITCH CHECKS ON LT.

HWY. 163:
- STA. 48+66 = 22 BAGS
- STA. 50+00 = 22 BAGS
- STA. 51+80 = 22 BAGS
- STA. 52+75 = 22 BAGS
- STA. 54+30 = 22 BAGS
- STA. 55+60 = 22 BAGS

(E-5) SAND BAG DITCH CHECKS ON RT.

E. LAWSON RD.:
- STA. 106+80 = 22 BAGS
- STA. 108+90 = 22 BAGS
- STA. 110+00 = 22 BAGS
- STA. 111+35 = 22 BAGS




STATE OF ARKANSAS
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No. 11425
TRINITY D. SMITH
7-29-19

CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

7/26/2019

R100950.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. | | 100950 | 12 | 57 |

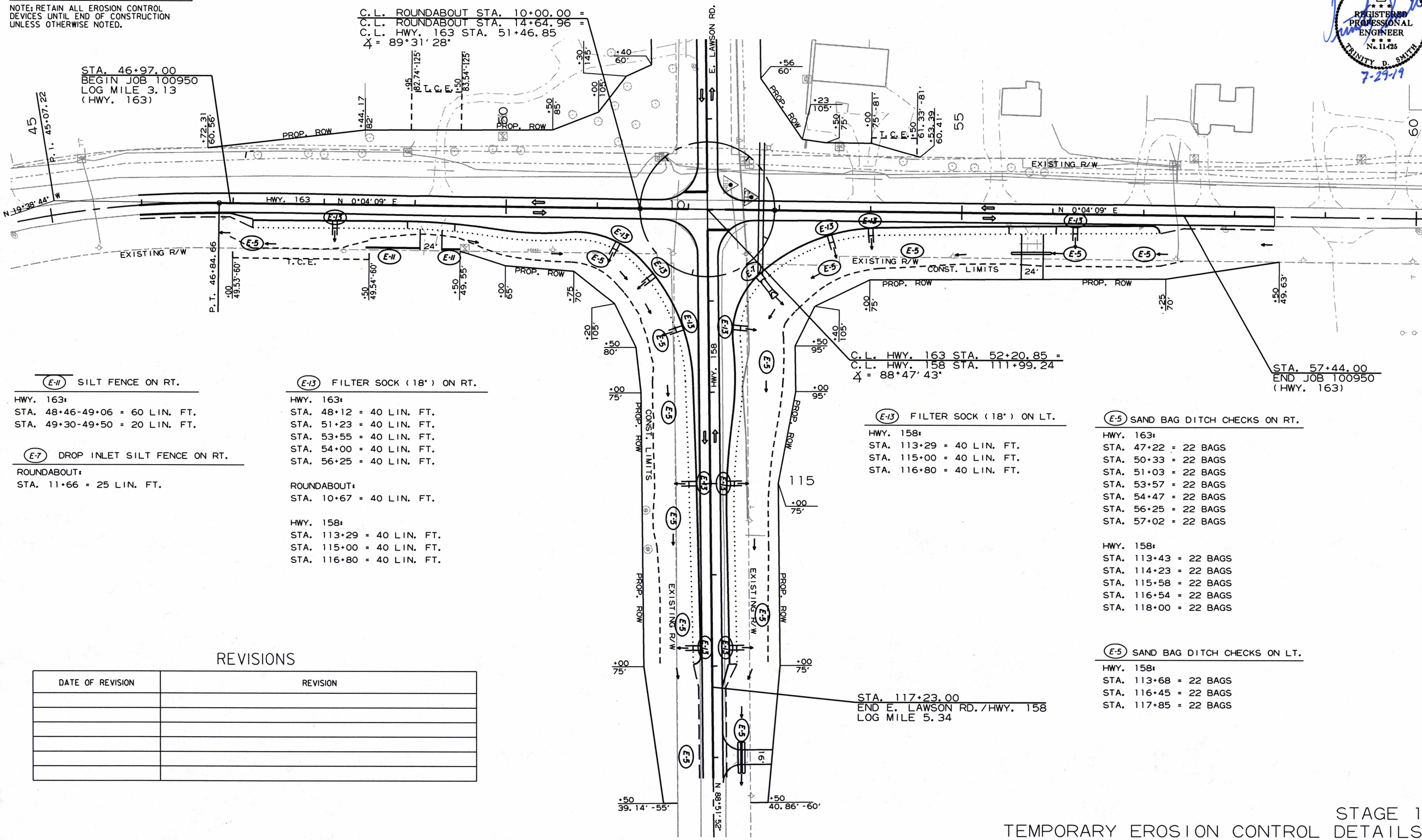
(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19

## LEGEND

E-5 = SAND BAG DITCH CHECKS
E-7 = DROP INLET SILT FENCE
E-11 = SILT FENCE
E-13 = FILTER SOCK (18")

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.




### E-11 SILT FENCE ON RT.

HWY. 163:
STA. 48+46-49+06 = 60 LIN. FT.
STA. 49+30-49+50 = 20 LIN. FT.

### E-7 DROP INLET SILT FENCE ON RT.

ROUNDABOUT:
STA. 11+66 = 25 LIN. FT.

### E-13 FILTER SOCK (18") ON RT.

HWY. 163:
STA. 48+12 = 40 LIN. FT.
STA. 51+23 = 40 LIN. FT.
STA. 53+55 = 40 LIN. FT.
STA. 54+00 = 40 LIN. FT.
STA. 56+25 = 40 LIN. FT.

ROUNDABOUT:
STA. 10+67 = 40 LIN. FT.

HWY. 158:
STA. 113+29 = 40 LIN. FT.
STA. 115+00 = 40 LIN. FT.
STA. 116+80 = 40 LIN. FT.

### E-13 FILTER SOCK (18") ON LT.

HWY. 158:
STA. 113+29 = 40 LIN. FT.
STA. 115+00 = 40 LIN. FT.
STA. 116+80 = 40 LIN. FT.

### E-5 SAND BAG DITCH CHECKS ON RT.

HWY. 163:
STA. 47+22 = 22 BAGS
STA. 50+33 = 22 BAGS
STA. 51+03 = 22 BAGS
STA. 53+57 = 22 BAGS
STA. 54+47 = 22 BAGS
STA. 56+25 = 22 BAGS
STA. 57+02 = 22 BAGS

HWY. 158:
STA. 113+43 = 22 BAGS
STA. 114+23 = 22 BAGS
STA. 115+58 = 22 BAGS
STA. 116+54 = 22 BAGS
STA. 118+00 = 22 BAGS

### E-5 SAND BAG DITCH CHECKS ON LT.

HWY. 158:
STA. 113+68 = 22 BAGS
STA. 116+45 = 22 BAGS
STA. 117+85 = 22 BAGS

## REVISIONS

| DATE OF REVISION | REVISION |
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# STAGE 1
# TEMPORARY EROSION CONTROL DETAILS

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(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
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No. 11425
TRINITY D. SMITH
7-29-19

## REVISIONS

| DATE OF REVISION | REVISION |
|---|---|
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### LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-13) = FILTER SOCK (18")

NOTE: RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

### (E-7) DROP INLET SILT FENCE ON RT.

E. LAWSON RD.:
STA. 108+00 = 25 LIN. FT.
STA. 109+72 = 25 LIN. FT.
STA. 110+65 = 25 LIN. FT.

ROUNDABOUT:
STA. 13+00 = 25 LIN. FT.

### (E-7) DROP INLET SILT FENCE ON LT.

E. LAWSON RD.:
STA. 110+91 = 25 LIN. FT.

### (E-13) FILTER SOCK (18") ON LT.

HWY. 163:
STA. 48+12 = 40 LIN. FT.
STA. 50+30 = 40 LIN. FT.
STA. 50+90 = 40 LIN. FT.
STA. 53+25 = 40 LIN. FT.
STA. 53+75 = 40 LIN. FT.
STA. 56+00 = 40 LIN. FT.

### (E-13) FILTER SOCK (18") ON LT.

E. LAWSON RD.:
STA. 108+50 = 40 LIN. FT.
STA. 110+20 = 40 LIN. FT.

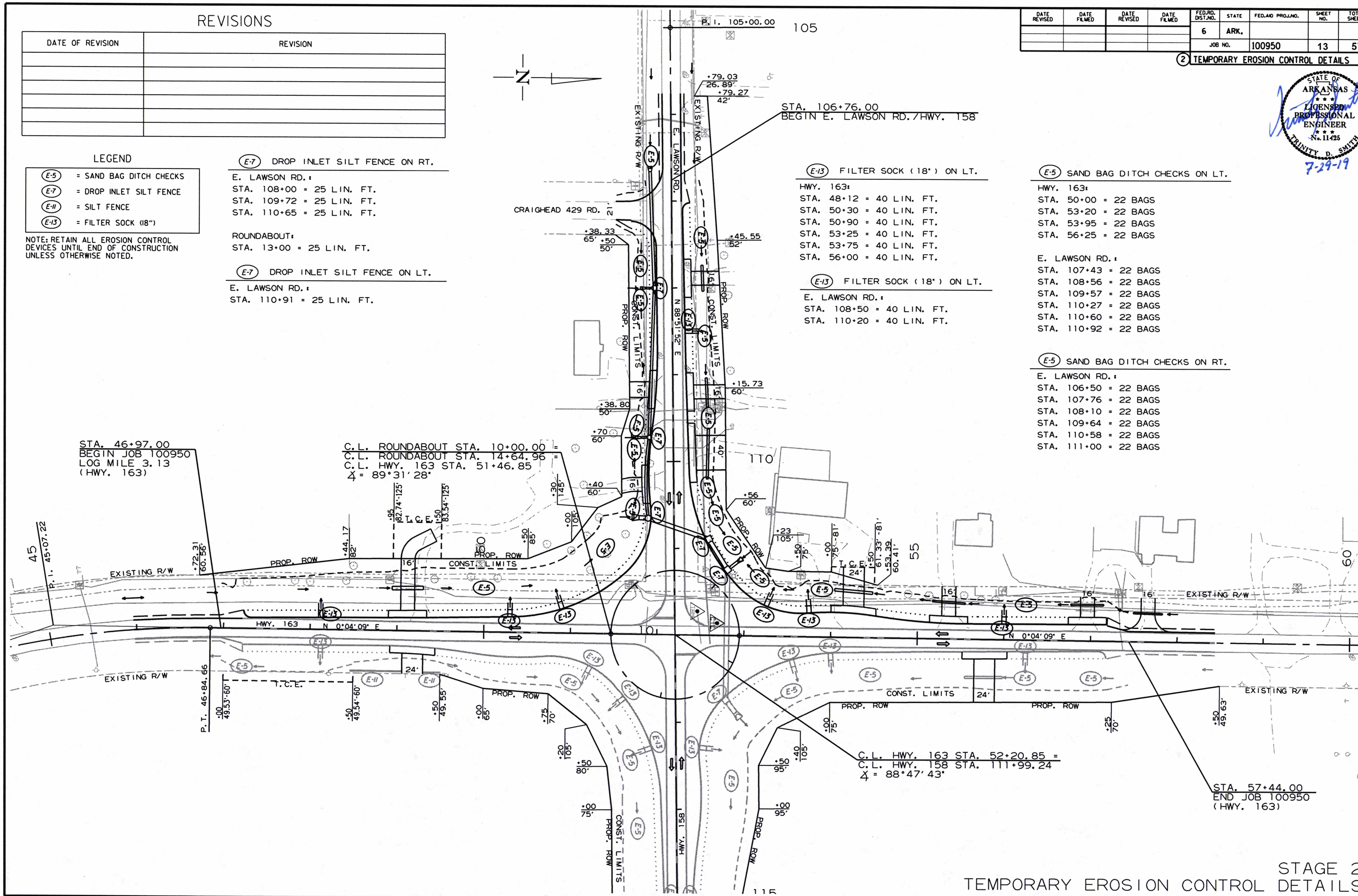
### (E-5) SAND BAG DITCH CHECKS ON LT.

HWY. 163:
STA. 50+00 = 22 BAGS
STA. 53+20 = 22 BAGS
STA. 53+95 = 22 BAGS
STA. 56+25 = 22 BAGS

E. LAWSON RD.:
STA. 107+43 = 22 BAGS
STA. 108+56 = 22 BAGS
STA. 109+57 = 22 BAGS
STA. 110+27 = 22 BAGS
STA. 110+60 = 22 BAGS
STA. 110+92 = 22 BAGS

### (E-5) SAND BAG DITCH CHECKS ON RT.

E. LAWSON RD.:
STA. 106+50 = 22 BAGS
STA. 107+76 = 22 BAGS
STA. 108+10 = 22 BAGS
STA. 109+64 = 22 BAGS
STA. 110+58 = 22 BAGS
STA. 111+00 = 22 BAGS




# STAGE 2
# TEMPORARY EROSION CONTROL DETAILS

7/26/2019
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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 |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 14 | 57 |

(2) MAINTENANCE OF TRAFFIC DETAILS

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

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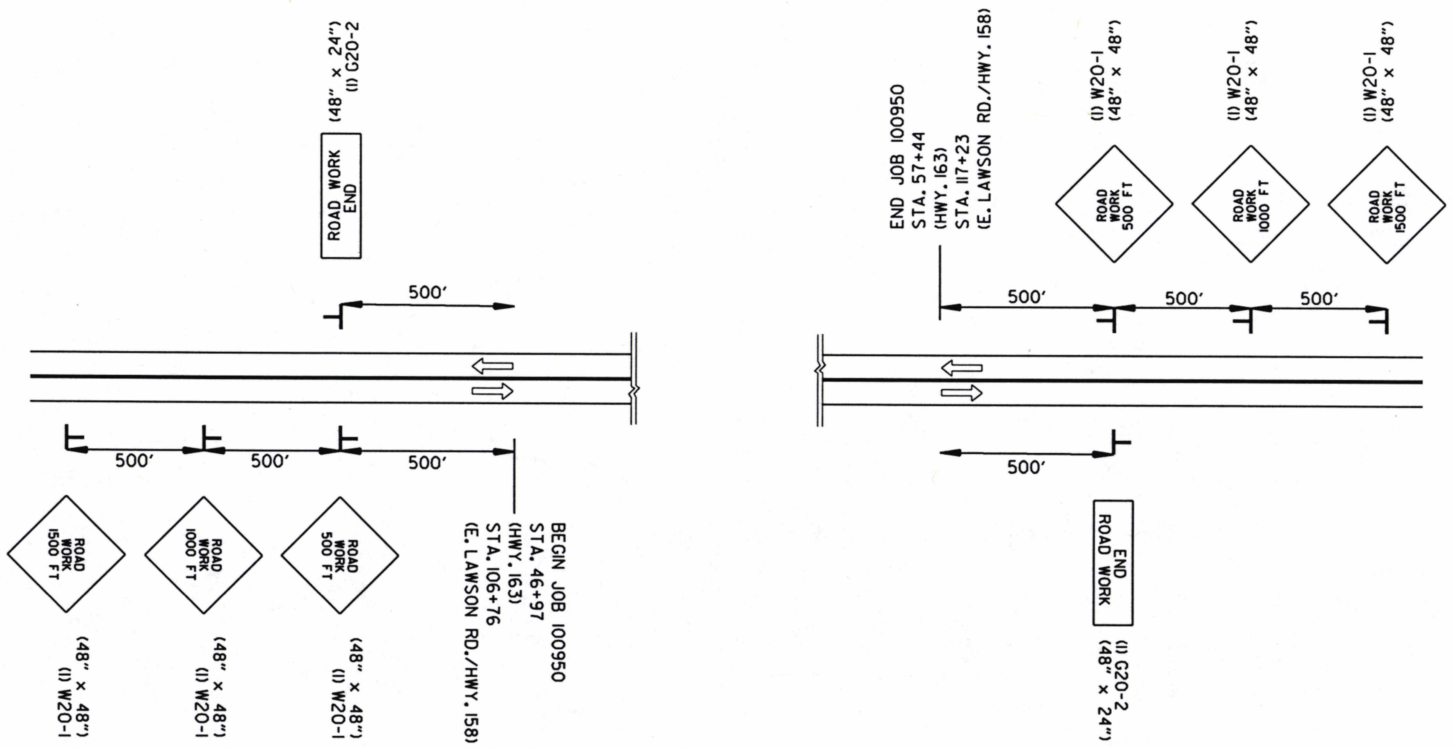
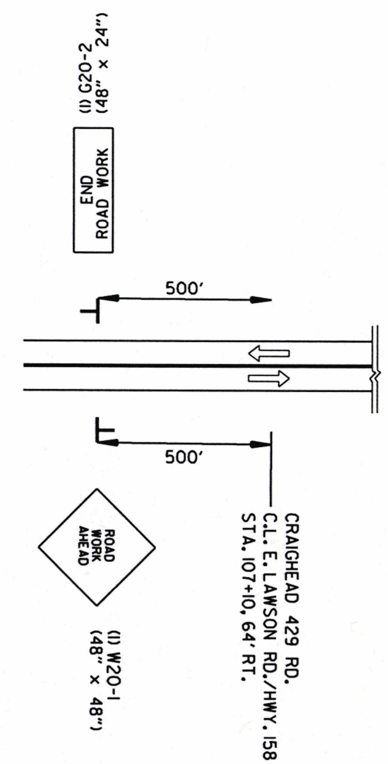
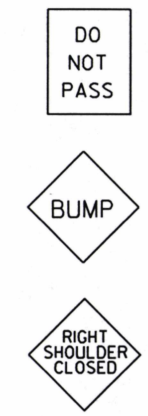


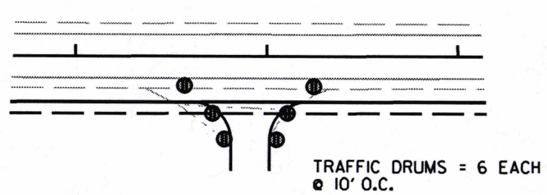

ADVANCE WARNING HWY. 163 AND E. LAWSON RD./HWY. 158 (ALL STAGES)



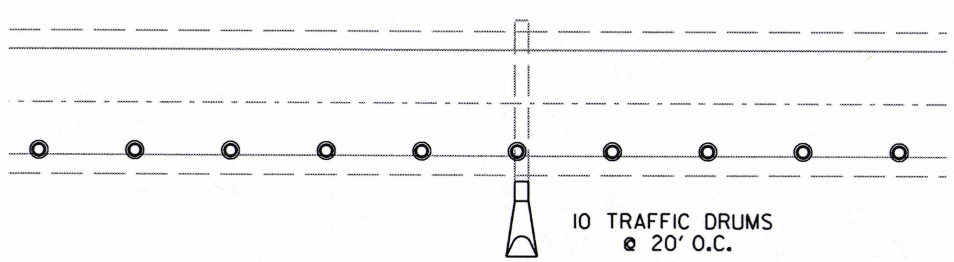

ADVANCE WARNING SIDE ROADS (ALL STAGES)




| | | |
|---|---|---|
| DO NOT PASS | (4) R4-1 (24" X 30") | ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER |
| BUMP | (4) W8-1 (30" X 30") | ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER |
| RIGHT SHOULDER CLOSED | (4) W21 - 5a (36" X 36") | ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER |




DRIVEWAY/TRAFFIC DRUM DETAIL




TRAFFIC DRUMS AND SIGNS ON EXISTING SHOULDER FOR EXTENDING/CONSTRUCTING PIPE CULVERTS LT. AND RT.

CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AT THE LOCATIONS LISTED ON THE ADVANCED WARNING DETAILS. INSTALL END ROAD WORK SIGNS AT THE END OF THE JOB AS SHOWN ON THE ADVANCE WARNING DETAILS. INSTALL ROAD WORK AHEAD (W20-1) SIGN ON SIDE ROAD AS SHOWN ON THE ADVANCE WARNING DETAILS.

INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC DRUMS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT DRAINAGE STRUCTURES AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT RT. OF HWY. 163 FROM STA. 45+97 TO STA. 58+44, LT. AND RT. OF HWY. 158 FROM STA. 112+10 TO STA. 118+23 AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 2:

INSTALL TRAFFIC DRUMS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

MAINTAIN CONSTRUCTION PAVEMENT MARKINGS INSTALLED IN STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT DRAINAGE STRUCTURES AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT LT. OF HWY. 163 FROM STA. 45+97 TO STA. 58+44, LT. AND RT. OF E. LAWSON RD. FROM STA. 105+76 TO STA. 111+89 AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 3:

INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC DRUMS AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

SHIFT TRAFFIC AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT FINAL PORTIONS OF ROUNDABOUT FROM STA. 10+00 TO STA. 14+64.96, AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT SPLITTER ISLANDS ON HWY. 163 FROM STA. 49+30 TO STA. 51+31 AND STA. 53+11 TO STA. 55+11 AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT SPLITTER ISLANDS ON E. LAWSON RD./HWY. 158 FROM STA. 109+09 TO STA. 111+09 AND STA. 112+89 TO STA. 114+90 AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

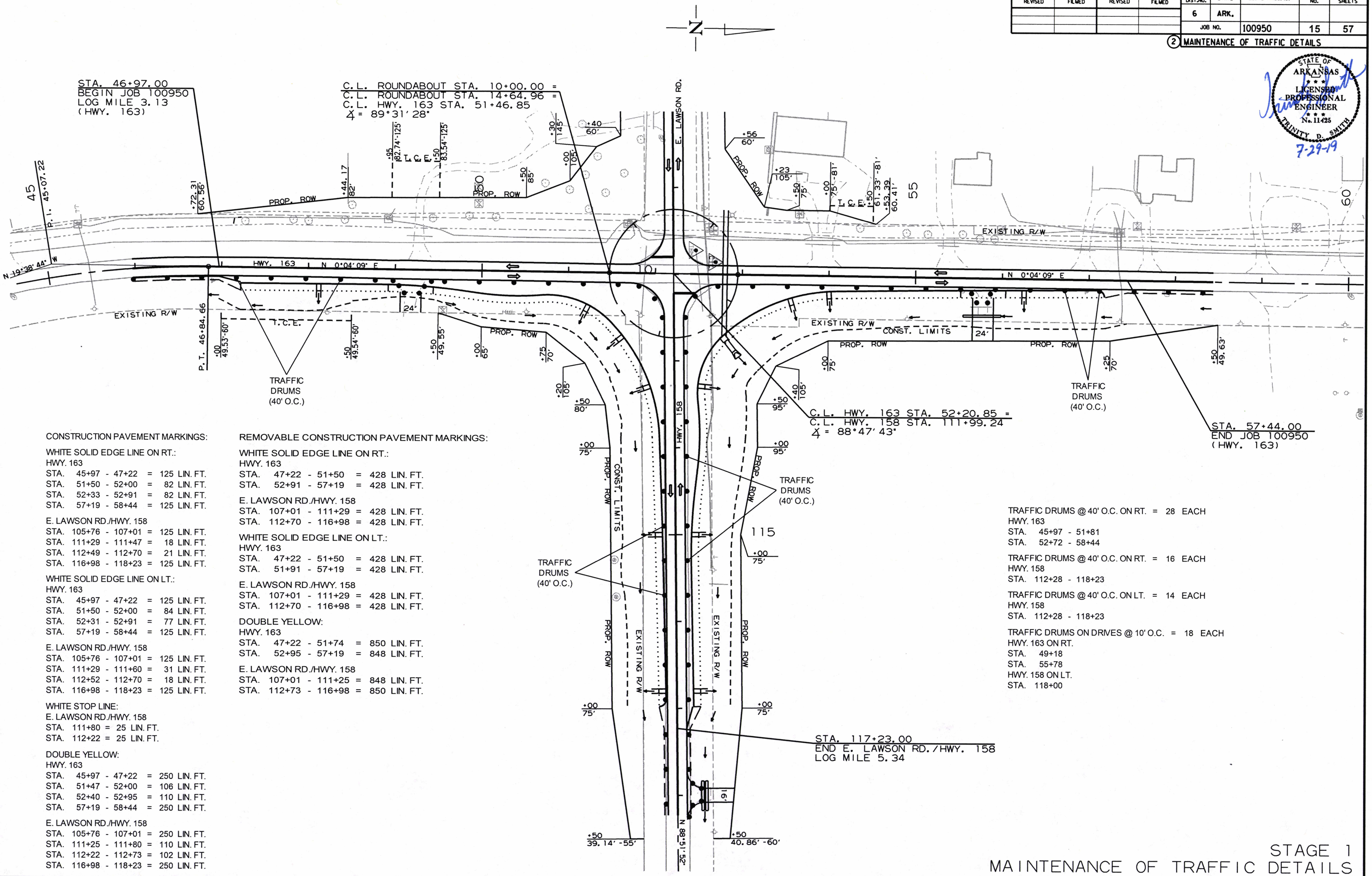
APPLY FINAL 2" LIFT OF ACHM AND PLACE PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKING DETAILS.

# ADVANCED WARNING MAINTENANCE OF TRAFFIC DETAILS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 15 | 57 |

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19




CONSTRUCTION PAVEMENT MARKINGS:

WHITE SOLID EDGE LINE ON RT.:
HWY. 163
STA. 45+97 - 47+22 = 125 LIN. FT.
STA. 51+50 - 52+00 = 82 LIN. FT.
STA. 52+33 - 52+91 = 82 LIN. FT.
STA. 57+19 - 58+44 = 125 LIN. FT.

E. LAWSON RD./HWY. 158
STA. 105+76 - 107+01 = 125 LIN. FT.
STA. 111+29 - 111+47 = 18 LIN. FT.
STA. 112+49 - 112+70 = 21 LIN. FT.
STA. 116+98 - 118+23 = 125 LIN. FT.

WHITE SOLID EDGE LINE ON LT.:
HWY. 163
STA. 45+97 - 47+22 = 125 LIN. FT.
STA. 51+50 - 52+00 = 84 LIN. FT.
STA. 52+31 - 52+91 = 77 LIN. FT.
STA. 57+19 - 58+44 = 125 LIN. FT.

E. LAWSON RD./HWY. 158
STA. 105+76 - 107+01 = 125 LIN. FT.
STA. 111+29 - 111+60 = 31 LIN. FT.
STA. 112+52 - 112+70 = 18 LIN. FT.
STA. 116+98 - 118+23 = 125 LIN. FT.

WHITE STOP LINE:
E. LAWSON RD./HWY. 158
STA. 111+80 = 25 LIN. FT.
STA. 112+22 = 25 LIN. FT.

DOUBLE YELLOW:
HWY. 163
STA. 45+97 - 47+22 = 250 LIN. FT.
STA. 51+47 - 52+00 = 106 LIN. FT.
STA. 52+40 - 52+95 = 110 LIN. FT.
STA. 57+19 - 58+44 = 250 LIN. FT.

E. LAWSON RD./HWY. 158
STA. 105+76 - 107+01 = 250 LIN. FT.
STA. 111+25 - 111+80 = 110 LIN. FT.
STA. 112+22 - 112+73 = 102 LIN. FT.
STA. 116+98 - 118+23 = 250 LIN. FT.

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS:

WHITE SOLID EDGE LINE ON RT.:
HWY. 163
STA. 47+22 - 51+50 = 428 LIN. FT.
STA. 52+91 - 57+19 = 428 LIN. FT.

E. LAWSON RD./HWY. 158
STA. 107+01 - 111+29 = 428 LIN. FT.
STA. 112+70 - 116+98 = 428 LIN. FT.

WHITE SOLID EDGE LINE ON LT.:
HWY. 163
STA. 47+22 - 51+50 = 428 LIN. FT.
STA. 51+91 - 57+19 = 428 LIN. FT.

E. LAWSON RD./HWY. 158
STA. 107+01 - 111+29 = 428 LIN. FT.
STA. 112+70 - 116+98 = 428 LIN. FT.

DOUBLE YELLOW:
HWY. 163
STA. 47+22 - 51+74 = 850 LIN. FT.
STA. 52+95 - 57+19 = 848 LIN. FT.

E. LAWSON RD./HWY. 158
STA. 107+01 - 111+25 = 848 LIN. FT.
STA. 112+73 - 116+98 = 850 LIN. FT.

TRAFFIC DRUMS @ 40′ O.C. ON RT. = 28 EACH
HWY. 163
STA. 45+97 - 51+81
STA. 52+72 - 58+44

TRAFFIC DRUMS @ 40′ O.C. ON RT. = 16 EACH
HWY. 158
STA. 112+28 - 118+23

TRAFFIC DRUMS @ 40′ O.C. ON LT. = 14 EACH
HWY. 158
STA. 112+28 - 118+23

TRAFFIC DRUMS ON DRIVES @ 10′ O.C. = 18 EACH
HWY. 163 ON RT.
STA. 49+18
STA. 55+78
HWY. 158 ON LT.
STA. 118+00

STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

7/26/2019
R100950.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. | | 100950 | 16 | 57 |

(2) MAINTENANCE OF TRAFFIC DETAILS

TRAFFIC DRUMS @ 40' O.C. ON RT. = 8 EACH
HWY. 163
STA. 50+76 - 51+81
STA. 52+72 - 53+92

TRAFFIC DRUMS @ 40' O.C. ON RT. = 12 EACH
E. LAWSON RD.
STA. 105+76 - 111+75

TRAFFIC DRUMS @ 40' O.C. ON RT. = 5 EACH
HWY. 158
STA. 112+28 - 113+70

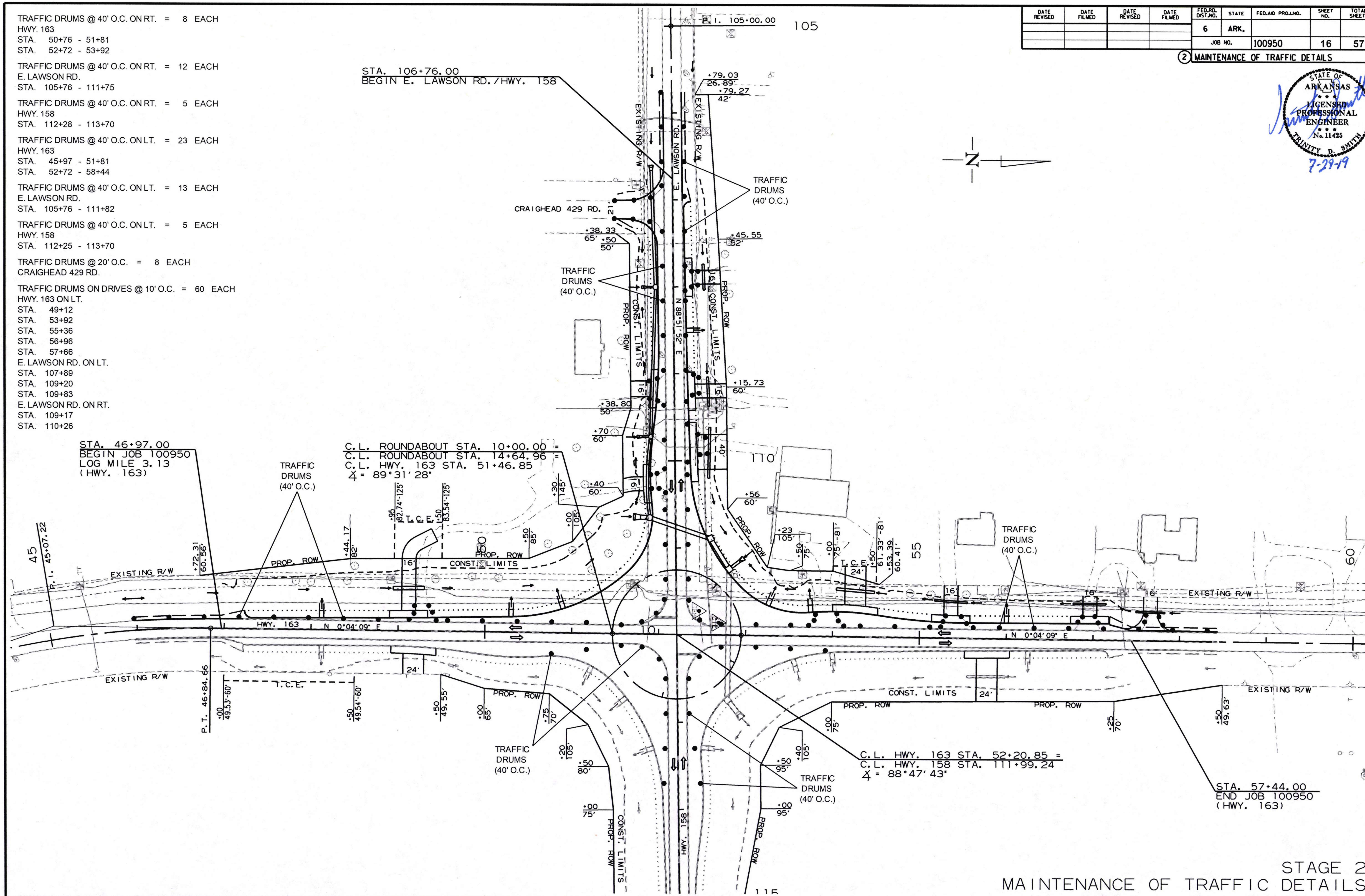
TRAFFIC DRUMS @ 40' O.C. ON LT. = 23 EACH
HWY. 163
STA. 45+97 - 51+81
STA. 52+72 - 58+44

TRAFFIC DRUMS @ 40' O.C. ON LT. = 13 EACH
E. LAWSON RD.
STA. 105+76 - 111+82

TRAFFIC DRUMS @ 40' O.C. ON LT. = 5 EACH
HWY. 158
STA. 112+25 - 113+70

TRAFFIC DRUMS @ 20' O.C. = 8 EACH
CRAIGHEAD 429 RD.

TRAFFIC DRUMS ON DRIVES @ 10' O.C. = 60 EACH
HWY. 163 ON LT.
STA. 49+12
STA. 53+92
STA. 55+36
STA. 56+96
STA. 57+66
E. LAWSON RD. ON LT.
STA. 107+89
STA. 109+20
STA. 109+83
E. LAWSON RD. ON RT.
STA. 109+17
STA. 110+26




STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

7/26/2019

R100950.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. | | 100950 | 17 | 57 |

(2) MAINTENANCE OF TRAFFIC DETAILS

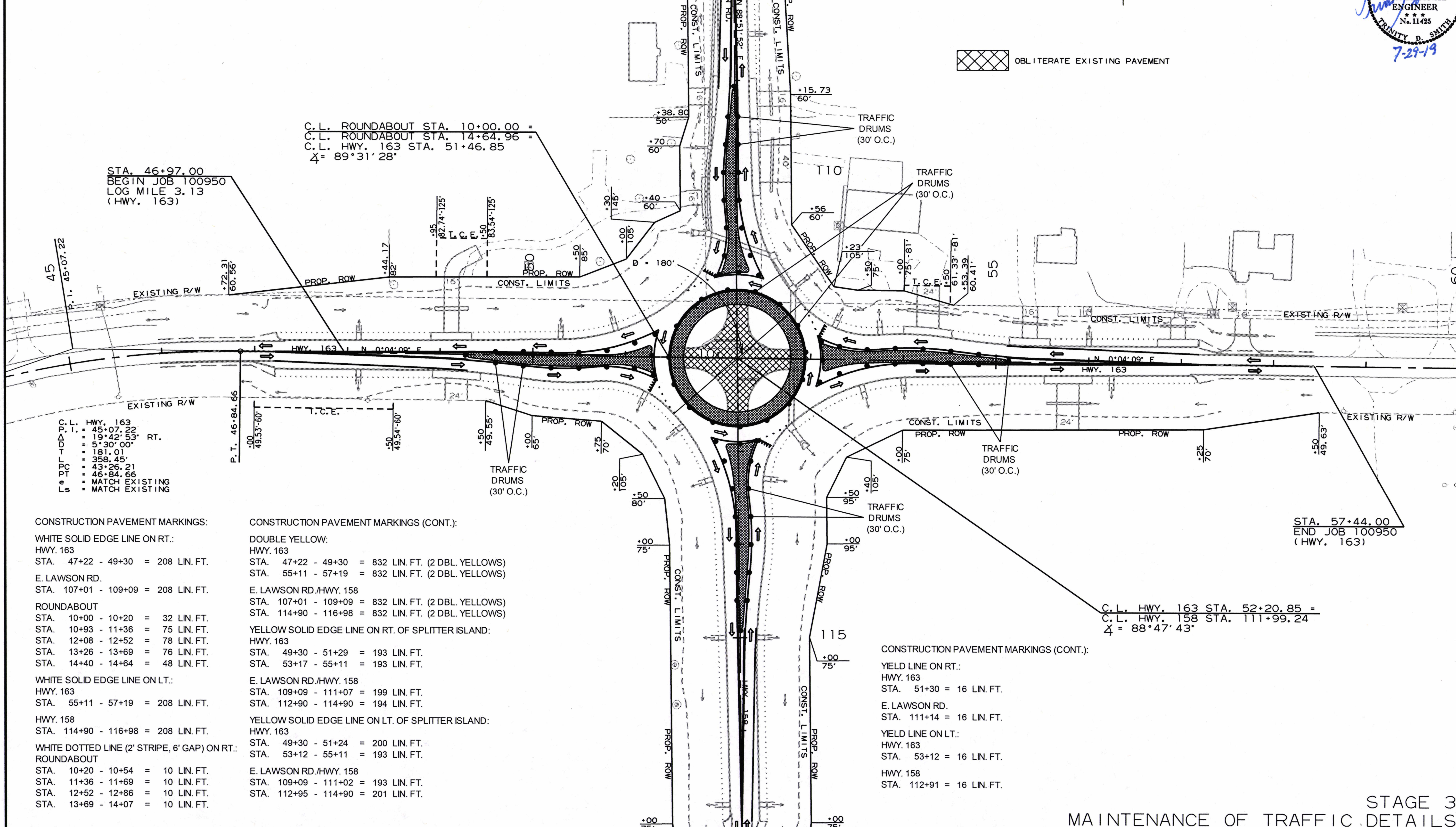
STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH

7-29-19

TRAFFIC DRUMS @ 30' O.C. SPLITTER ISLANDS = 64 EACH
HWY. 163
STA. 49+30 - 51+32
STA. 53+10 - 53+10

E. LAWSON RD./HWY. 158
STA. 109+90 - 111+09
STA. 112+88 - 114+90

TRAFFIC DRUMS @ 30' O.C. ROUNDABOUT = 15 EACH
STA. 10+00 - 14+64




CONSTRUCTION PAVEMENT MARKINGS:

WHITE SOLID EDGE LINE ON RT.:
HWY. 163
STA. 47+22 - 49+30 = 208 LIN. FT.

E. LAWSON RD.
STA. 107+01 - 109+09 = 208 LIN. FT.

ROUNDABOUT
STA. 10+00 - 10+20 = 32 LIN. FT.
STA. 10+93 - 11+36 = 75 LIN. FT.
STA. 12+08 - 12+52 = 78 LIN. FT.
STA. 13+26 - 13+69 = 76 LIN. FT.
STA. 14+40 - 14+64 = 48 LIN. FT.

WHITE SOLID EDGE LINE ON LT.:
HWY. 163
STA. 55+11 - 57+19 = 208 LIN. FT.

HWY. 158
STA. 114+90 - 116+98 = 208 LIN. FT.

WHITE DOTTED LINE (2' STRIPE, 6' GAP) ON RT.:
ROUNDABOUT
STA. 10+20 - 10+54 = 10 LIN. FT.
STA. 11+36 - 11+69 = 10 LIN. FT.
STA. 12+52 - 12+86 = 10 LIN. FT.
STA. 13+69 - 14+07 = 10 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS (CONT.):

DOUBLE YELLOW:
HWY. 163
STA. 47+22 - 49+30 = 832 LIN. FT. (2 DBL. YELLOWS)
STA. 55+11 - 57+19 = 832 LIN. FT. (2 DBL. YELLOWS)

E. LAWSON RD./HWY. 158
STA. 107+01 - 109+09 = 832 LIN. FT. (2 DBL. YELLOWS)
STA. 114+90 - 116+98 = 832 LIN. FT. (2 DBL. YELLOWS)

YELLOW SOLID EDGE LINE ON RT. OF SPLITTER ISLAND:
HWY. 163
STA. 49+30 - 51+29 = 193 LIN. FT.
STA. 53+17 - 55+11 = 193 LIN. FT.

E. LAWSON RD./HWY. 158
STA. 109+09 - 111+07 = 199 LIN. FT.
STA. 112+90 - 114+90 = 194 LIN. FT.

YELLOW SOLID EDGE LINE ON LT. OF SPLITTER ISLAND:
HWY. 163
STA. 49+30 - 51+24 = 200 LIN. FT.
STA. 53+12 - 55+11 = 193 LIN. FT.

E. LAWSON RD./HWY. 158
STA. 109+09 - 111+02 = 193 LIN. FT.
STA. 112+95 - 114+90 = 201 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS (CONT.):

YIELD LINE ON RT.:
HWY. 163
STA. 51+30 = 16 LIN. FT.

E. LAWSON RD.
STA. 111+14 = 16 LIN. FT.

YIELD LINE ON LT.:
HWY. 163
STA. 53+12 = 16 LIN. FT.

HWY. 158
STA. 112+91 = 16 LIN. FT.

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

7/26/2019
R100950.DGN

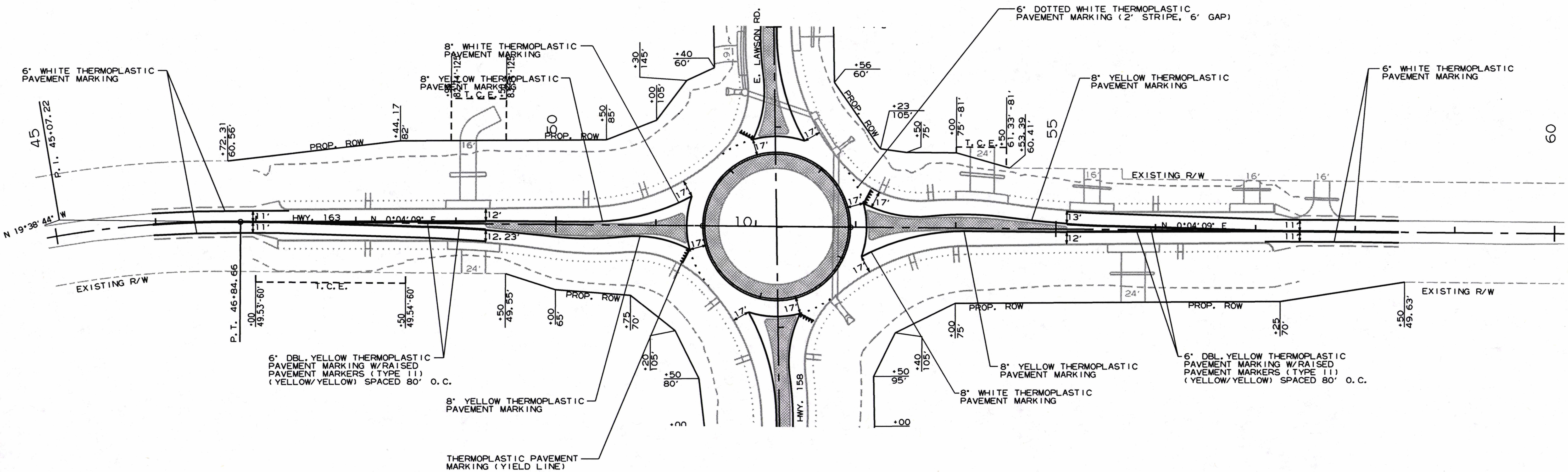
PERMANENT PAVEMENT MARKING QUANTITIES:

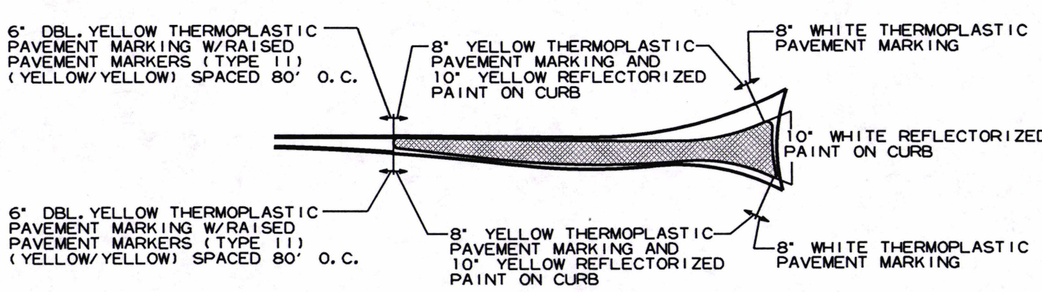
THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 1914 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 4328 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (8") = 309 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (8") = 1572 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING (YIELD LINE) = 64 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") = 140 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10") = 1600 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) = 32 EACH

| 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. | | 100950 | 18 | 57 |

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19




TYPICAL SPLITTER ISLAND STRIPING

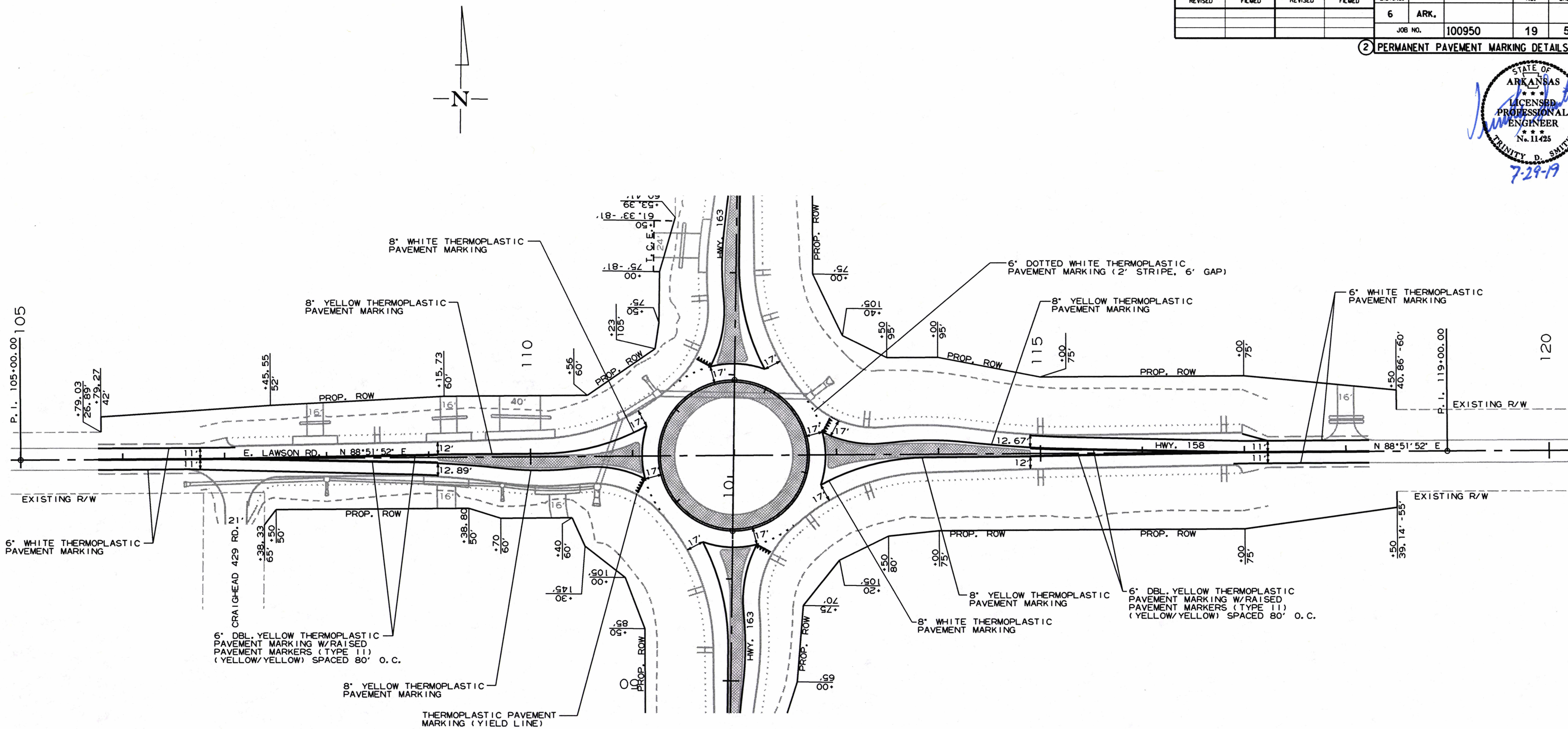
7/26/2019
R100950.DGN

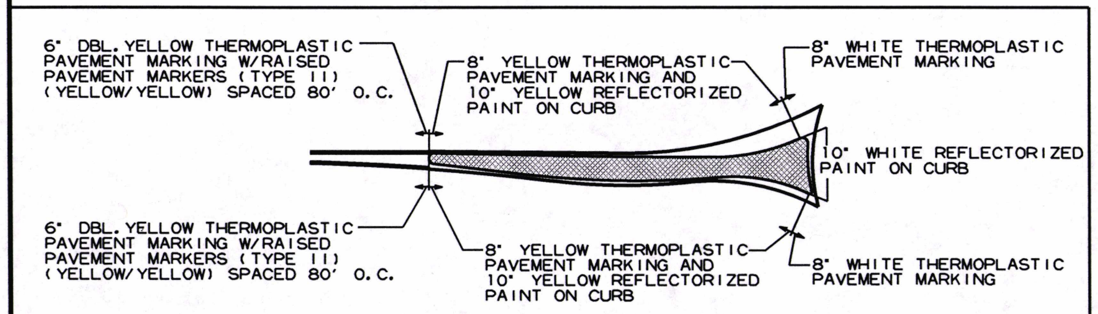
HWY. 163
PERMANENT PAVEMENT MARKING DETAILS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | | JOB NO. | 100950 | 19 | 57 |

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19




TYPICAL SPLITTER ISLAND STRIPING

E. LAWSON RD./HWY. 158
PERMANENT PAVEMENT MARKING DETAILS

7/26/2019
R100950.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. | | 100950 | 20 | 57 |

2 QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-8-19

## ADVANCE WARNING SIGNS AND DEVICES

| SIGN NUMBER | DESCRIPTION | SIGN SIZE | STAGE 1 | STAGE 2 | STAGE 3 | MAXIMUM NUMBER REQUIRED | TOTAL SIGNS REQUIRED | | VERTICAL PANELS | TRAFFIC DRUMS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | LIN. FT. - EACH | | | | NO. | SQ. FT. | EACH | |
| W20-1 | ROAD WORK 1500 FT. | 48"x48" | 4 | 4 | 4 | 4 | 4 | 64.0 | | |
| W20-1 | ROAD WORK 1000 FT. | 48"x48" | 4 | 4 | 4 | 4 | 4 | 64.0 | | |
| W20-1 | ROAD WORK 500 FT. | 48"x48" | 4 | 4 | 4 | 4 | 4 | 64.0 | | |
| W20-1 | ROAD WORK AHEAD | 48"x48" | 1 | 1 | 1 | 1 | 1 | 16.0 | | |
| G20-2 | END ROAD WORK | 48"x24" | 5 | 5 | 5 | 5 | 5 | 40.0 | | |
| R4-1 | DO NOT PASS | 24"x30" | 4 | 4 | 4 | 4 | 4 | 20.0 | | |
| W21-5a | RIGHT SHOULDER CLOSED | 36"x36" | 4 | 4 | 4 | 4 | 4 | 36.0 | | |
| W8-1 | BUMP | 30"x30" | 4 | 4 | 4 | 4 | 4 | 25.0 | | |
| | | | | | | | | | | |
| | VERTICAL PANELS | | 58 | 66 | | 66 | | | 66 | |
| | TRAFFIC DRUMS | | 76 | 126 | 79 | 126 | | | | 126 |
| | | | | | | | | | | |
| TOTALS: | | | | | | | | 329.0 | 66 | 126 |

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

## CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

| DESCRIPTION | STAGE 1 | STAGE 3 | END OF JOB | CONSTRUCTION PAVEMENT MARKINGS | REMOVABLE CONSTRUCTION PAVEMENT MARKINGS | RAISED PAVEMENT MARKERS | THERMOPLASTIC PAVEMENT MARKING | | | | | REFLECTORIZED PAINT PAVEMENT MARKING | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TYPE II | 6" | | 8" | | YIELD LINE | 10" | |
| | | | | | | (YEL/YEL) | WHITE | YELLOW | WHITE | YELLOW | | WHITE | YELLOW |
| | LIN. FT. - EACH | | | LIN. FT. | LIN. FT. | EACH | LIN. FT. | | | | | LIN. FT. | |
| CONSTRUCTION PAVEMENT MARKINGS | 2891 | 6139 | | 9030 | | | | | | | | | |
| REMOVABLE CONSTRUCTION PAVEMENT MARKINGS | 6820 | | | | 6820 | | | | | | | | |
| | | | | | | | | | | | | | |
| RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) | | | 32 | | | 32 | | | | | | | |
| | | | | | | | | | | | | | |
| THERMOPLASTIC PAVEMENT MARKING WHITE (6") | | | 1914 | | | | 1914 | | | | | | |
| THERMOPLASTIC PAVEMENT MARKING YELLOW (6") | | | 4328 | | | | | 4328 | | | | | |
| THERMOPLASTIC PAVEMENT MARKING WHITE (8") | | | 309 | | | | | | 309 | | | | |
| THERMOPLASTIC PAVEMENT MARKING YELLOW (8") | | | 1572 | | | | | | | 1572 | | | |
| THERMOPLASTIC PAVEMENT MARKING (YIELD LINE) | | | 64 | | | | | | | | 64 | | |
| REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") | | | 140 | | | | | | | | | 140 | |
| REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10") | | | 1600 | | | | | | | | | | 1600 |
| | | | | | | | | | | | | | |
| TOTALS: | | | | 9030 | 6820 | 32 | 1914 | 4328 | 309 | 1572 | 64 | 140 | 1600 |

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

## EROSION CONTROL

| STATION | STATION | LOCATION | PERMANENT EROSION CONTROL | | | | | TEMPORARY EROSION CONTROL | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEEDING | LIME | MULCH COVER | WATER | SECOND SEEDING APPLICATION | TEMPORARY SEEDING | MULCH COVER | WATER | FILTER SOCK (18") | SAND BAG DITCH CHECKS | ROCK DITCH CHECKS | DROP INLET SILT FENCE | SILT FENCE | SEDIMENT BASIN | OBLITERATION OF SEDIMENT BASIN | *SEDIMENT REMOVAL & DISPOSAL |
| | | | | | | | | | | | (E-13) | (E-5) | (E-6) | (E-7) | (E-11) | (E-14) | | |
| | | | ACRE | TON | ACRE | M.GAL. | ACRE | ACRE | ACRE | M.GAL. | LIN. FT. | BAG | CU.YD. | LIN. FT. | LIN. FT. | CU.YD. | CU.YD. | CU. YD. |
| ENTIRE | PROJECT | CLEARING AND GRUBBING | | | | | | | | | | 220 | 30 | | | | | 20 |
| ENTIRE | PROJECT | STAGE 1 | 2.10 | 4.20 | 2.10 | 214.2 | 2.10 | 3.36 | 3.36 | 68.5 | 480 | 330 | 45 | 25 | 80 | | | 46 |
| ENTIRE | PROJECT | STAGE 2 | 1.75 | 3.50 | 1.75 | 178.5 | 1.75 | 2.98 | 2.98 | 60.8 | 320 | 374 | 51 | 125 | | | | 5 |
| ENTIRE | PROJECT | STAGE 3 | 0.24 | 0.48 | 0.24 | 24.5 | 0.24 | 0.24 | 0.24 | 4.9 | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| *ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. | | | 1.00 | 2.00 | 1.00 | 102.0 | 1.00 | 1.65 | 1.65 | 33.7 | 200 | 176 | 24 | 50 | 100 | 400 | 400 | 427 |
| | | | | | | | | | | | | | | | | | | |
| TOTALS: | | | 5.09 | 10.18 | 5.09 | 519.2 | 5.09 | 8.23 | 8.23 | 167.9 | 1000 | 1100 | 150 | 200 | 180 | 400 | 400 | 498 |

BASIS OF ESTIMATE:
LIME ....................................................2 TONS / ACRE OF SEEDING
WATER.................................................102.0 M.G. / ACRE OF SEEDING
WATER.................................................20.4 M.G. / ACRE OF TEMPORARY SEEDING
SAND BAG DITCH CHECKS..........22 BAGS / LOCATION
ROCK DITCH CHECKS.................3 CU.YD./LOCATION

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

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

1/2/2019

R100950.DGN

QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19

## CLEARING AND GRUBBING

| STATION | STATION | LOCATION | CLEARING | GRUBBING |
|---|---|---|---|---|
| | | | STATION | |
| 46+00 | 52+00 | HWY. 163 ON LT. | 6 | 6 |
| 54+00 | 56+00 | HWY. 163 ON LT. | 2 | 2 |
| 105+00 | 106+00 | E. LAWSON RD. ON RT. | 1 | 1 |
| 109+00 | 111+00 | E. LAWSON RD. ON RT. | 2 | 2 |
| | | | | |
| TOTALS: | | | 11 | 11 |

## REMOVAL AND DISPOSAL OF FENCE

| STATION | STATION | LOCATION | FENCE |
|---|---|---|---|
| | | | LIN. FT. |
| 112+43 | 118+50 | HWY. 158 ON RT. | 607 |
| | | | |
| TOTAL: | | | 607 |

## REMOVAL AND DISPOSAL OF CULVERTS

| STATION | DESCRIPTION | PIPE CULVERTS |
|---|---|---|
| | | EACH |
| 49+28 | HWY. 163 ON LT. | 1 |
| 53+92 | HWY. 163 ON LT. | 1 |
| 55+36 | HWY. 163 ON LT. | 1 |
| 55+78 | HWY. 163 ON RT. | 1 |
| 56+96 | HWY. 163 ON LT. | 1 |
| 57+66 | HWY. 163 ON LT. | 1 |
| 107+11 | E. LAWSON RD. ON RT. | 1 |
| 107+89 | E. LAWSON RD. ON LT. | 1 |
| 109+17 | E. LAWSON RD. ON RT. | 1 |
| 109+20 | E. LAWSON RD. ON LT. | 1 |
| 109+83 | E. LAWSON RD. ON LT. | 1 |
| 110+26 | E. LAWSON RD. ON RT. | 1 |
| 111+55 | E. LAWSON RD. - CROSS DRAIN | 1 |
| 118+00 | E. LAWSON RD. ON LT. | 2 |
| | | |
| TOTAL: | | 15 |

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

## MAILBOXES

| LOCATION | MAILBOXES | MAILBOX SUPPORTS (SINGLE) |
|---|---|---|
| | EACH | |
| ENTIRE PROJECT | 6 | 6 |
| | | |
| | | |
| TOTALS: | 6 | 6 |

## ACHM PATCHING OF EXISTING ROADWAY

| DESCRIPTION | TON |
|---|---|
| ENTIRE PROJECT - TO BE USED IF AND WHERE | 25 |
| DIRECTED BY THE ENGINEER | |
| | |
| TOTAL: | 25 |

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

## FENCING

| STATION | STATION | LOCATION | WIRE FENCE (TYPE C) |
|---|---|---|---|
| | | | LIN. FT. |
| 113+02 | 118+50 | HWY. 158 ON LT. | 570 |
| | | | |
| TOTAL: | | | 570 |

## SOIL LOG

| STATION | LATITUDE DEG | LATITUDE MIN | LATITUDE SEC | LONGITUDE DEG | LONGITUDE MIN | LONGITUDE SEC | LOCATION | DEPTH FEET | LIQUID LIMIT | PLASTICITY INDEX | AASHTO CLASSIFICATION | COLOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50+00 | 35 | 44 | 53.40 | 90 | 39 | 57.40 | 18' RT. | 0-5 | 43 | 25 | A-7-6(18) | BROWN |
| 50+00 | 35 | 44 | 53.40 | 90 | 39 | 57.40 | 20' RT. | 0-5 | 38 | 19 | A-6(18) | BROWN |
| 50+00 | 35 | 44 | 53.40 | 90 | 39 | 57.50 | 6' RT. | 0-5 | 32 | 16 | A-6(9) | BROWN |
| 55+00 | 35 | 44 | 58.20 | 90 | 39 | 57.70 | 6' LT. | 0-5 | 30 | 13 | A-6(5) | BR/GR |
| 55+00 | 35 | 44 | 58.20 | 90 | 39 | 57.70 | 18' LT. | 0-5 | 34 | 15 | A-6(10) | BROWN |
| 108+00 | 35 | 44 | 55.40 | 90 | 40 | 2.40 | 18' RT. | 0-5 | 32 | 16 | A-6(11) | BR/GR |
| 108+00 | 35 | 44 | 55.30 | 90 | 40 | 2.40 | 6' RT. | 0-5 | 40 | 25 | A-6(21) | BR/GR |
| 115+00 | 35 | 44 | 55.60 | 90 | 39 | 54.00 | 6' LT. | 0-5 | 34 | 17 | A-6(13) | BROWN |
| 115+00 | 35 | 44 | 55.70 | 90 | 39 | 54.00 | 18' LT. | 0-5 | 36 | 15 | A-6(15) | BROWN |

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

## EARTHWORK

| STATION | STATION | LOCATION / DESCRIPTION | UNCLASSIFIED EXCAVATION | COMPACTED EMBANKMENT | * SOIL STABILIZATION |
|---|---|---|---|---|---|
| | | | CU. YD. | | TON |
| ENTIRE | PROJECT | STAGE 1-HWY. 163 MAIN LANES | 987 | 2301 | |
| ENTIRE | PROJECT | STAGE 1-HWY. 158 MAIN LANES | 3056 | 2620 | |
| ENTIRE | PROJECT | STAGE 2-HWY. 163 MAIN LANES | 1442 | 1975 | |
| ENTIRE | PROJECT | STAGE 2-E. LAWSON RD. MAIN LANES | 824 | 919 | |
| ENTIRE | PROJECT | STAGE 3-ROUNDABOUT | 16 | 1809 | |
| ENTIRE | PROJECT | APPROACHES | 20 | 870 | |
| | | | | | |
| | | CRAIGHEAD 429 RD. | 27 | 17 | |
| | | | | | |
| ENTIRE | PROJECT | PAVEMENT OBLITERATION | 145 | | |
| | | | | | |
| * ENTIRE | PROJECT | TO BE USED IF AND WHERE | | | 100 |
| | | DIRECTED BY THE ENGINEER | | | |
| | | | | | |
| TOTALS: | | | 6517 | 10511 | 100 |

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

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

## REMOVAL AND DISPOSAL OF ITEMS

| STATION | LOCATION | SIGN FOUNDATIONS | SIGNS | LUMINAIRE POLES |
|---|---|---|---|---|
| | | EACH | EACH | EACH |
| 52+90 | HWY. 163 ON LT. | | | 1 |
| 53+30 | HWY. 163 ON LT. | 2 | 1 | |
| 110+00 | E. LAWSON RD. ON LT. | 2 | 1 | |
| | | | | |
| TOTALS: | | 4 | 2 | 1 |

## 4" PIPE UNDERDRAIN

| STATION | STATION | LOCATIONS | 4" PIPE UNDERDRAINS | UNDERDRAIN OUTLET PROTECTORS |
|---|---|---|---|---|
| | | | LIN. FT. | EACH |
| * ENTIRE PROJECT TO BE USED IF AND | | | 500 | 4 |
| WHERE DIRECTED BY THE ENGINEER | | | | |
| | | | | |
| TOTALS: | | | 500 | 4 |

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

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

## SELECTED PIPE BEDDING

| LOCATION | SELECTED PIPE BEDDING |
|---|---|
| | CU.YD. |
| ENTIRE PROJECT TO BE USED IF | |
| AND WHERE DIRECTED BY THE | 150 |
| ENGINEER | |
| | |
| | |
| TOTAL: | 150 |

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

## EROSION CONTROL MATTING

| STATION | STATION | LOCATION | LENGTH | CLASS 3 |
|---|---|---|---|---|
| | | | LIN. FT. | SQ. YD. |
| 48+25.00 | 48+50.00 | HWY. 163 ON RT. | 25.00 | 22.22 |
| 49+50.00 | 51+35.86 | HWY. 163 ON RT. | 185.86 | 165.21 |
| 53+05.19 | 57+19.00 | HWY. 163 ON RT. | 413.81 | 367.83 |
| 53+11.84 | 54+09.17 | HWY. 163 ON LT. | 97.33 | 86.52 |
| 57+19.00 | 57+84.00 | HWY. 163 ON LT. | 65.00 | 57.78 |
| 107+01.00 | 109+70.00 | E. LAWSON RD. ON LT. | 269.00 | 239.11 |
| 112+79.93 | 116+98.00 | HWY. 158 ON RT. | 418.07 | 371.62 |
| 112+96.62 | 113+45.33 | HWY. 158 ON LT. | 48.71 | 43.30 |
| 116+98.00 | 118+23.00 | HWY. 158 ON LT. | 125.00 | 111.11 |
| | | | | |
| TOTAL: | | | | 1464.70 |

NOTE: AVERAGE WIDTH = 8'-0"

## 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

## PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

| STATION | LOCATION | WIDTH | LENGTH | TON |
|---|---|---|---|---|
| | | FEET | | |
| 52+80 | HWY. 163 | 10.83 | 22 | 17 |
| 110+75 | E. LAWSON RD. | 10.83 | 22 | 17 |
| 111+55 | E. LAWSON RD. | 10.83 | 22 | 17 |
| | | | | |
| TOTAL: | | | | 51 |

AVG. DEPTH = 12"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19

## CONCRETE DITCH PAVING

| STATION | STATION | LOCATION | LENGTH | "W" | "B" | CONC. DITCH PAVING (TYPE A) | CONC. DITCH PAVING (TYPE B) | SOLID SODDING | WATER |
|---|---|---|---|---|---|---|---|---|---|
| | | | LIN. FT. | FEET | FEET | SQ. YD. | SQ. YD. | SQ. YD. | M. GAL. |
| 48+12.00 | | HWY. 163 ON LT. | 13.39 | 4.00 | | | 5.95 | 5.95 | 0.07 |
| 48+12.00 | | HWY. 163 ON RT. | 10.93 | 4.00 | | | 4.86 | 4.86 | 0.06 |
| 50+30.00 | | HWY. 163 ON LT. | 13.80 | 4.00 | | | 6.13 | 6.13 | 0.08 |
| 50+90.00 | | HWY. 163 ON LT. | 14.04 | 4.00 | | | 6.24 | 6.24 | 0.08 |
| 51+23.00 | | HWY. 163 ON RT. | 11.32 | 4.00 | | | 5.03 | 5.03 | 0.06 |
| 53+25.00 | | HWY. 163 ON LT. | 17.55 | 4.00 | | | 7.80 | 7.80 | 0.10 |
| 53+55.00 | | HWY. 163 ON RT. | 22.77 | 4.00 | | | 10.12 | 10.12 | 0.13 |
| 53+75.00 | | HWY. 163 ON LT. | 15.54 | 4.00 | | | 6.91 | 6.91 | 0.09 |
| 54+00.00 | | HWY. 163 ON RT. | 19.09 | 4.00 | | | 8.48 | 8.48 | 0.11 |
| 56+00.00 | | HWY. 163 ON LT. | 13.14 | 4.00 | | | 5.84 | 5.84 | 0.07 |
| 56+25.00 | | HWY. 163 ON RT. | 13.70 | 4.00 | | | 6.09 | 6.09 | 0.08 |
| 107+35.06 | 109+04.00 | E. LAWSON RD. ON RT. | 168.94 | 6.00 | | | 112.63 | 75.08 | 0.95 |
| 108+50.00 | | E. LAWSON RD. ON LT. | 10.27 | 4.00 | | | 4.56 | 4.56 | 0.06 |
| 109+31.00 | 110+11.00 | E. LAWSON RD. ON RT. | 80.00 | 6.00 | | | 53.33 | 35.56 | 0.45 |
| 110+10.00 | 111+39.49 | E. LAWSON RD. ON LT. | 175.29 | 22.00 | 4.00 | 428.49 | | 77.91 | 0.98 |
| 110+40.00 | 110+65.00 | E. LAWSON RD. ON RT. | 25.00 | 20.00 | 10.00 | 55.56 | | 11.11 | 0.14 |
| 110+65.00 | 111+08.46 | E. LAWSON RD. ON RT. | 43.46 | 40.00 | 20.00 | 193.16 | | 19.32 | 0.24 |
| 113+29.00 | | HWY. 158 ON LT. | 23.32 | 4.00 | | | 10.36 | 10.36 | 0.13 |
| 113+29.00 | | HWY. 158 ON RT. | 14.78 | 4.00 | | | 6.57 | 6.57 | 0.08 |
| 115+00.00 | | HWY. 158 ON LT. | 17.94 | 4.00 | | | 7.97 | 7.97 | 0.10 |
| 115+00.00 | | HWY. 158 ON RT. | 13.33 | 4.00 | | | 5.92 | 5.92 | 0.07 |
| 116+80.00 | | HWY. 158 ON LT. | 11.81 | 4.00 | | | 5.25 | 5.25 | 0.07 |
| 116+80.00 | | HWY. 158 ON RT. | 11.80 | 4.00 | | | 5.24 | 5.24 | 0.07 |
| 10+67.00 | | ROUNDABOUT ON RT. | 13.49 | 4.00 | | | 6.00 | 6.00 | 0.08 |
| | | | | | | | | | |
| TOTALS: | | | | | | 677.21 | 291.28 | 344.30 | 4.35 |

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

## CONCRETE COMBINATION CURB AND GUTTER

| STATION | STATION | LOCATION | TYPE A (1' 6") | TYPE E-1 (2' 0") |
|---|---|---|---|---|
| | | | LIN. FT. | LIN. FT. |
| 47+22 | 51+53 | HWY. 163 ON RT. | 420 | |
| 47+22 | 51+60 | HWY. 163 ON LT. | 424 | |
| 52+81 | 57+19 | HWY. 163 ON RT. | 431 | |
| 52+89 | 57+19 | HWY. 163 ON LT. | 410 | |
| 107+01 | 111+40 | E. LAWSON RD. ON LT. | 429 | |
| 107+22 | 111+30 | E. LAWSON RD. ON RT. | 405 | |
| 112+58 | 116+98 | HWY. 158 ON RT. | 422 | |
| 112+68 | 116+98 | HWY. 158 ON LT. | 415 | |
| 10+00 | 14+65 | ROUNDABOUT | | 465 |
| | | | | |
| TOTALS: | | | 3356 | 465 |

## CONCRETE ISLAND

| STATION | STATION | LOCATION | CURB FACE TYPE | CONCRETE ISLAND |
|---|---|---|---|---|
| | | | | SQ.YD. |
| 49+30 | 51+31 | HWY. 163 | C | 262 |
| 53+11 | 55+11 | HWY. 163 | C | 264 |
| 109+09 | 111+09 | E. LAWSON RD. | C | 253 |
| 112+89 | 114+90 | HWY. 158 | C | 274 |
| | | | | |
| TOTAL: | | | | 1053 |

## COLD MILLING ASPHALT PAVEMENT

| STATION | STATION | LOCATION | AVG. WIDTH | COLD MILLING ASPHALT PAVEMENT |
|---|---|---|---|---|
| | | | FEET | SQ. YD. |
| 45+97.00 | 46+97.00 | HWY. 163 -MAIN LANES | 22.00 | 244.44 |
| 57+44.00 | 58+44.00 | HWY. 163 -MAIN LANES | 22.00 | 244.44 |
| 105+76.00 | 106+76.00 | E. LAWSON RD. -MAIN LANES | 22.00 | 244.44 |
| 117+23.00 | 118+23.00 | HWY. 158 -MAIN LANES | 22.00 | 244.44 |
| | | | | |
| TOTAL: | | | | 977.76 |

NOTE: AVERAGE MILLING DEPTH 1".

## DRIVEWAYS & TURNOUTS

| STATION | SIDE | LOCATION | WIDTH | **MODIFIED CURB | | PORTLAND CEMENT CONCRETE DRIVEWAY | ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22) | | AGGREGATE BASE COURSE (CLASS 7) | SIDE DRAINS 18" | 24" | 30" | 42" | STANDARD DRAWINGS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | FEET | STATION | STATION | SQ. YD. | SQ. YD. | TON | TON | LIN. FT. | | | | |
| 49+12 | LT. | HWY. 163 | 16 | 48+90 | 49+34 | 39.11 | 182.06 | 20.03 | 74.34 | | | | 36 | PCC-1, PCM-1, PCP-1, PCP-2 |
| 49+18 | RT. | HWY. 162 | 24 | 48+92 | 49+44 | 46.22 | 61.52 | 6.77 | 25.12 | | | | | |
| 54+26 | LT. | HWY. 163 | 24 | 54+00 | 54+52 | 166.83 | | | | | | 40 | | PCC-1, PCM-1, PCP-1, PCP-2 |
| 55+36 | LT. | HWY. 163 | 16 | 55+14 | 55+58 | 39.11 | 61.00 | 6.71 | 24.91 | 38 | | | | PCC-1, PCM-1, PCP-1, PCP-2 |
| 55+78 | RT. | HWY. 163 | 24 | 55+52 | 56+04 | 46.22 | 133.07 | 14.64 | 54.34 | | 44 | | | PCC-1, PCM-1, PCP-1, PCP-2 |
| 56+96 | LT. | HWY. 163 | 16 | 56+74 | 57+18 | 39.11 | 41.32 | 4.55 | 16.87 | 38 | | | | PCC-1, PCM-1, PCP-1, PCP-2 |
| 57+66 | LT. | HWY. 163 | 16 | | | | 98.70 | 10.86 | 40.30 | 34 | | | | PCC-1, PCM-1, PCP-1, PCP-2 |
| 107+89 | LT. | E. LAWSON RD. | 16 | 107+67 | 108+11 | 39.11 | 57.35 | 6.31 | 23.42 | | 30 | | | PCC-1, PCM-1, PCP-1, PCP-2 |
| 109+17 | RT. | E. LAWSON RD. | 16 | 108+95 | 109+39 | 39.11 | 39.79 | 4.38 | 16.25 | | | | | |
| 109+20 | LT. | E. LAWSON RD. | 16 | 108+98 | 109+42 | 39.11 | 64.25 | 7.07 | 26.24 | | 34 | | | PCC-1, PCM-1, PCP-1, PCP-2 |
| 109+90 | LT. | E. LAWSON RD. | 40 | 109+56 | 110+24 | 60.44 | 154.00 | 16.94 | 62.88 | | 58 | | | PCC-1, PCM-1, PCP-1, PCP-2 |
| 110+26 | RT. | E. LAWSON RD. | 16 | 110+04 | 110+48 | 39.11 | 41.92 | 4.61 | 17.12 | | | | | |
| 118+00 | LT. | HWY. 158 | 16 | | | | 125.90 | 13.85 | 51.41 | | | 68 | | PCC-1, PCM-1, PCP-1, PCP-2 |
| | | | | | | | | | | | | | | |
| * ENTIRE PROJECT TEMPORARY DRIVES | | | | | | | | | 195.00 | | | | | |
| | | | | | | | | | | | | | | |
| TOTALS: | | | | | | 593.48 | 1060.88 | 116.72 | 628.20 | 110 | 166 | 108 | 36 | |

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

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

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

** FOR INFORMATION ONLY

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

| 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. | | 100950 | 23 | 57 |

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19

## STRUCTURES

| STATION | DESCRIPTION | REINFORCED CONCRETE PIPE CULVERT (CLASS III) 18" | (CLASS III) 30" | (CLASS III) 48" | (CLASS III) 54" | (CLASS III) 29"X18" | (CLASS IV) 48" | (CLASS IV) 54" | SIDE DRAIN 12" | PIPE CULVERT STORM DRAIN ALTERNATES 1 & 2 24" | 48" | FLARED END SECTIONS FOR R.C. PIPE CULVERTS 18" | 30" | 48" | 54" | 29"X18" | DROP INLETS TYPE C | TYPE MO | TYPE SPECIAL | EXT. 4' | EXT. 8' | JUNCT. BOXES (TYPE E) | YARD DRAINS | SOLID SODDING | WATER | STD. DWG. NOS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LIN. FT. | | | | | | | | | | EACH | | | | | EACH | | | | | | | SQ.YD. | M.GAL. | |
| 48+12 | HWY. 163 - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | 2 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 48+12 | HWY. 163 - CONSTRUCT DROP INLET ON RT. | | | | | | | | | | | | | | | | | | 1 | 2 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 50+30 | HWY. 163 - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | | | | | 32 | 0.40 | SPECIAL DETAILS |
| 50+90 | HWY. 163 - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | | 1 | | | 32 | 0.40 | SPECIAL DETAILS |
| 51+23 | HWY. 163 - CONSTRUCT DROP INLET ON RT. | | | | | | | | | | | | | | | | | | 1 | 1 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 53+25 | HWY. 163 - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | 2 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 53+55 | HWY. 163 - CONSTRUCT DROP INLET ON RT. | | | | | | | | | | | | | | | | | | 1 | 1 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 53+75 | HWY. 163 - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | | 1 | | | 32 | 0.40 | SPECIAL DETAILS |
| 54+00 | HWY. 163 - CONSTRUCT DROP INLET ON RT. | | | | | | | | | | | | | | | | | | 1 | 1 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 56+00 | HWY. 163 - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | | | | | 32 | 0.40 | SPECIAL DETAILS |
| 56+25 | HWY. 163 - CONSTRUCT DROP INLET ON RT. | | | | | | | | | | | | | | | | | | 1 | | | | | 32 | 0.40 | SPECIAL DETAILS |
| 108+00 | E. LAWSON RD. - CONSTRUCT DROP INLET ON RT. | 8 | | | | 132 | | | | 168 | | 1 | | | | 1 | | 1 | | | | | | 13 | 0.16 | FPC-9E, FPC-9M, PCC-1, PCM-1, FES-1, FES-2 |
| 108+50 | E. LAWSON RD. - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | | | | | 32 | 0.40 | SPECIAL DETAILS |
| 109+72 | E. LAWSON RD. - CONSTRUCT DROP INLET ON RT. | 8 | | | | | | | | 88 | | 1 | | | | | | 1 | | 1 | | | | 5 | 0.06 | FPC-9E, FPC-9M, PCC-1, PCM-1, FES-1, FES-2 |
| 110+65 | E. LAWSON RD. - CONSTRUCT DROP INLET ON RT. | | | 8 | | | 70 | | | | | | | 1 | | | | 1 | | | 1 | | | 29 | 0.37 | FPC-9E, FPC-9M, PCC-1, FES-1, FES-2 |
| 110+91 | E. LAWSON RD. - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | 36 | | | | | | 1 | | | 1 | | | | | | FPC-9E, PCC-1, PCM-1 |
| 113+29 | HWY. 158 - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | | | | | 32 | 0.40 | SPECIAL DETAILS |
| 113+29 | HWY. 158 - CONSTRUCT DROP INLET ON RT. | | | | | | | | | | | | | | | | | | 1 | 1 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 115+00 | HWY. 158 - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | 1 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 115+00 | HWY. 158 - CONSTRUCT DROP INLET ON RT. | | | | | | | | | | | | | | | | | | 1 | 1 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 116+80 | HWY. 158 - CONSTRUCT DROP INLET ON LT. | | | | | | | | | | | | | | | | | | 1 | | | | | 32 | 0.40 | SPECIAL DETAILS |
| 116+80 | HWY. 158 - CONSTRUCT DROP INLET ON RT. | | | | | | | | | | | | | | | | | | 1 | 1 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 10+67 | ROUNDABOUT - CONSTRUCT DROP INLET ON RT. | | | | | | | | | | | | | | | | | | 1 | 1 | | | | 32 | 0.40 | SPECIAL DETAILS |
| 11+66 | ROUNDABOUT - CONSTRUCT JUNCTION BOX ON RT. | | | | 16 | | | | | | | | | | 1 | | | | | | | 1 | | 35 | 0.44 | FPC-9, PCC-1, FES-1, FES-2 |
| 13+00 | ROUNDABOUT - CONSTRUCT JUNCTION BOX ON RT. | | 12 | | | | | 146 | | | | | 1 | | | | | | | | | 1 | | 13 | 0.16 | FPC-9, PCC-1, FES-1, FES-2 |
| * | ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER | | | | | | | | 600 | | | | | | | | | | | | | | 6 | | | FPC-9, PCC-1, PCM-1 |
| TOTALS: | | 16 | 12 | 8 | 16 | 132 | 70 | 146 | 600 | 256 | 36 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 19 | 16 | 3 | 2 | 6 | 703 | 8.79 | |

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

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

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

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

## PORTLAND CEMENT CONCRETE PAVEMENT

| STATION | STATION | LOCATION | LENGTH | ACHM BASE COURSE (1 1/2") AVG. WID. | SQ.YD. | POUND / SQ.YD. | PG 64-22 | PORTLAND CEMENT CONCRETE PAVEMENT AVG. WID. | 8" U.T. |
|---|---|---|---|---|---|---|---|---|---|
| | | | FEET | FEET | | | TON | FEET | SQ. YD. |
| 10+00.00 | 14+64.96 | ROUNDABOUT - TRUCK APRON | 464.96 | 14.00 | 723.27 | 660.00 | 238.68 | 14.00 | 723.27 |
| TOTALS: | | | | | 723.27 | | 238.68 | | 723.27 |

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

4/9/2019

RI00950.DGN

QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-8-19

## BASE AND SURFACING

| STATION | STATION | LOCATION | LENGTH (FEET) | AGGREGATE BASE COURSE (CLASS 7) TON / STATION | AGGREGATE BASE COURSE (CLASS 7) TON | TACK COAT (0.05 GAL. PER SQ. YD.) TOTAL WID. FEET | TACK COAT (0.05 GAL. PER SQ. YD.) SQ.YD. | TACK COAT (0.05 GAL. PER SQ. YD.) GALLON | TACK COAT (0.17 GAL. PER SQ. YD.) TOTAL WID. FEET | TACK COAT (0.17 GAL. PER SQ. YD.) SQ.YD. | TACK COAT (0.17 GAL. PER SQ. YD.) GALLON | TACK COAT TOTAL GALLONS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MAIN LANES** | | | | | | | | | | | | |
| 45+97.00 | 46+97.00 | HWY. 163 - TRANSITION | 100.00 | | | | | | 22.00 | 244.44 | 41.55 | 41.55 |
| 46+97.00 | 47+22.00 | HWY. 163 - NOTCH AND WIDEN | 25.00 | VAR. | 36.88 | VAR. | 117.25 | 5.86 | | | | 5.86 |
| 47+22.00 | 49+38.00 | HWY. 163 - NOTCH AND WIDEN, C.C.C. & G. LT. & RT. | 216.00 | VAR. | 74.52 | VAR. | 857.07 | 42.85 | | | | 42.85 |
| 49+38.00 | 51+30.85 | HWY. 163 - NOTCH AND WIDEN, C.C.C. & G. LT. & RT. | 192.85 | VAR. | 255.25 | VAR. | 1391.65 | 69.58 | | | | 69.58 |
| 53+10.85 | 54+81.00 | HWY. 163 - NOTCH AND WIDEN, C.C.C. & G. LT. & RT. | 170.15 | VAR. | 267.75 | VAR. | 1294.55 | 64.73 | | | | 64.73 |
| 54+81.00 | 57+19.00 | HWY. 163 - NOTCH AND WIDEN, C.C.C. & G. LT. & RT. | 238.00 | VAR. | 85.09 | VAR. | 944.71 | 47.24 | | | | 47.24 |
| 57+19.00 | 57+44.00 | HWY. 163 - NOTCH AND WIDEN | 25.00 | VAR. | 36.88 | VAR. | 117.25 | 5.86 | | | | 5.86 |
| 57+44.00 | 58+44.00 | HWY. 163 - TRANSITION | 100.00 | | | | | | 22.00 | 244.44 | 41.55 | 41.55 |
| 105+76.00 | 106+76.00 | E. LAWSON RD. - TRANSITION | 100.00 | | | | | | 22.00 | 244.44 | 41.55 | 41.55 |
| 106+76.00 | 107+01.00 | E. LAWSON RD. - NOTCH AND WIDEN | 25.00 | VAR. | 36.88 | VAR. | 117.25 | 5.86 | | | | 5.86 |
| 107+01.00 | 109+87.00 | E. LAWSON RD. - NOTCH AND WIDEN, C.C.C. & G. LT. & RT. | 286.00 | VAR. | 546.26 | VAR. | 1164.09 | 58.20 | | | | 58.20 |
| 109+87.00 | 111+09.24 | E. LAWSON RD. - NOTCH AND WIDEN, C.C.C. & G. LT. & RT. | 122.24 | VAR. | 139.66 | VAR. | 1030.97 | 51.55 | | | | 51.55 |
| 112+89.27 | 114+50.00 | HWY. 158 - NOTCH AND WIDEN, C.C.C. & G. LT. & RT. | 160.73 | VAR. | 359.63 | VAR. | 1208.15 | 60.41 | | | | 60.41 |
| 114+50.00 | 116+98.00 | HWY. 158 - NOTCH AND WIDEN, C.C.C. & G. LT. & RT. | 248.00 | VAR. | 214.52 | VAR. | 983.26 | 49.16 | | | | 49.16 |
| 116+98.00 | 117+23.00 | HWY. 158 - NOTCH AND WIDEN | 25.00 | VAR. | 36.88 | VAR. | 117.25 | 5.86 | | | | 5.86 |
| 117+23.00 | 118+23.00 | HWY. 158 - TRANSITION | 100.00 | | | | | | 22.00 | 244.44 | 41.55 | 41.55 |
| 10+00.00 | 14+64.96 | ROUNDABOUT - FULL DEPTH | 464.96 | 79.75 | 370.81 | 32.00 | 1653.19 | 82.66 | | | | 82.66 |
| **ADDITIONAL FOR LEVELING & GRADE RAISE** | | | | | | | | | | | | |
| 46+97.00 | 57+44.00 | HWY. 163 - LEVELING | 1047.00 | | | | | | 22.00 | 2559.33 | 435.09 | 435.09 |
| 106+76.00 | 111+88.23 | E. LAWSON RD. - LEVELING | 512.23 | | | | | | 22.00 | 1252.12 | 212.86 | 212.86 |
| 112+11.00 | 112+25.00 | HWY. 158 - LEVELING | 14.00 | | | | | | 22.00 | 34.22 | 5.82 | 5.82 |
| 112+25.00 | 115+00.00 | HWY. 158 - LEVELING | 275.00 | | | 22.00 | 672.22 | 33.61 | | | | 33.61 |
| 112+25.00 | 115+00.00 | HWY. 158 - GRADE RAISE | 275.00 | | | | | | 22.00 | 672.22 | 114.28 | 114.28 |
| 115+00.00 | 117+23.00 | HWY. 158 - LEVELING | 223.00 | | | | | | 22.00 | 545.11 | 92.67 | 92.67 |
| **SIDE STREETS** | | | | | | | | | | | | |
| 107+10.00 | | CRAIGHEAD 429 RD. | | VAR. | 63.50 | VAR. | 321.28 | 16.06 | | | | 16.06 |
| **TOTALS:** | | | | | **2524.51** | | **11990.14** | **599.49** | | **6040.76** | **1026.92** | **1626.41** |

| STATION | STATION | PORTLAND CEMENT CONCRETE BASE 6" UNIFORM THICKNESS AVG. WID. FEET | PORTLAND CEMENT CONCRETE BASE 6" UNIFORM THICKNESS SQ. YD. | PORTLAND CEMENT CONCRETE BASE 6" UNIFORM THICKNESS AVG. WID. FEET | PORTLAND CEMENT CONCRETE BASE 6" UNIFORM THICKNESS SQ. YD. | ACHM BINDER COURSE (1") AVG. WID. FEET | ACHM BINDER COURSE (1") SQ.YD. | ACHM BINDER COURSE (1") POUND / SQ.YD. | ACHM BINDER COURSE (1") PG 64-22 TON | ACHM SURFACE COURSE (1/2") AVG. WID. FEET | ACHM SURFACE COURSE (1/2") SQ.YD. | ACHM SURFACE COURSE (1/2") POUND / SQ.YD. | ACHM SURFACE COURSE (1/2") PG 70-22 TON | ACHM SURFACE COURSE (1/2") AVG. WID. FEET | ACHM SURFACE COURSE (1/2") SQ.YD. | ACHM SURFACE COURSE (1/2") POUND / SQ.YD. | ACHM SURFACE COURSE (1/2") PG 70-22 TON | ACHM SURFACE COURSE (1/2") TOTAL PG 70-22 TON |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MAIN LANES** | | | | | | | | | | | | | | | | | | |
| 45+97.00 | 46+97.00 | | | | | | | | | | | | | 30.00 | 333.33 | 220.00 | 36.67 | 36.67 |
| 46+97.00 | 47+22.00 | | | | | VAR. | 10.31 | 440.00 | 2.27 | VAR. | 9.96 | 220.00 | 1.10 | VAR. | 106.94 | 220.00 | 11.76 | 12.86 |
| 47+22.00 | 49+38.00 | 4.50 | 108.00 | 2.00 | 48.00 | VAR. | 152.26 | 440.00 | 33.50 | VAR. | 152.26 | 220.00 | 16.75 | VAR. | 704.81 | 220.00 | 77.53 | 94.28 |
| 49+38.00 | 51+30.85 | | | | | VAR. | 600.68 | 440.00 | 132.15 | VAR. | 600.68 | 220.00 | 66.07 | VAR. | 790.97 | 220.00 | 87.01 | 153.08 |
| 53+10.85 | 54+81.00 | | | | | VAR. | 570.86 | 440.00 | 125.59 | VAR. | 570.86 | 220.00 | 62.79 | VAR. | 723.69 | 220.00 | 79.61 | 142.40 |
| 54+81.00 | 57+19.00 | 4.50 | 119.00 | 2.00 | 52.89 | VAR. | 177.09 | 440.00 | 38.96 | VAR. | 177.09 | 220.00 | 19.48 | VAR. | 767.62 | 220.00 | 84.44 | 103.92 |
| 57+19.00 | 57+44.00 | | | | | VAR. | 10.31 | 440.00 | 2.27 | VAR. | 9.96 | 220.00 | 1.10 | VAR. | 106.94 | 220.00 | 11.76 | 12.86 |
| 57+44.00 | 58+44.00 | | | | | | | | | | | | | 30.00 | 333.33 | 220.00 | 36.67 | 36.67 |
| 105+76.00 | 106+76.00 | | | | | | | | | | | | | 30.00 | 333.33 | 220.00 | 36.67 | 36.67 |
| 106+76.00 | 107+01.00 | | | | | VAR. | 10.31 | 440.00 | 2.27 | VAR. | 9.96 | 220.00 | 1.10 | VAR. | 106.94 | 220.00 | 11.76 | 12.86 |
| 107+01.00 | 109+87.00 | 4.50 | 143.00 | 2.00 | 63.56 | VAR. | 246.84 | 440.00 | 54.30 | VAR. | 246.84 | 220.00 | 27.15 | VAR. | 917.25 | 220.00 | 100.90 | 128.05 |
| 109+87.00 | 111+09.24 | | | | | VAR. | 457.70 | 440.00 | 100.69 | VAR. | 457.70 | 220.00 | 50.35 | VAR. | 573.27 | 220.00 | 63.06 | 113.41 |
| 112+89.27 | 114+50.00 | | | | | VAR. | 529.93 | 440.00 | 116.58 | VAR. | 529.93 | 220.00 | 58.29 | VAR. | 678.22 | 220.00 | 74.60 | 132.89 |
| 114+50.00 | 116+98.00 | 4.50 | 124.00 | 2.00 | 55.11 | VAR. | 177.82 | 440.00 | 39.12 | VAR. | 177.82 | 220.00 | 19.56 | VAR. | 805.44 | 220.00 | 88.60 | 108.16 |
| 116+98.00 | 117+23.00 | | | | | VAR. | 10.31 | 440.00 | 2.27 | VAR. | 9.96 | 220.00 | 1.10 | VAR. | 106.94 | 220.00 | 11.76 | 12.86 |
| 117+23.00 | 118+23.00 | | | | | | | | | | | | | 30.00 | 333.33 | 220.00 | 36.67 | 36.67 |
| 10+00.00 | 14+64.96 | | | | | 16.00 | 826.60 | 440.00 | 181.85 | 16.00 | 826.60 | 220.00 | 90.93 | 16.00 | 826.60 | 220.00 | 90.93 | 181.86 |
| **ADDITIONAL FOR LEVELING & GRADE RAISE** | | | | | | | | | | | | | | | | | | |
| 46+97.00 | 57+44.00 | | | | | | | | | 22.00 | 2559.33 | 220.00 | 281.53 | | | | | 281.53 |
| 106+76.00 | 111+88.23 | | | | | | | | | 22.00 | 1252.12 | 220.00 | 137.73 | | | | | 137.73 |
| 112+11.00 | 112+25.00 | | | | | | | | | 22.00 | 34.22 | 220.00 | 3.76 | | | | | 3.76 |
| 112+25.00 | 115+00.00 | | | | | | | | | 22.00 | 672.22 | 220.00 | 73.94 | | | | | 73.94 |
| 112+25.00 | 115+00.00 | | | | | 22.00 | 672.22 | 550.00 | 184.86 | | | | | | | | | |
| 115+00.00 | 117+23.00 | | | | | | | | | 22.00 | 545.11 | 220.00 | 59.96 | | | | | 59.96 |
| **SIDE STREETS** | | | | | | | | | | | | | | | | | | |
| 107+10.00 | | | | | | VAR. | 161.72 | 440.00 | 35.58 | VAR. | 159.56 | 220.00 | 17.55 | VAR. | 168.84 | 220.00 | 18.57 | 36.12 |
| **TOTALS:** | | | **494.00** | | **219.56** | | **4614.96** | | **1052.26** | | **9002.18** | | **990.24** | | **8717.79** | | **958.97** | **1949.21** |

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2")....................94.8% MIN. AGGR.................5.2% ASPHALT BINDER
ACHM BINDER COURSE (1")............................95.9% MIN. AGGR.................4.1% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

1/2/2019

R100950.DGN

## SUMMARY OF QUANTITIES

| ITEM NUMBER | ITEM | QUANTITY | UNIT |
|---|---|---|---|
| 201 | CLEARING | 11 | STATION |
| 201 | GRUBBING | 11 | STATION |
| 202 | REMOVAL AND DISPOSAL OF FENCE | 607 | LIN. FT. |
| 202 | REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS | 4 | EACH |
| 202 | REMOVAL AND DISPOSAL OF PIPE CULVERTS | 15 | EACH |
| 202 | REMOVAL AND DISPOSAL OF LUMINAIRE POLES | 1 | EACH |
| 202 | REMOVAL AND DISPOSAL OF SIGNS | 2 | EACH |
| 210 | UNCLASSIFIED EXCAVATION | 6517 | CU. YD. |
| 210 | COMPACTED EMBANKMENT | 10511 | CU. YD. |
| SP & 210 | SOIL STABILIZATION | 100 | TON |
| SS & 303 | AGGREGATE BASE COURSE (CLASS 7) | 3153 | TON |
| 309 | PORTLAND CEMENT CONCRETE BASE (6" UNIFORM THICKNESS) | 714 | SQ. YD. |
| SS & 401 | TACK COAT | 1646 | GAL. |
| SP, SS, & 405 | MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2") | 230 | TON |
| SP, SS, & 405 | ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2") | 9 | TON |
| SP, SS, & 406 | MINERAL AGGREGATE IN ACHM BINDER COURSE (1") | 1009 | TON |
| SP, SS, & 406 | ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1") | 43 | TON |
| SP, SS, & 407 | MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2") | 1959 | TON |
| SP, SS, & 407 | ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") | 6 | TON |
| SP, SS, & 407 | ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2") | 101 | TON |
| 412 | COLD MILLING ASPHALT PAVEMENT | 978 | SQ. YD. |
| SP, SS, & 414 | ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC | 10 | TON |
| SP, SS, & 415 | ACHM PATCHING OF EXISTING ROADWAY | 25 | TON |
| SP & 501 | PORTLAND CEMENT CONCRETE PAVEMENT (8" UNIFORM THICKNESS) | 723 | SQ. YD. |
| SS & 505 | PORTLAND CEMENT CONCRETE DRIVEWAY | 593.48 | SQ. YD. |
| 601 | MOBILIZATION | 1.00 | LUMP SUM |
| SP & 602 | FURNISHING FIELD OFFICE | 1 | EACH |
| SS & 603 | MAINTENANCE OF TRAFFIC | 1.00 | LUMP SUM |
| SP, SS, & 604 | SIGNS | 329 | SQ. FT. |
| SP, SS, & 604 | TRAFFIC DRUMS | 126 | EACH |
| 604 | CONSTRUCTION PAVEMENT MARKINGS | 9030 | LIN. FT. |
| 604 | REMOVABLE CONSTRUCTION PAVEMENT MARKINGS | 6820 | LIN. FT. |
| SP, SS, & 604 | VERTICAL PANELS | 66 | EACH |
| SS & 605 | CONCRETE DITCH PAVING (TYPE A) | 677 | SQ. YD. |
| SS & 605 | CONCRETE DITCH PAVING (TYPE B) | 291 | SQ. YD. |
| 606 | 18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | 16 | LIN. FT. |
| * 606 | 24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) (ALTERNATE NO. 1) | 256 | LIN. FT. |
| * 606 | 24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE (ALTERNATE NO. 2) | 256 | LIN. FT. |
| 606 | 30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | 12 | LIN. FT. |
| 606 | 48" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | 8 | LIN. FT. |
| * 606 | 48" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) (ALTERNATE NO. 1) | 36 | LIN. FT. |
| * 606 | 48" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE (ALTERNATE NO. 2) | 36 | LIN. FT. |
| 606 | 48" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV) | 70 | LIN. FT. |
| 606 | 54" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | 16 | LIN. FT. |
| 606 | 54" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV) | 146 | LIN. FT. |
| 606 | 29" X 18" REINFORCED CONCRETE ARCH PIPE CULVERTS (CLASS III) | 132 | LIN. FT. |
| SS & 606 | 12" SIDE DRAIN | 600 | LIN. FT. |
| SP, SS, & 606 | 18" SIDE DRAIN | 110 | LIN. FT. |
| SP, SS, & 606 | 24" SIDE DRAIN | 166 | LIN. FT. |
| SP, SS, & 606 | 30" SIDE DRAIN | 108 | LIN. FT. |
| SP, SS, & 606 | 42" SIDE DRAIN | 36 | LIN. FT. |
| 606 | 18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | 2 | EACH |
| 606 | 30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | 1 | EACH |
| 606 | 48" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | 1 | EACH |
| 606 | 54" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | 1 | EACH |
| 606 | 29" X 18" FLARED END SECTIONS FOR REINFORCED CONCRETE ARCH PIPE CULVERTS | 1 | EACH |
| 606 | SELECTED PIPE BEDDING | 150 | CU. YD. |
| SS & 609 | DROP INLETS (TYPE C) | 1 | EACH |
| SS & 609 | DROP INLETS (TYPE MO) | 3 | EACH |
| SS & 609 | DROP INLETS (TYPE SPECIAL) | 19 | EACH |
| SS & 609 | JUNCTION BOXES (TYPE E) | 2 | EACH |
| SS & 609 | DROP INLET EXTENSIONS (4') | 16 | EACH |
| SS & 609 | DROP INLET EXTENSIONS (8') | 3 | EACH |
| SS & 609 | YARD DRAINS | 6 | EACH |
| SS & 611 | 4" PIPE UNDERDRAINS | 500 | LIN. FT. |
| SS & 611 | UNDERDRAIN OUTLET PROTECTORS | 4 | EACH |
| 615 | PAVEMENT REPAIR OVER CULVERTS (ASPHALT) | 51 | TON |
| 619 | WIRE FENCE (TYPE C) | 570 | LIN. FT. |
| 620 | LIME | 10 | TON |
| 620 | SEEDING | 5.09 | ACRE |
| SS & 620 | MULCH COVER | 13.32 | ACRE |
| 620 | WATER | 700.2 | M. GAL. |
| 621 | TEMPORARY SEEDING | 8.23 | ACRE |
| 621 | SILT FENCE | 180 | LIN. FT. |
| 621 | SAND BAG DITCH CHECKS | 1100 | BAG |
| 621 | DROP INLET SILT FENCE | 200 | LIN. FT. |
| 621 | SEDIMENT BASIN | 400 | CU. YD. |
| 621 | OBLITERATION OF SEDIMENT BASIN | 400 | CU. YD. |
| 621 | SEDIMENT REMOVAL AND DISPOSAL | 498 | CU. YD. |
| 621 | ROCK DITCH CHECKS | 150 | CU. YD. |
| SS & 621 | FILTER SOCK (18") | 1000 | LIN. FT. |
| 623 | SECOND SEEDING APPLICATION | 5.09 | ACRE |
| 624 | SOLID SODDING | 1047 | SQ. YD. |
| 626 | EROSION CONTROL MATTING (CLASS 3) | 1465 | SQ. YD. |
| SS & 632 | CONCRETE ISLAND | 1053 | SQ. YD. |
| SS & 634 | CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6") | 3356 | LIN. FT. |
| SS & 634 | CONCRETE COMBINATION CURB AND GUTTER (TYPE E-1) (2' 0") | 465 | LIN. FT. |
| 635 | ROADWAY CONSTRUCTION CONTROL | 1.00 | LUMP SUM |
| 637 | MAILBOXES | 6 | EACH |
| 637 | MAILBOX SUPPORTS (SINGLE) | 6 | EACH |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.) | 504 | LIN. FT. |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/4 A.W.G., E.G.C.) | 2357 | LIN. FT. |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/12 A.W.G.) | 504 | LIN. FT. |
| 710 | NON-METALLIC CONDUIT (2") | 2323 | LIN. FT. |
| SP | ANTI-THEFT CONCRETE PULL BOX (TYPE 2 HD) | 21 | EACH |
| SP | LED ROADWAY ILLUMINATION POLE (12,414 LUMENS, COBRA HEAD, SHOE BASE, 30') | 12 | EACH |
| SP | SERVICE POINT ASSEMBLY (1 CIRCUIT) | 1 | EACH |
| 718 | REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") | 140 | LIN. FT. |
| 718 | REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10") | 1600 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (6") | 1914 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (8") | 309 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING YELLOW (6") | 4328 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING YELLOW (8") | 1572 | LIN. FT. |
| SP & 719 | THERMOPLASTIC PAVEMENT MARKING (YIELD LINE) | 64 | LIN. FT. |
| 721 | RAISED PAVEMENT MARKERS (TYPE II) | 32 | EACH |

* DENOTES ALTERNATE BID ITEMS.

## REVISIONS

| DATE | REVISION | SHEET NUMBER |
|---|---|---|
| | | |

| 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. | | 100950 | 25 | 57 |

(2) SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-6-20

SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-8-19

SURVEY CONTROL COORDINATES

Project Name: s100950
Date: 11/7/2016
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL. 160017 - 160031
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

| Point Name | Northing | Easting | Elev | Feature | Description |
|---|---|---|---|---|---|
| 1 | 516147.5421 | 1708598.6775 | 248.410 | CTL | STD AHTD MON. STAMPED PN: 1 |
| 2 | 516864.0538 | 1708377.4389 | 246.797 | CTL | STD AHTD MON. STAMPED PN: 2 |
| 3 | 517947.6461 | 1708269.2512 | 247.180 | CTL | STD AHTD MON. STAMPED PN: 3 |
| 4 | 518882.5009 | 1708298.6433 | 248.198 | CTL | STD AHTD MON. STAMPED PN: 4 |
| 5 | 519708.7260 | 1708299.4583 | 247.623 | CTL | STD AHTD MON. STAMPED PN: 5 |
| 6 | 517883.5339 | 1706539.2464 | 270.968 | CTL | STD AHTD MON. STAMPED PN: 6 |
| 7 | 517870.1460 | 1707399.2044 | 254.633 | CTL | STD AHTD MON. STAMPED PN: 7 |
| 8 | 517898.8910 | 1709075.4594 | 235.545 | CTL | STD AHTD MON. STAMPED PN: 8 |
| 9 | 517910.1215 | 1709902.7681 | 234.589 | CTL | STD AHTD MON. STAMPED PN: 9 |
| 100 | 515025.3111 | 1700268.4305 | 251.352 | GPS | AHTD GPS MON 160017 |
| 101 | 525987.2878 | 1693936.0611 | -99999.00 | GPS | AHTD GPS MON 160031 |
| 900 | 524990.8734 | 1704470.2496 | 292.728 | TBM | SQUARE CUT IN CU WTH FES 1 JONESBORO |
| 901 | 522096.9655 | 1704276.8549 | 286.549 | TBM | SQUARE CUT IN CUS S CARAWAY RD |
| 902 | 519925.2011 | 1704315.3796 | 291.329 | TBM | SQUAR CUT IN CU WITH FES S CARAWAY RD |
| 903 | 517763.0808 | 1704316.3517 | 301.117 | TBM | X CUT IN FH 158 JONESBORO |
| 904 | 517890.6205 | 1706839.0697 | 263.181 | TBM | SQUARE CUT IN HW W LAWSON RD |
| 905 | 517924.6985 | 1708255.9492 | 242.841 | TBM | SQUARE CUT IN CENT HW 163 JONESBORO |
| 906 | 516586.7236 | 1708464.2770 | 243.629 | TBM | SQUARE CUT IN CENT HW 163 JONESBORO |
| 907 | 519207.4067 | 1708263.8108 | 245.506 | TBM | SQUARE CUT IN CENT OF HW 163 |
| 908 | 517709.0946 | 1702145.1516 | 290.557 | TBM | CPS IN GP 23.0' SW OF CL CR411 |
| 909 | 519135.4494 | 1701089.4267 | 273.417 | TBM | SQUARE CUT IN BASE OF PA 1 JONESBORO |
| 910 | 517039.8472 | 1700377.2982 | 252.151 | TBM | SQUARE CUT IN CENT HW 1 JONESBORO |
| 998 | 522700.8687 | 1705289.7048 | 274.890 | BM | NGS DISK B 242 JONESBORO |
| 999 | 527097.7536 | 1706200.7654 | 264.480 | BM | NGS DISK C 76 1 JONESBORO |

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999290427 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. s100950gi.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: 160017 - 160031
CONVERGENCE ANGLE: 00-46-28 RIGHT AT PN: 7 LT: N 35-44-55 LG: W090-40-08
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

HWY. 163

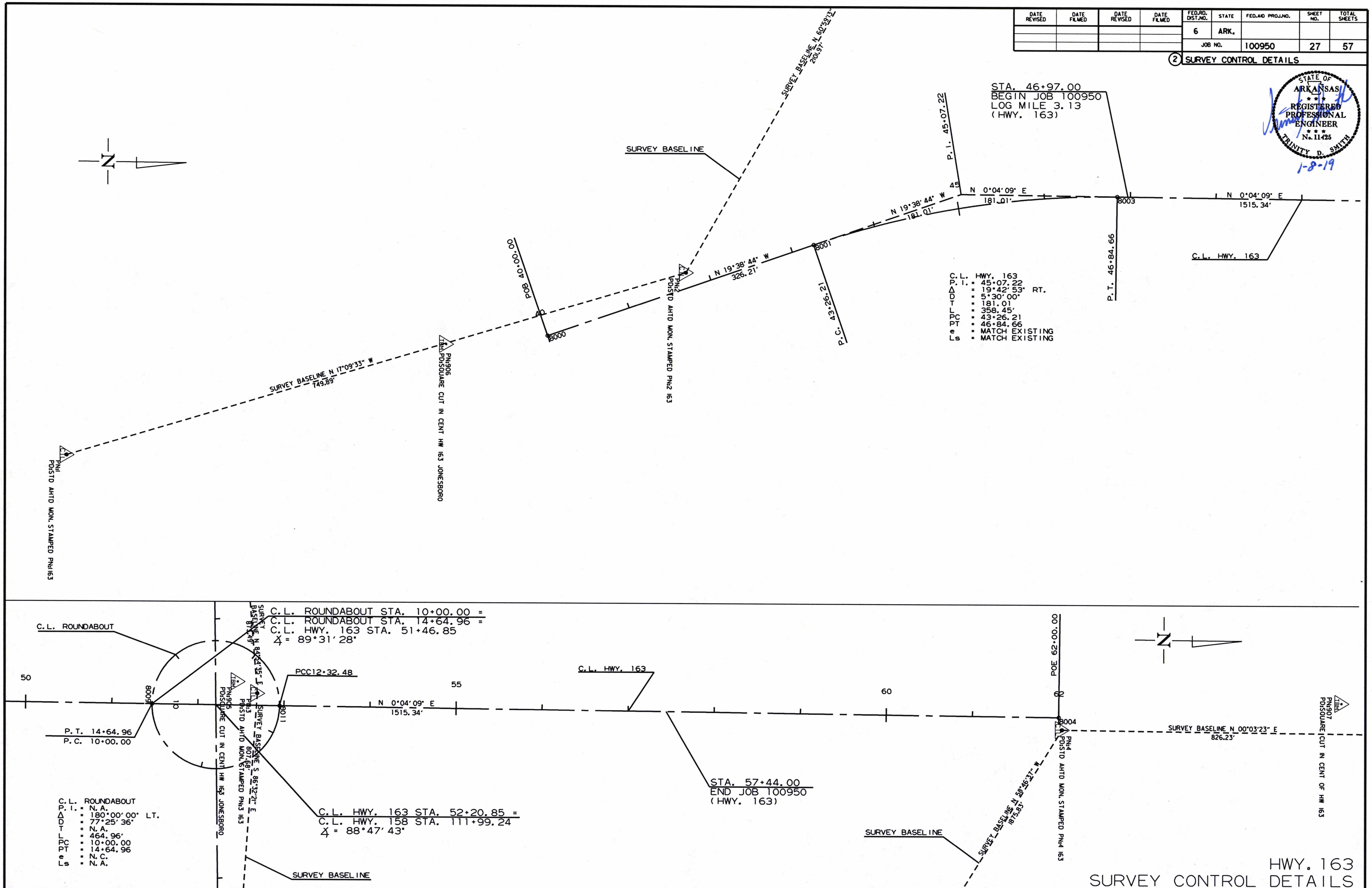
| POINT NO. | TYPE | STATION | NORTHING | EASTING |
|---|---|---|---|---|
| 8000 | POB | 40+00.00 | 516704.5203 | 1708452.8393 |
| 8001 | PC | 43+26.21 | 517011.7418 | 1708343.1673 |
| 8003 | PT | 46+84.66 | 517363.2324 | 1708282.5288 |
| 8004 | POE | 62+00.00 | 518878.5727 | 1708284.3568 |

E. LAWSON RD./HWY. 158

| POINT NO. | TYPE | STATION | NORTHING | EASTING |
|---|---|---|---|---|
| 8005 | POB | 100+00.00 | 517877.0756 | 1707084.1478 |
| 8006 | PI | 105+00.00 | 517885.5676 | 1707584.0757 |
| 8007 | PI | 119+00.00 | 517913.3130 | 1708983.8007 |
| 8008 | POE | 123+98.49 | 517922.7874 | 1709482.2047 |

ROUNDABOUT

| POINT NO. | TYPE | STATION | NORTHING | EASTING |
|---|---|---|---|---|
| 8009 | PC | 10+00.00 | 517825.4252 | 1708283.0863 |
| 8011 | PCC | 12+32.48 | 517973.4251 | 1708283.2649 |
| 8009 | PT | 14+64.96 | 517825.4252 | 1708283.0863 |



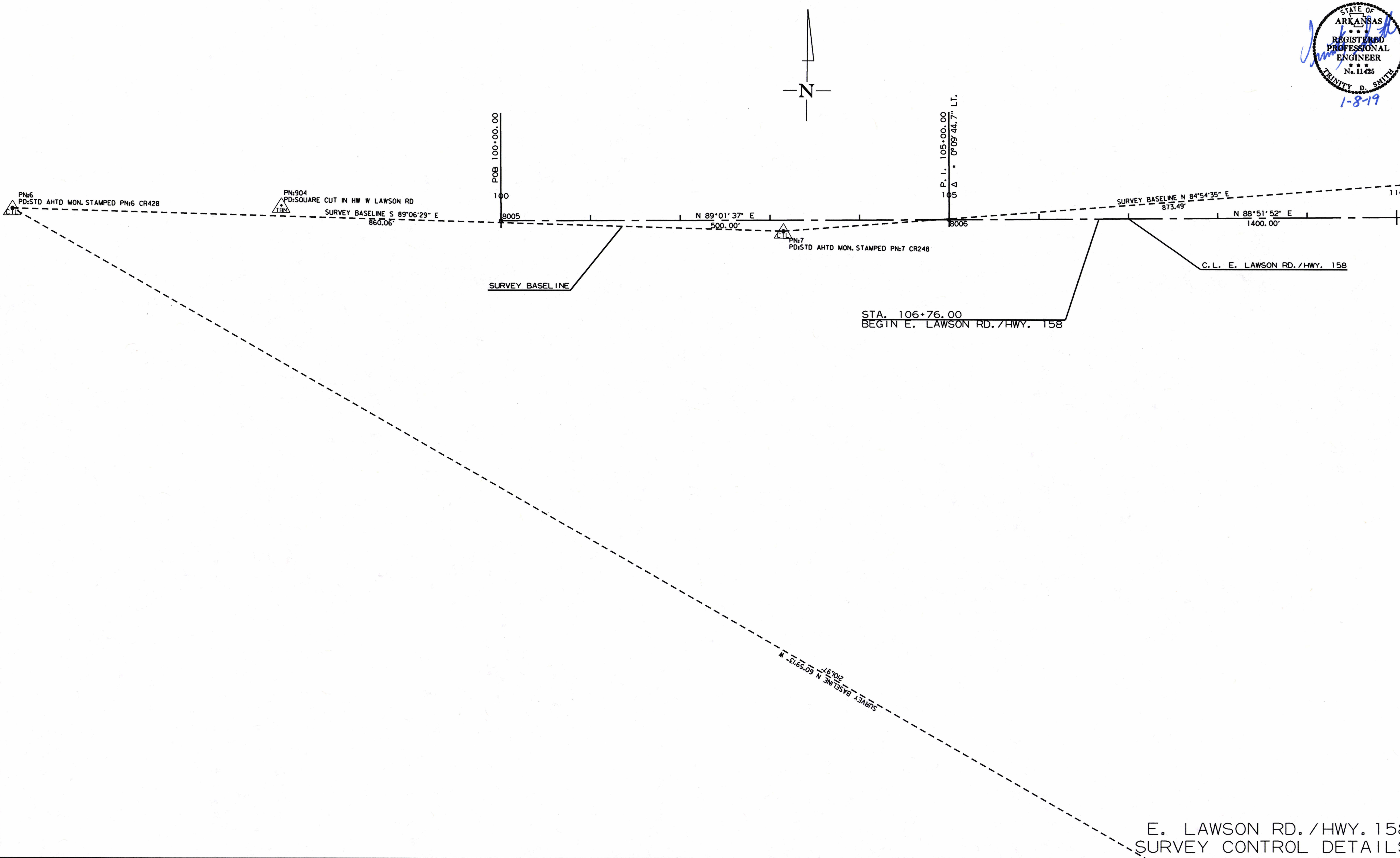

1/4/2019

R100950.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. | | 100950 | 28 | 57 |

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-8-19



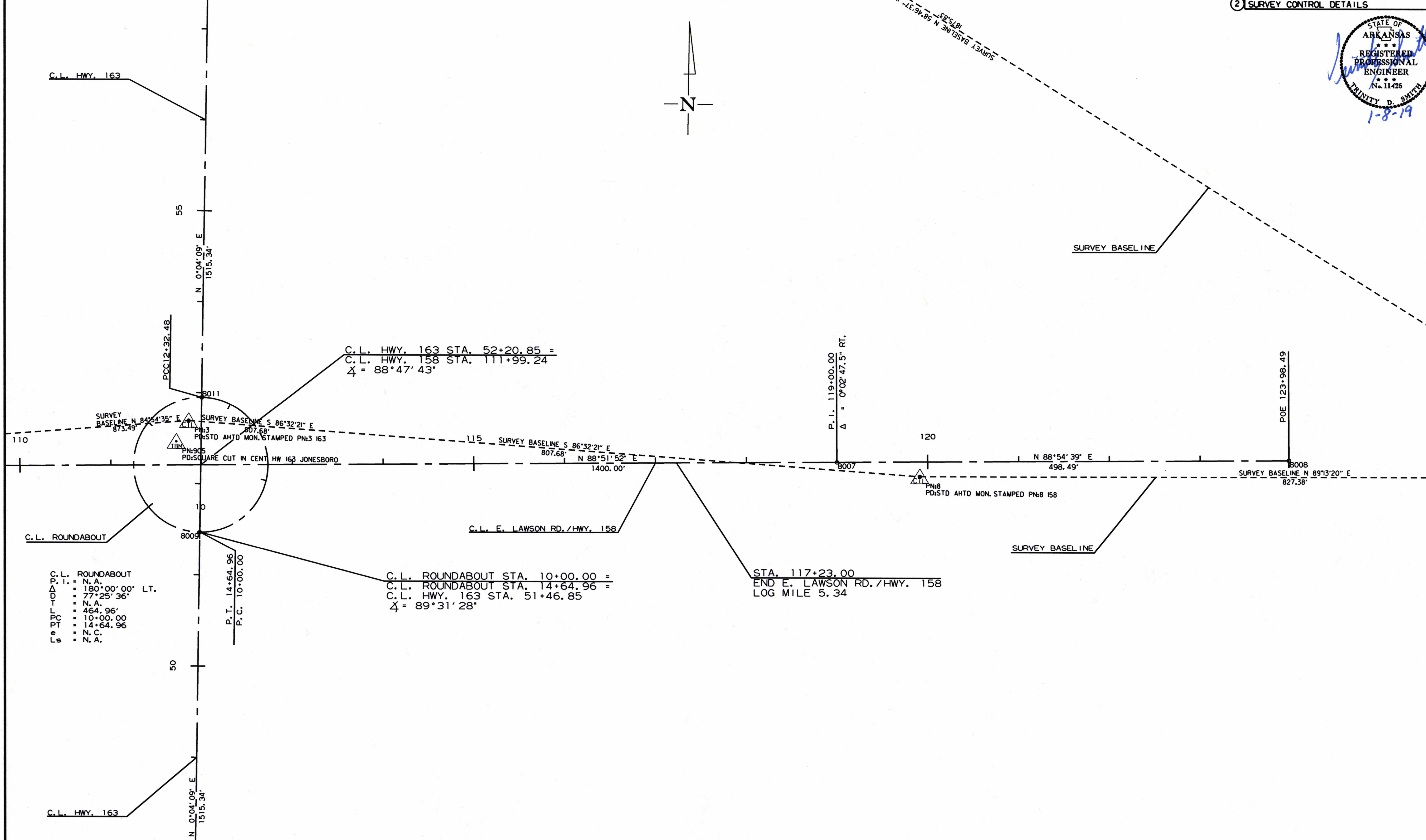

# E. LAWSON RD./HWY. 158
# SURVEY CONTROL DETAILS

1/4/2019

R100950.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. | | 100950 | 29 | 57 |

(2) SURVEY CONTROL DETAILS




E. LAWSON RD./HWY. 158
SURVEY CONTROL DETAILS

1/4/2019

R100950.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. | | 100950 | 30 | 57 |

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19

STA. 48+12 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 5.95 SQ. YD.

STA. 48+12 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
WITH 4' EXTENSION LT. & RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 50+30 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 50+90 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
WITH 8' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 49+28 - IN PLACE
24" X 30' R.C. PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE

STA. 49+12 - INSTALL
42" X 36' PIPE CULVERT
SIDE DRAIN ON LT.
CONSTRUCT APPROACH ON LT. = 170 CU. YDS.
UNCLASSIFIED EXCAVATION ON LT. = 20 CU. YDS.

STA. 52+50 - IN PLACE
3' X 2' R.C. BOX CULVERT
CROSS DRAIN
PLUG AND ABANDON

STA. 50+30 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 6.13 SQ. YD.

STA. 50+90 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 6.24 SQ. YD.

STA. 53+25 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 7.80 SQ. YD.

STA. 53+75 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 6.91 SQ. YD.

STA. 53+25 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
WITH 4' EXTENSION LT. & RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 53+75 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
WITH 8' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 53+92 - IN PLACE
30" X 40' C.M. PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE

STA. 54+26 - INSTALL
30" X 40' PIPE CULVERT
SIDE DRAIN ON LT.
CONSTRUCT APPROACH ON LT. = 110 CU. YDS.

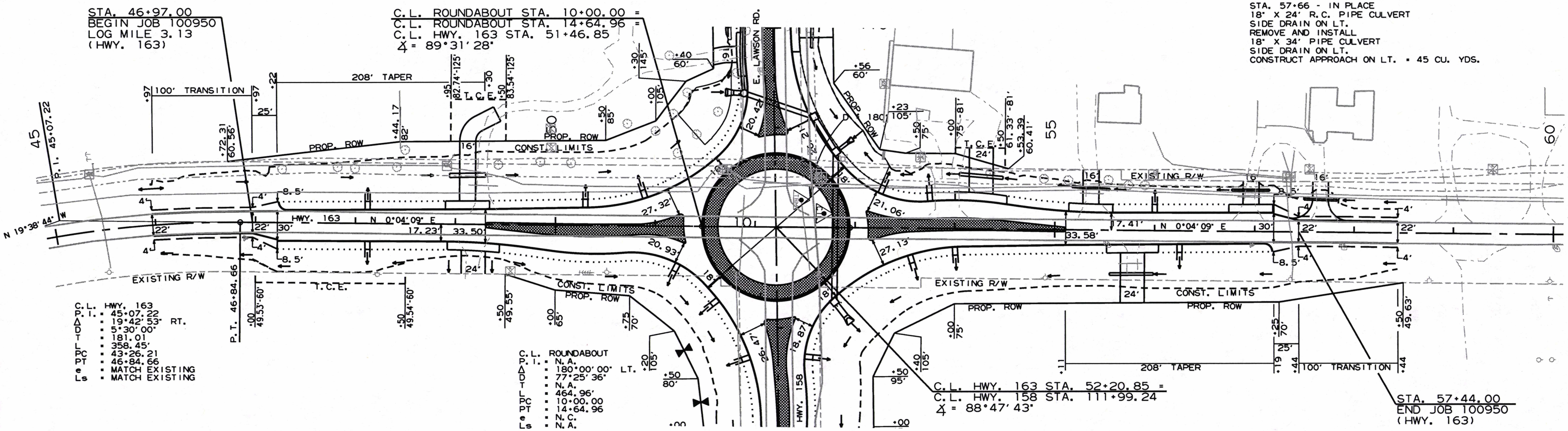
STA. 56+00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 5.84 SQ. YD.

STA. 56+00 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 55+36 - IN PLACE
18" X 24' C.M. PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
SIDE DRAIN ON LT.
CONSTRUCT APPROACH ON LT. = 60 CU. YDS.

STA. 56+96 - IN PLACE
18" X 24' C.M. PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
SIDE DRAIN ON LT.
CONSTRUCT APPROACH ON LT. = 45 CU. YDS.

STA. 57+66 - IN PLACE
18" X 24' R.C. PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
SIDE DRAIN ON LT.
CONSTRUCT APPROACH ON LT. = 45 CU. YDS.




STA. 49+18 - CONSTRUCT
APPROACH ON RT. = 20 CU. YDS.

STA. 48+12 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
WITH 4' EXTENSION LT. & RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 51+23 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
WITH 4' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 48+12 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 4.86 SQ. YD.

STA. 51+23 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 5.03 SQ. YD.

STA. 53+55 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
WITH 4' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 54+00 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
WITH 4' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 53+55 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 10.12 SQ. YD.

STA. 54+00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 8.48 SQ. YD.

STA. 56+25 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 56+25 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 6.09 SQ. YD.

STA. 55+78 - IN PLACE
24" X 24' C.M. PIPE CULVERT
SIDE DRAIN ON RT.
REMOVE AND INSTALL
24" X 44' PIPE CULVERT
SIDE DRAIN ON RT.
CONSTRUCT APPROACH ON RT. = 125 CU. YDS.

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

HWY. 163

7/26/2019

R100950.DGN

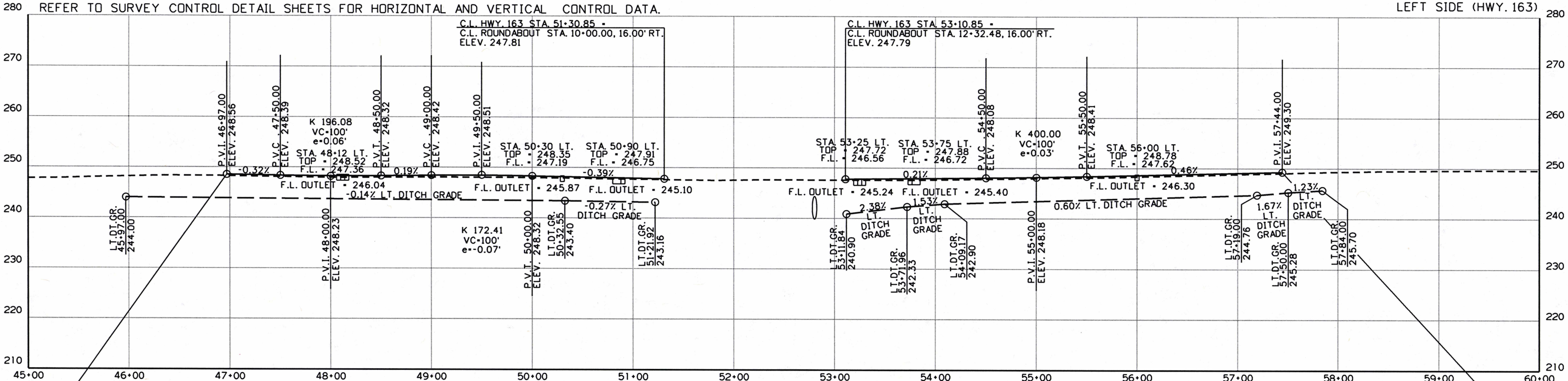
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 31 | 57 |

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-8-19

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

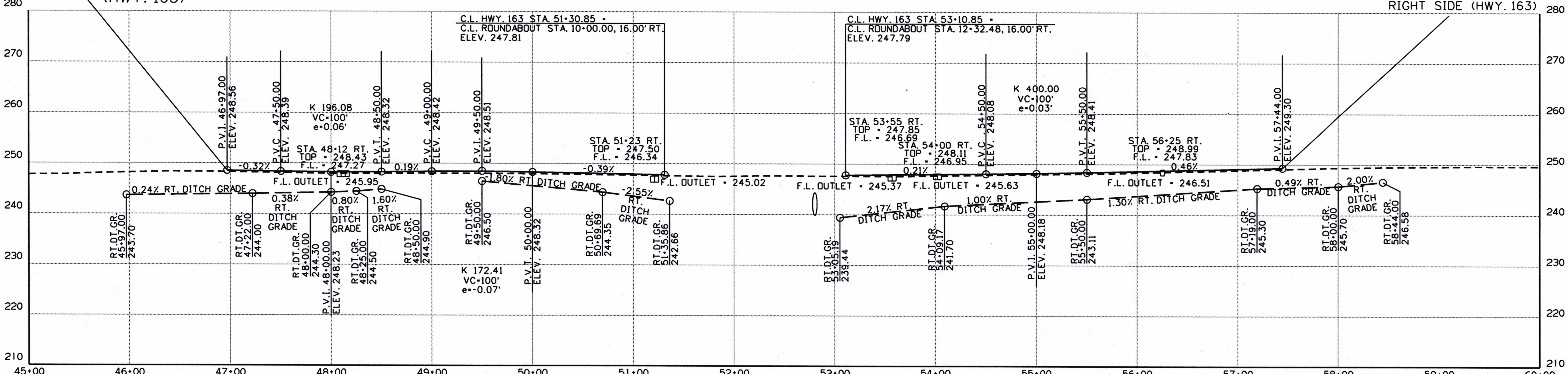
LEFT SIDE (HWY. 163)




STA. 46+97.00
BEGIN JOB 100950
LOG MILE 3.13
(HWY. 163)

STA. 57+44.00
END JOB 100950
(HWY. 163)

RIGHT SIDE (HWY. 163)




1/7/2019

R100950.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. | | 100950 | 32 | 57 |

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19

STA. 107+89 - IN PLACE
18" X 20' C.M. PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE AND INSTALL
24" X 30' PIPE CULVERT
SIDE DRAIN ON LT.
CONSTRUCT APPROACH ON LT. = 35 CU. YDS.

STA. 108+50 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 4.56 SQ. YD.

STA. 108+50 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 109+20 - IN PLACE
24" X 27' C.M. PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE AND INSTALL
24" X 34' PIPE CULVERT
SIDE DRAIN ON LT.
CONSTRUCT APPROACH ON LT. = 50 CU. YDS.

STA. 109+90 - IN PLACE
24" X 48' C.M. PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE AND INSTALL
24" X 58' PIPE CULVERT
SIDE DRAIN ON LT.
CONSTRUCT APPROACH ON LT. = 110 CU. YDS.

STA. 110+91 - CONSTRUCT
DROP INLET ON LT.
WITH 4' EXTENSION
& 48" X 36' R.C. PIPE CULVERT
CONNECT TO JUNCTION BOX ON
LT. @ ROUNDABOUT STA. 13+00
TYPE C DROP INLET = 6' X 6'
DROP INLET H = 5'-0"

STA. 110+10.00 TO STA. 111+39.49 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE A) = 428.49 SQ. YD.

STA. 113+29 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 10.36 SQ. YD.

STA. 115+00 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 7.97 SQ. YD.

STA. 116+80 LT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 5.25 SQ. YD.

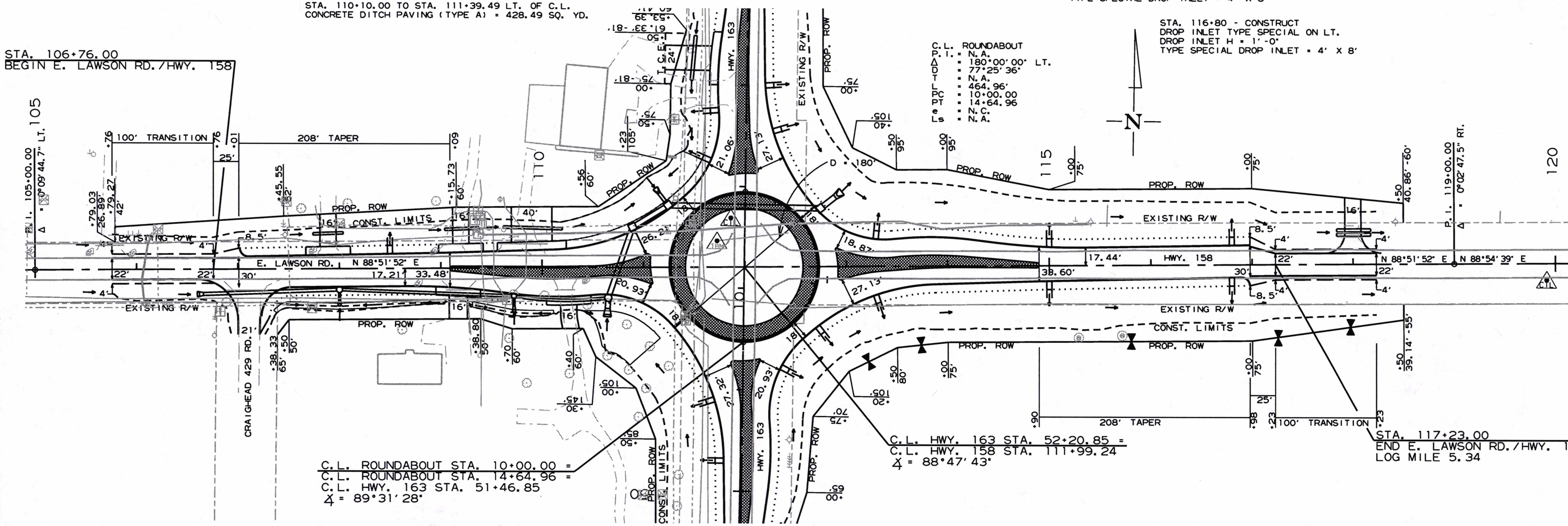
STA. 115+57 - IN PLACE
6" X 21' PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE

STA. 118+00 - IN PLACE
DBL. 24" X 27' C.M. PIPE CULVERT
SIDE DRAIN ON LT.
REMOVE AND INSTALL
DBL. 30" X 34' PIPE CULVERT
SIDE DRAIN ON LT.
CONSTRUCT APPROACH ON LT. = 70 CU. YDS.

STA. 113+29 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 115+00 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
WITH 4' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 116+80 - CONSTRUCT
DROP INLET TYPE SPECIAL ON LT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'




STA. 108+00 - CONSTRUCT
DROP INLET ON RT.
& 24" X 168' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 109+72
& 29" X 18" X 132' R.C. ARCH PIPE CULVERT INLET
WITH FES
& 18" X 8' R.C. PIPE CULVERT INLET
WITH FES
TYPE MO DROP INLET = 5'
TYPE C DROP INLET = 5' X 5'
DROP INLET H = 5'-0"

STA. 109+72 - CONSTRUCT
DROP INLET ON RT.
WITH 4' EXTENSION
& 24" X 88' PIPE CULVERT
CONNECT TO DROP INLET ON
RT. @ STA. 110+65
& 18" X 8' R.C. PIPE CULVERT INLET
WITH FES
TYPE MO DROP INLET = 4'
TYPE C DROP INLET = 4' X 4'
DROP INLET H = 5'-0"

STA. 110+65 - CONSTRUCT
DROP INLET ON RT.
WITH 8' EXTENSION
& 48" X 70' R.C. PIPE CULVERT
(CLASS IV)(TYPE III BEDDING)
CONNECT TO DROP INLET ON
LT. @ STA. 110+91
& 48" X 8' R.C. PIPE CULVERT INLET
WITH FES
TYPE MO DROP INLET = 6'
TYPE C DROP INLET = 6' X 6'
DROP INLET H = 6'-0"

STA. 113+29 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
WITH 4' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 115+00 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
WITH 4' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 116+80 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
WITH 4' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 107+35.06 TO STA. 109+04.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 112.63 SQ. YD.

STA. 109+31.00 TO STA. 110+11.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 53.33 SQ. YD.

STA. 110+40.00 TO STA. 110+65.00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE A) = 55.56 SQ. YD.

STA. 110+65.00 TO STA. 111+08.46 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE A) = 193.16 SQ. YD.

STA. 113+29 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 6.57 SQ. YD.

STA. 115+00 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 5.92 SQ. YD.

STA. 116+80 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 5.24 SQ. YD.

STA. 107+11 - IN PLACE
18" X 40' C.M. PIPE CULVERT
SIDE DRAIN ON RT.
REMOVE

STA. 109+17 - IN PLACE
24" X 27' C.M. PIPE CULVERT
SIDE DRAIN ON RT.
REMOVE AND CONSTRUCT
APPROACH ON RT. = 15 CU. YDS.

STA. 110+26 - IN PLACE
24" X 20' C.M. PIPE CULVERT
SIDE DRAIN ON RT.
REMOVE AND CONSTRUCT
APPROACH ON RT. = 15 CU. YDS.

STA. 111+55 - IN PLACE
48" X 48' C.M. PIPE CULVERT
CROSS DRAIN
REMOVE

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

7/26/2019
R100950.DGN

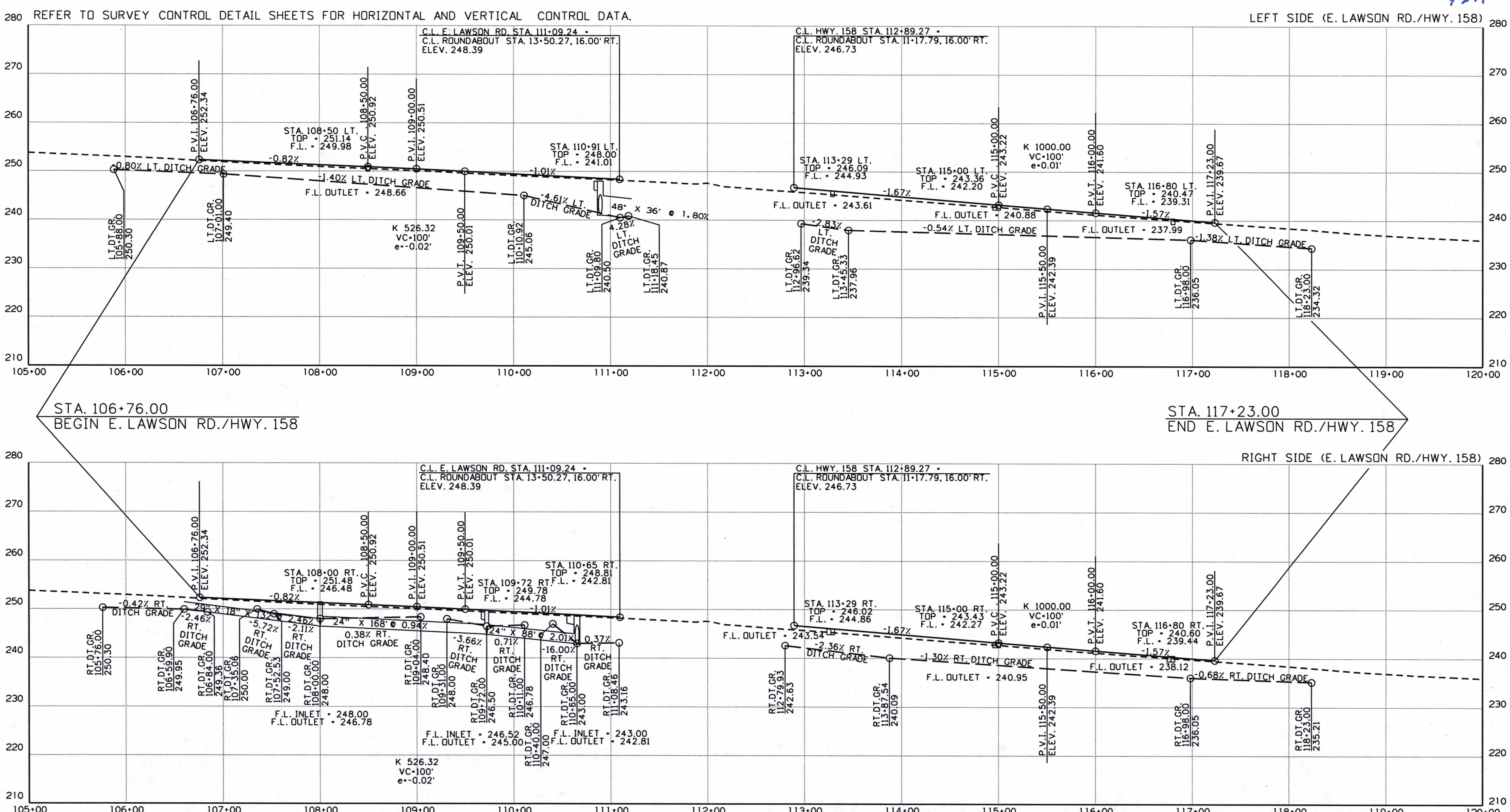
E. LAWSON RD./HWY. 158

| 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. | | 100950 | 33 | 57 |

(2) PLAN AND PROFILE SHEETS

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

7-2-19




4/23/2019

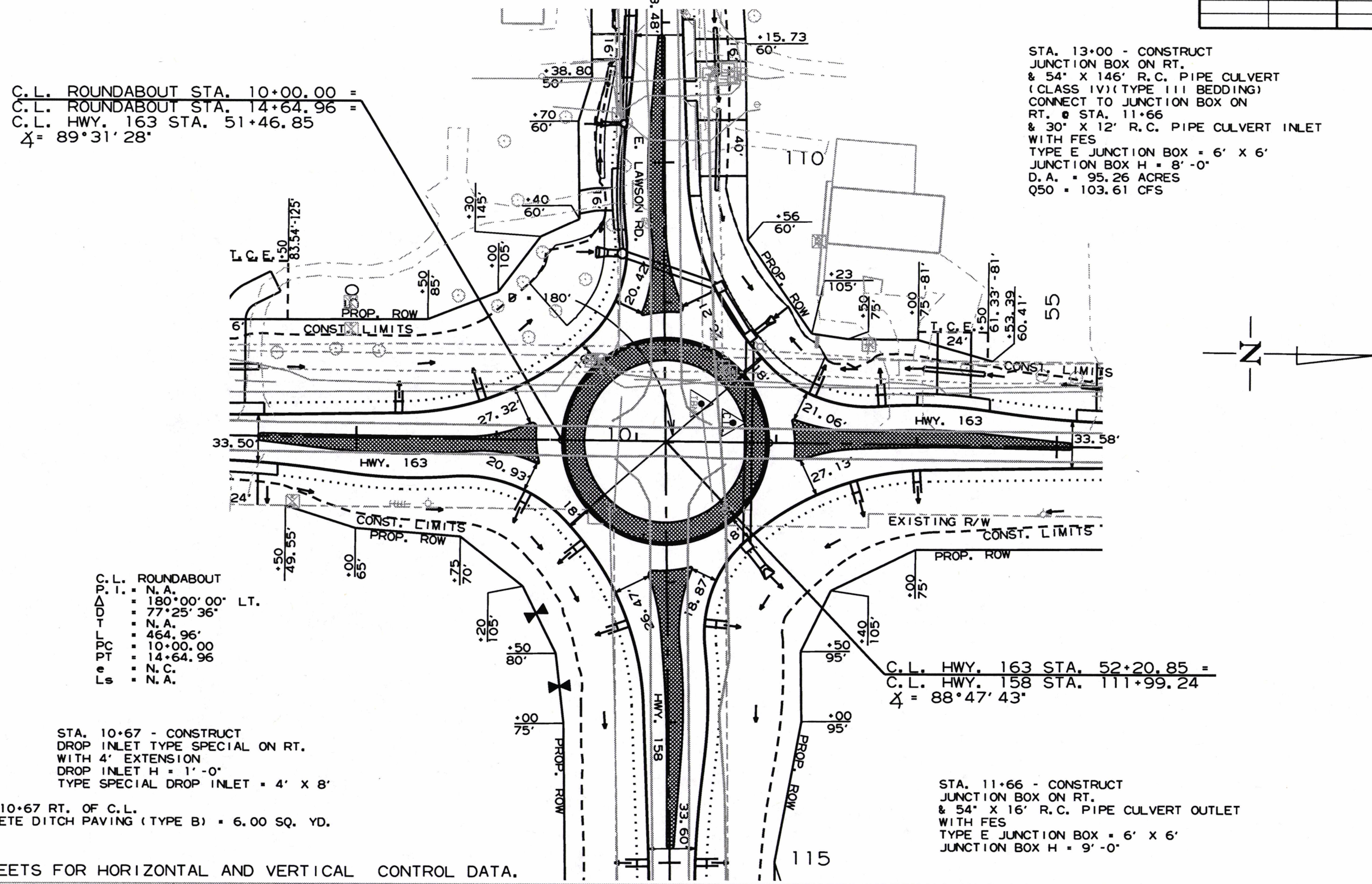
R100950.DGN

| 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. | 100950 | | 34 | 57 |

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-29-19

STA. 13+00 - CONSTRUCT
JUNCTION BOX ON RT.
& 54" X 146' R.C. PIPE CULVERT
(CLASS IV)(TYPE III BEDDING)
CONNECT TO JUNCTION BOX ON
RT. @ STA. 11+66
& 30" X 12' R.C. PIPE CULVERT INLET
WITH FES
TYPE E JUNCTION BOX = 6' X 6'
JUNCTION BOX H = 8'-0"
D.A. = 95.26 ACRES
Q50 = 103.61 CFS




C.L. ROUNDABOUT
P.I. = N.A.
∆ = 180°00'00" LT.
D = 77°25'36"
T = N.A.
L = 464.96'
PC = 10+00.00
PT = 14+64.96
e = N.C.
Ls = N.A.

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

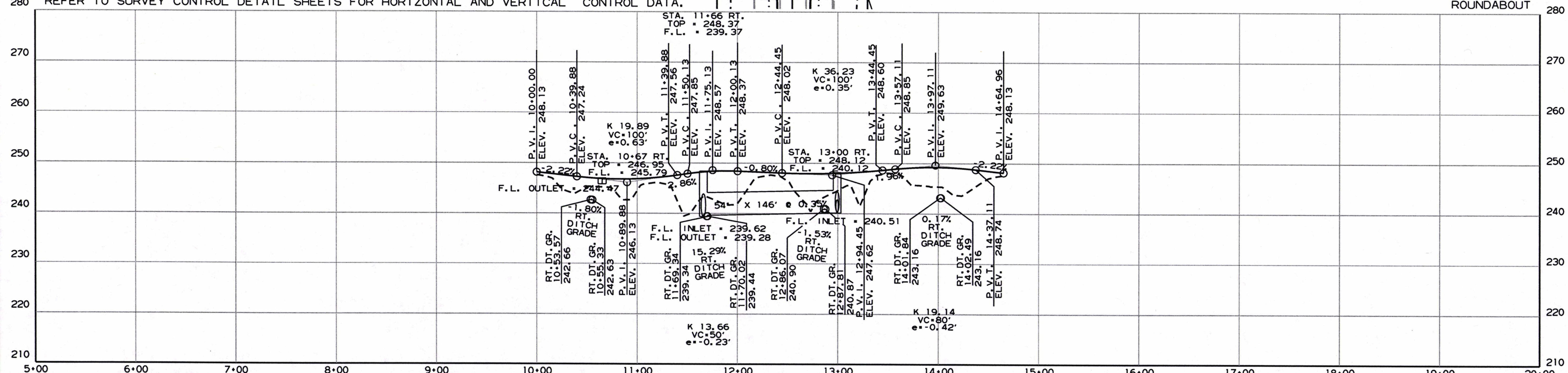
STA. 10+67 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
WITH 4' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 10+67 RT. OF C.L.
CONCRETE DITCH PAVING (TYPE B) = 6.00 SQ. YD.

STA. 11+66 - CONSTRUCT
JUNCTION BOX ON RT.
& 54" X 16' R.C. PIPE CULVERT OUTLET
WITH FES
TYPE E JUNCTION BOX = 6' X 6'
JUNCTION BOX H = 9'-0"

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

ROUNDABOUT




7/26/2019
R100950.DGN

## GENERAL NOTES:

1. UNDERGROUND UTILITIES EXIST WITHIN AND ADJACENT TO THE LIMITS OF CONSTRUCTION. THE LOCATION OF EXISTING UTILITIES SHOWN IN THE PLANS ARE APPROXIMATE AND ARE THE LOCATIONS AT THE TIME OF DESIGN. SOME UTILITES MAY HAVE BEEN RELOCATED SINCE THE TIME OF DESIGN AND THE CONTRACTOR'S NOTICE TO PROCEED. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES INVOLVED AND VERIFY LOCATIONS OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL MAINTAIN THE UTILITY LOCATION MARKINGS UNTIL IT IS NO LONGER NECESSARY. ARKANSAS UNDERGROUND FACILITIES DAMAGE PREVENTION ACT REQUIRES TWO WORKING DAYS IN ADVANCE NOTIFICATION THROUGH THE ARKANSAS ONE-CALL SYSTEM CENTER BEFORE EXCAVATING USING MECHANIZED EQUIPMET OR EXPLOSIVES (EXCEPT IN THE CASE OF EMEMERGENCY). THE ONE-CALL SYSTEM PHONE NUMBER IS 1-800-482-8998, OR 811. NOT ALL UTILITY COMPANIES ARE MEMBERS OF THE ARKANSAS ONE-CALL SYSTEM. THE CONTRACTOR IS ADVISED TO CONTACT ALL NON-MEMBER UTILITEIS AS WELL AS THE ONE-CALL SYSTEM.

2. 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.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U.S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECIEVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VAROUS BID ITEMS.

4. PERFORM ELECTRICAL WORK IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NATIONAL ELECTRICAL CODE (NFPA 70), LIFESAFETY CODE (NFPA 101), STATE AND LOCAL ELECTRICAL CODE. ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE ARKANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.

5. CONDUIT INSTALLED UNDER ROADWAY SURFACES SHALL BE INSTALLED BY A PUSHING OR BORING METHOD OR AS DIRECTED BY ENGINEER. PVC OR HDPE CONDUIT SHALL BE USED. PVC CONDUIT SHALL BE MARKED "DIR. BORING" OR "DIRECTIONAL BORING" AS PER NFPA 70 (NEC) REQUIREMENTS.

6. AFTER INSTALLATION, IF DAMAGED, THE ILLUMINATION ASSEMBLIES SHALL RECEIVE SPOT GALVANIZING REPAIR IN ACCORDANCE WITH SECTION 714 OF THE STANDARD SPECIFICATIONS, CURRENT EDITION.

7. ALL STEEL POLES SHALL BE DESIGNED TO MEET THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 4TH ED. (2001) WITH 2003 AND 2006 INTERIMS.

8. NON-DESTRUCTIVE MEG TEST AND CURRENT LEAKAGE TEST SHALL BE PERFORMED ON NEW CONDUCTORS, IN THE PRESENCE OF FIELD INSPECTOR. THE TEST VOLTAGE SHALL BE LIMITED TO 600 VOLTS. ANY CONDUCTOR NOT MEETING THE MIMINUM ACCEPTABLE VALUE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE USING NEW CONDUCTOR. THE RESULTS SHALL BE DOCUMENTED AND PROVIDED TO THE JOB ENGINEER.

9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES CAUSED BY MEG TEST WHILE DEVICES OR ACCESSORIES ARE STILL CONNECTED AND SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.

10. PULL BOX LIDS SHALL CLOSE FLUSH WITHOUT PINCHING ANY CONDUCTORS. CONDUIT LENGTHS IN PULL BOXES SHALL BE SET ACCORDINGLY. ANY CONDUCTORS THAT HAVE BEEN DAMAGED BY PINCHING SHALL BE COMPLETELY REPLACED AT CONTRACTOR'S EXPENSE.

11. INSTALL BREAKAWAY FUSE HOLDER IN POLE BASES. ALL ELECTRICAL SPLICES, INCLUDING DUMMY FUSES, SHALL BE WATERTIGHT AND SHALL BE DESIGNED AS BREAKAWAY (HOMAC FLOOD SEAL, EATON BUSSMANN, OR APPROVED EQUAL).

12. EQUIPMENT GROUNDING CONDUCTOR (E.G.C.) SHALL BE EXOTHERMICALLY BONDED TO THE GROUND ROD.

13. ALL ELECTRICAL COMPONENTS SHALL BE UL LISTED.

14. CONTRACTOR SHALL PERFORM 14 DAY BURN TEST COORDINATED WITH JOB ENGINEER.

15. PULL BOX LIDS SHALL BE LABELED "ARDOT", "ELECTRIC", AND "ALUMINUM".

16. ALL LUMINAIRE ASSEMBLIES SHALL BE OF BUG RATING OF U0, OR IESNA FULL CUTOFF TYPE.

17. BEFORE FINAL ACCEPTANCE, CONTRACTOR SHALL PROVIDE 2 SETS OF FULL SIZE AS-BUILT PLANS TO THE MAINTENANCE AUTHORITY.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 7527
JOSEPH A. SARTINI
4-8-19

LUMINAIRE POLE SCHEDULE

| POLE NO. | STATION HWY. 158 | STATION HWY. 163 | NORTHING | EASTING | OFFSET (FT) | MOUNTING HEIGHT | BASE TYPE | WATTS | VOLTAGE | DELIVERED LUMENS | UNIT | ORIENTATION ANGLE (PLAN NORTH = 0°, CW ROTATION) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Service Point | 109+47 | | 517949.52 | 1708030.12 | 55.1 | N/A | | | | | | |
| P1 | 108+84 | | 517911.3 | 1707967.77 | 18.12 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 180° |
| P2 | 110+42 | | 517920.44 | 1708124.56 | 24.16 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 175° |
| P3 | 111+37 | 52+90.76 | 517969.89 | 1708220.21 | 71.70/63.05 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 135° |
| P4 | | 55+75 | 518253.26 | 1708262.54 | 21.07 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 90° |
| P5 | | 54+27 | 518105.8 | 1708304.02 | 20.59 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 270° |
| P6 | 112+67.48 | 52+88 | 517966.19 | 1708350.37 | 65.42/67.12 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 230° |
| P7 | 115+28 | | 517926.86 | 1708612.03 | 20.91 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 180° |
| P8 | 113+82.00 | | 517881.77 | 1708466.35 | 21.28 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 0° |
| P9 | 112+65 | 51+54 | 517832.8 | 1708350.38 | 67.94/67.29 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 315° |
| P10 | | 48+75 | 517553.37 | 1708303.55 | 20.79 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 270° |
| P11 | | 50+19 | 517697.97 | 1708262.19 | 20.74 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 90° |
| P12 | 111+30 | 51+55 | 517833.41 | 1708215.36 | 67.73 | 30' | SHOE BASE | 105W | 240V | 12,414 | EACH | 45° |

SUMMARY OF QUANTITITES

| ITEM NO. | ITEM | QUANTITIES TOTAL | UNIT |
|---|---|---|---|
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.) | 504 | LIN. FT |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/4 A.W.G., E.G.C.) | 2357 | LIN. FT |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/12 A.W.G.) | 504 | LIN. FT |
| 710 | NON-METALLIC CONDUIT (2") | 2323 | LIN. FT |
| SP | ANTI-THEFT CONCRETE PULL BOX (TYPE 2 HD) | 21 | EACH |
| SP | LED ROADWAY ILLUMINATION POLE (12,414 LUMENS, COBRA HEAD, SHOE BASE, 30') | 12 | EACH |
| SP | SERVICE POINT ASSEMBLY (1 CIRCUIT) | 1 | EACH |

ILLUMINATION STATISTICS

| DESCRIPTION | AVERAGE (FOOT-CANDLES) | MAXIMUM (FOOT-CANDLES) | MINIMUM (FOOT-CANDLES) | AVG/MIN |
|---|---|---|---|---|
| ROUNDABOUT | 1.2 | 3.0 | 0.4 | 3.0:1 |
| ROADWAY, EAST | 1.2 | 3.0 | 0.3 | 4.0:1 |
| ROADWAY, WEST | 1.2 | 3.0 | 0.4 | 3.0:1 |
| ROADWAY, NORTH | 1.1 | 3.0 | 0.3 | 3.7:1 |
| ROADWAY, SOUTH | 1.1 | 3.0 | 0.3 | 3.7:1 |

NOTE: CALCULATION WAS BASED ON 0.89 LIGHT LOSS FACTOR.

LUMINAIRE SCHEDULE

| DESCRIPTION | DISTRIBUTION / LUMEN OUTPUT | LAMPS | TYPE | VOLTAGE |
|---|---|---|---|---|
| ROADWAY ILLUMINATION | TYPE 2 / 12,414 LUMENS | 105W | LED | 240V |

CONDUIT FILL CALCULATIONS

| CONDUIT SIZE | CONDUCTORS | | CONDUIT FILL | MAX FILL |
|---|---|---|---|---|
| | 2C/#4, EGC | 2C/#12, EGC | | |
| 2" | 1 | | 8.74% | 40% |
| 2" | | 1 | 1.55% | 40% |

ILLUMINATION DESIGN CRITERIA

| DESCRIPTION | AVERAGE (FOOT-CANDLES) | AVG/MIN |
|---|---|---|
| ROUNDABOUT | 1.2 | 4.0:1 |
| ROADWAY | 0.8 | 4.0:1 |

NOTE: DESIGN BASIS IS IESNA DESIGN GUIDE FOR ROUNDABOUT LIGHTING (DG-19-08), AASHTO ROADWAY LIGHTING DESIGN GUIDE (OCT 2005)

VOLTAGE DROP CALCULATIONS

| FROM | TO | WIRE SIZE | VOLTAGE (LINE-TO-LINE) | PHASE | WIRE TYPE | CONDUIT TYPE | IMPEDENCE (OHM/1000FT) | %VD |
|---|---|---|---|---|---|---|---|---|
| SERVICE | P1 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.36 |
| P1 | P2 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.47 |
| P2 | P3 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.31 |
| P3 | P4 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.72 |
| P4 | P5 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.37 |
| P5 | P6 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.3 |
| P6 | P7 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.46 |
| P7 | P8 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.24 |
| P8 | P9 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.14 |
| P9 | P10 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.23 |
| P10 | P11 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.1 |
| P11 | P12 | 2#4, 1#4 EGC | 240V | 1 | COPPER | PVC | 0.29 | 0.04 |
| | | | | | | | TOTAL | 3.74 |

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LICENSED PROFESSIONAL ENGINEER
No. 7527
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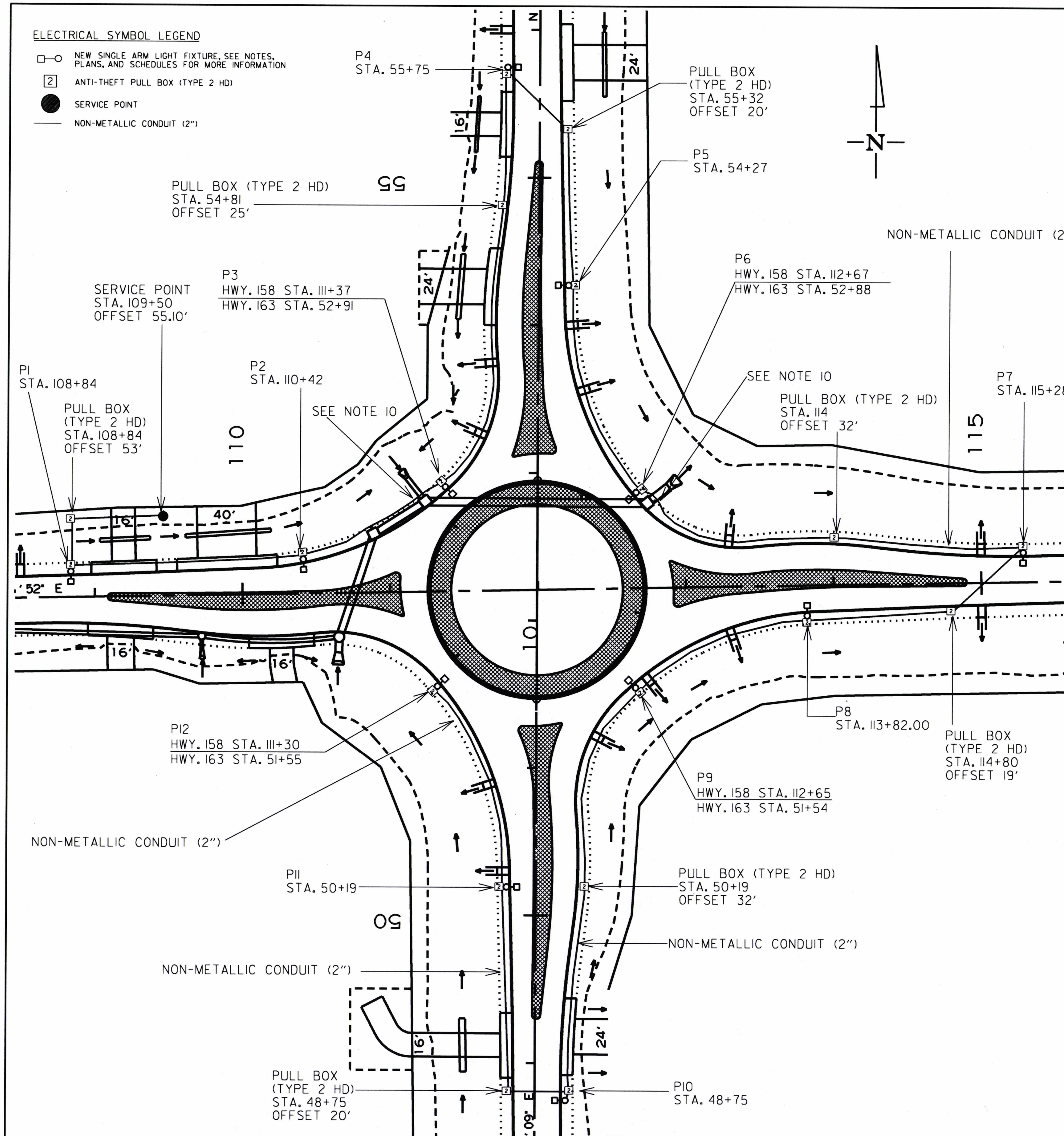
4-8-19

HWY. 158/HWY. 163 INTERS.
ILLUMINATION
QUANTITIES AND SCHEDULE

M100950.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. | | 100950 | 37 | 57 |

2 ILLUMINATION LAYOUT




ILLUMINATION NOTES

1. FOR LUMINAIRE ORIENTATION, SEE LUMINAIRE POLE SCHEDULE.
2. ALL CONDUIT SHALL BE 2" SCHEDULE 40 NON-METALLIC CONDUIT UNLESS OTHERWISE SPECIFIED.
3. INSTALL ANTI-THEFT PULL BOX (TYPE 2 HD) WITHIN 5 FEET OF THE POLE FOUNDATION. SLACK CABLES IN PULL BOXES SHALL BE 3 FEET.
4. INSTALL 2#12 XHHW, 1#12 E.G.C. FROM PULL BOX TO LUMINAIRE.
5. ALL SPLICES SHALL BE WATERTIGHT, AND UL-LISTED FOR CONTINUOUS USE IN SUBMERSIBLE INSTALLATIONS, SUCH AS HOMAC FLOOD-SEAL, EATON BUSSMANN, OR EQUIVALENT.
6. USE MINIMUM 1/4" PULL ROPE OR 1200 LBS PULL TAPE WHEN PULLING CONDUCTORS.
7. THE DEGREE OF TILT ON LUMINAIRES SHALL BE ZERO.
8. HOUSE-SIDE SHIELD SHALL BE INCLUDED WITH LUMINAIRES.
9. ALL CONDUIT SHALL BE BORED WHEN CROSSING EXISTING ROADWAY AND DRIVEWAY.
10. INSTALL CONDUIT AROUND DROP INLETS AND OVER PIPE CULVERT.
11. CONDUCT A MINIMUM 14-DAY BURN TEST FOR THE COMPLETE LIGHTING SYSTEM. REPLACE BURNED OUT AND NOTICEABLY DIM LUMINAIRES; MALFUNCTIONING EQUIPMENT SHALL BE CORRECTED, AND RETEST THE SYSTEM. OTHERWISE REMOVE AND REPLACE WITH NEW EQUIPMENT.

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 7527 JOSEPH A. SARTINI
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ILLUMINATION LAYOUT

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| | | | | 6 | ARK. | | | |
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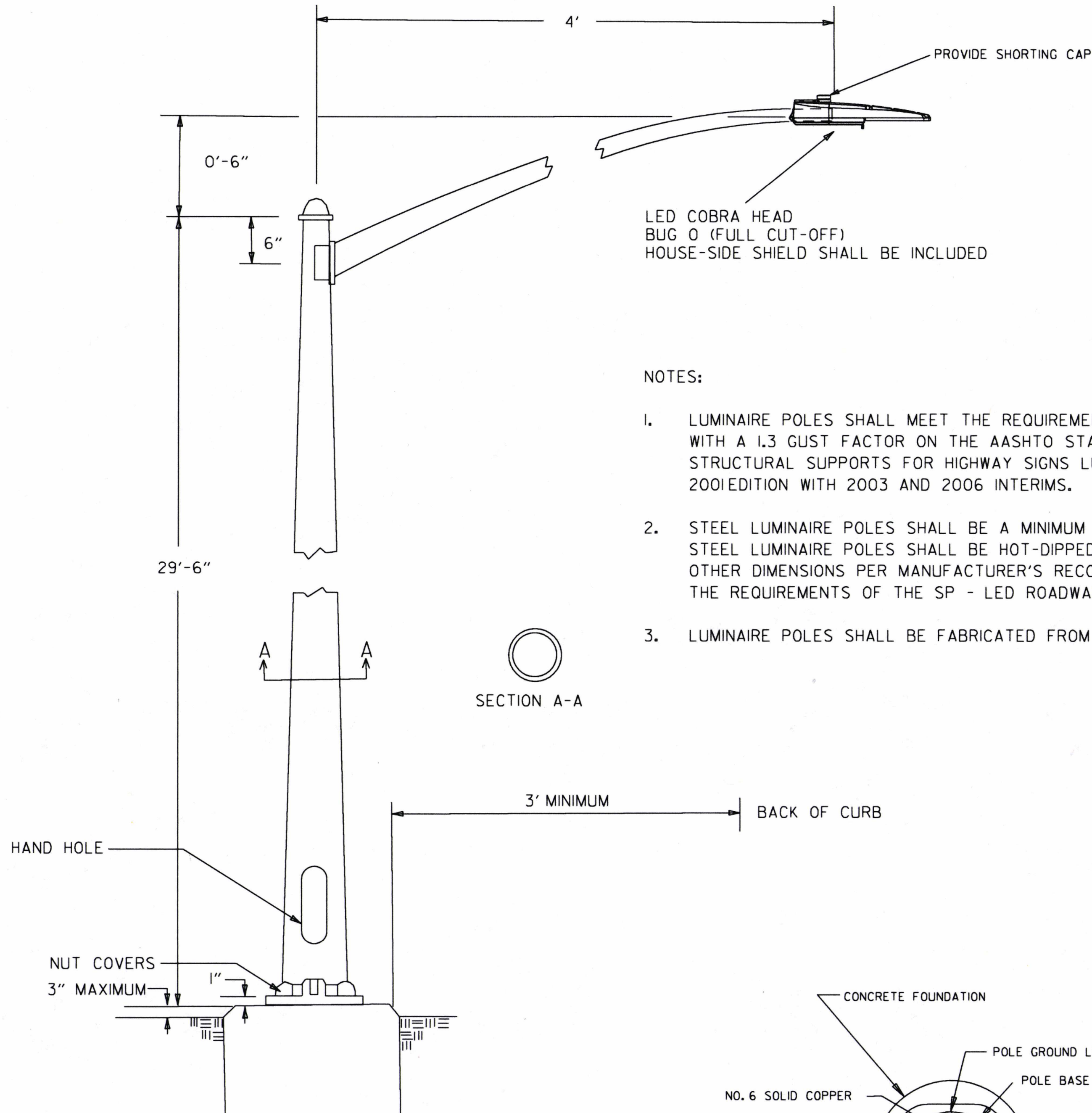
(2) LUMINAIRE POLE DETAILS




COBRA HEAD LUMINAIRE WITH SHOE BASE

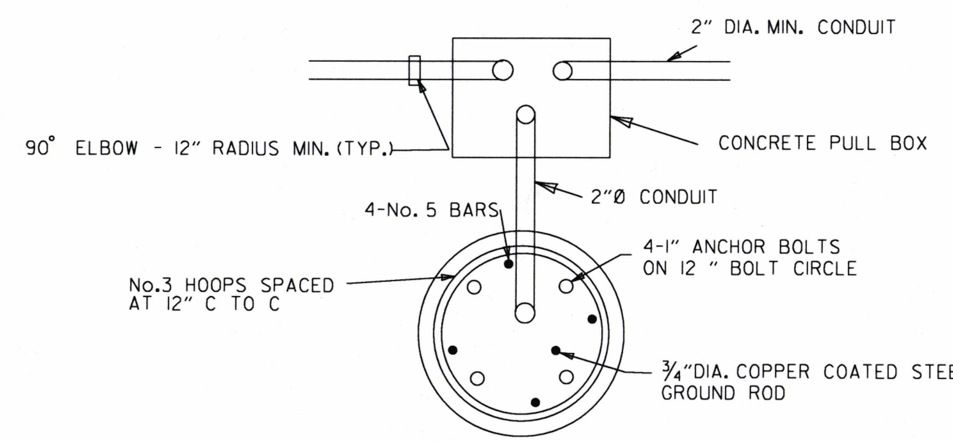
SECTION A-A

NOTES:

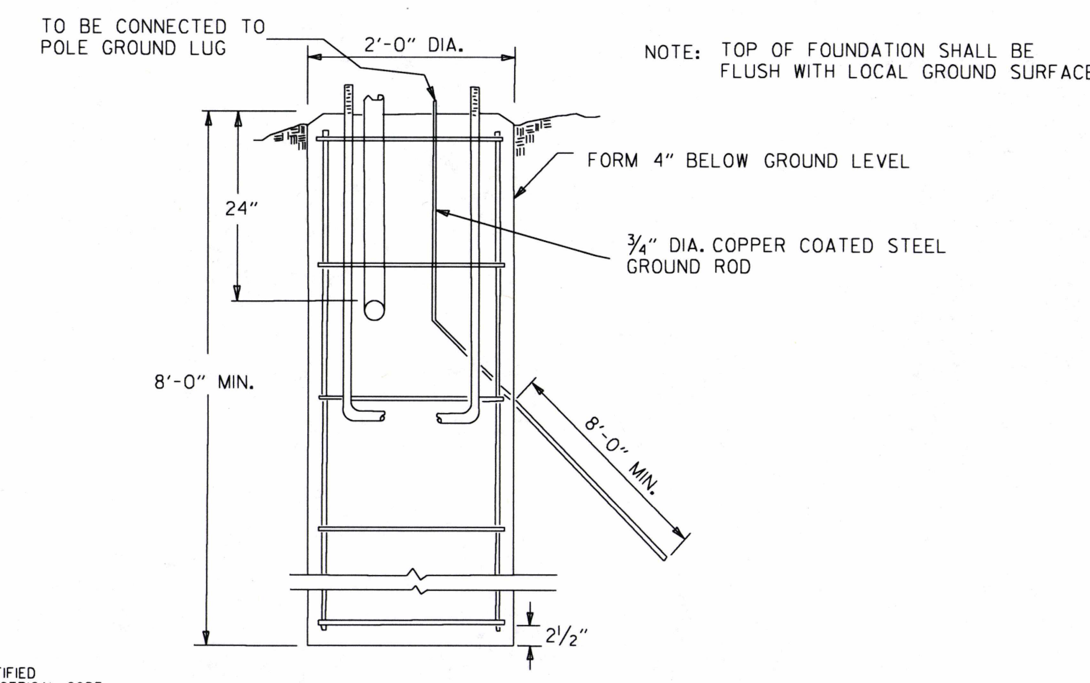
1. LUMINAIRE POLES SHALL MEET THE REQUIREMENTS OF 90 MPH WIND ZONE WITH A 1.3 GUST FACTOR ON THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS LUMINAIRES AND TRAFFIC SIGNALS, 2001EDITION WITH 2003 AND 2006 INTERIMS.

2. STEEL LUMINAIRE POLES SHALL BE A MINIMUM OF 11 GAUGE. STEEL LUMINAIRE POLES SHALL BE HOT-DIPPED GALVANIZED. OTHER DIMENSIONS PER MANUFACTURER'S RECOMMENDATION AS NECESSARY TO MEET THE REQUIREMENTS OF THE SP - LED ROADWAY ILLUMINATION POLE.

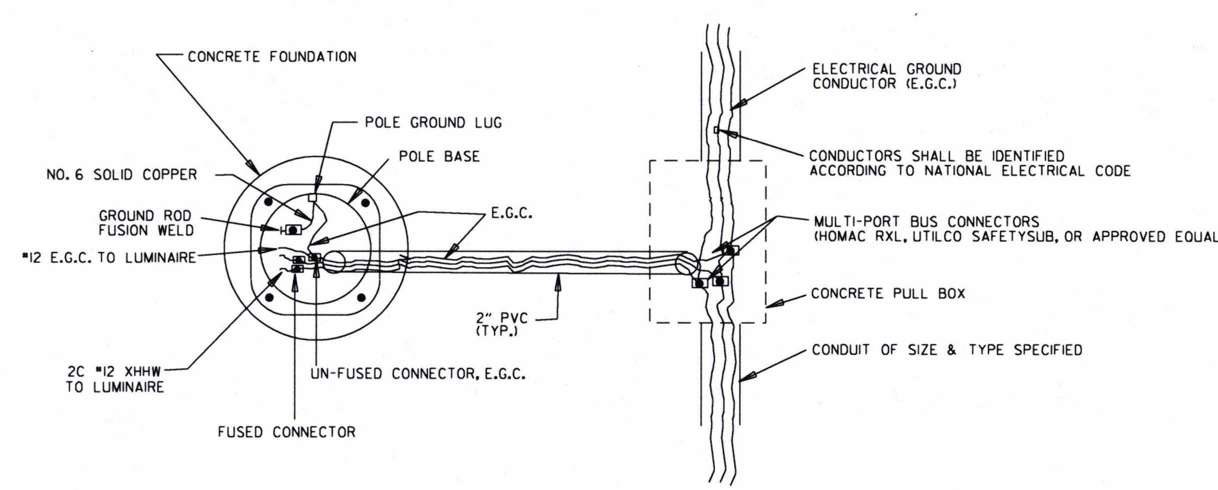
3. LUMINAIRE POLES SHALL BE FABRICATED FROM ASTM A572 GRADE 50 OR 65 STEEL.




PLAN




CONCRETE BASE




POLE FOUNDATION/PULL BOX
WIRING DETAIL

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LUMINAIRE POLE DETAILS

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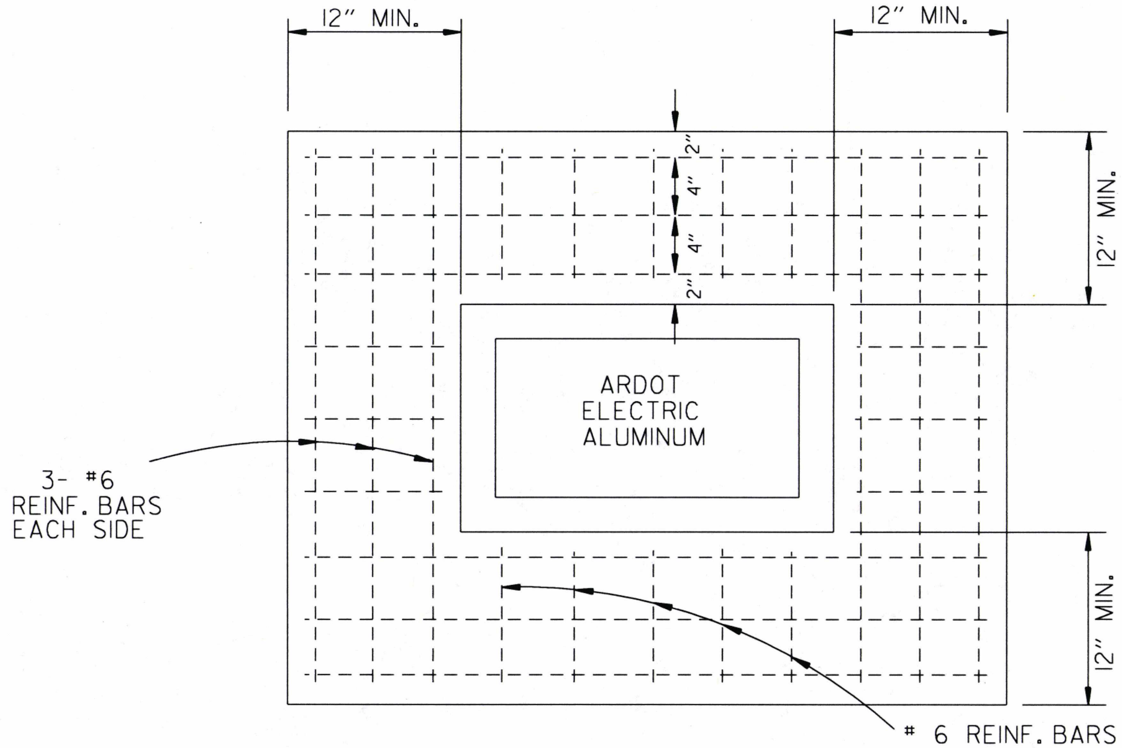
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 39 | 57 |

(2) PULL BOX DETAILS

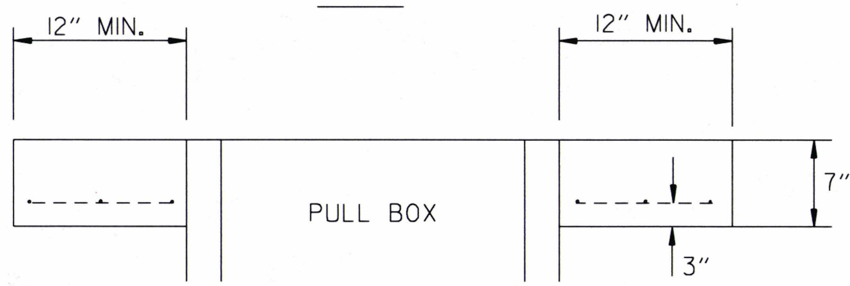
# DETAILS OF CONCRETE APRON

## FOR TYPE "HD" PULL BOX

NOTES:
1. ALL REINFORCING BARS TO BE GRADE 60.
2. PULL BOX LID SHALL BE LABELED "ARDOT", "ELECTRIC", AND "ALUMINUM".

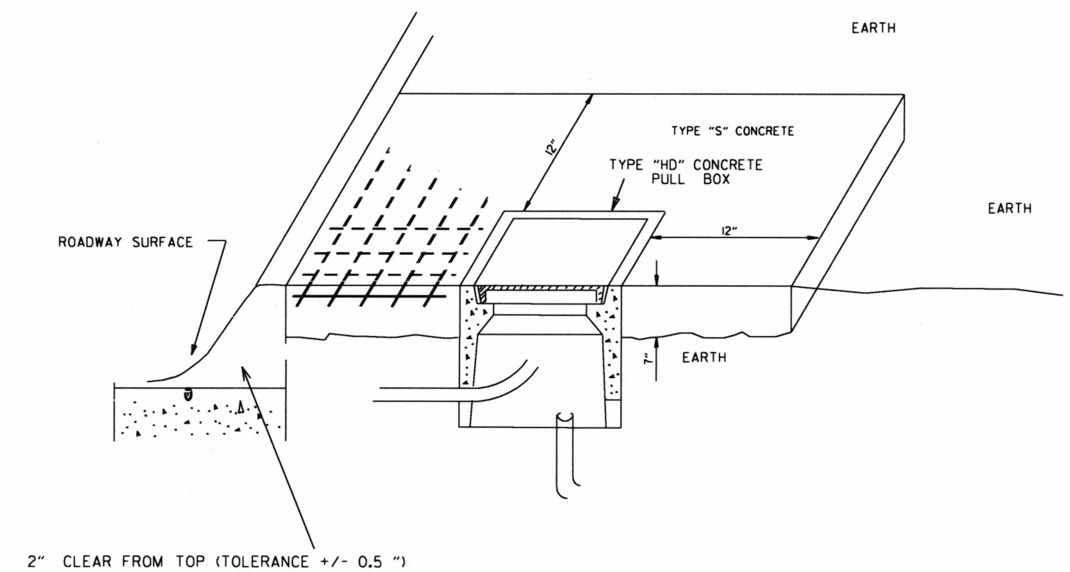



TOP




ELEVATION

# TYPE "HD" CONCRETE PULL BOX




NOTE:

1. ALL TYPE AND TYPE 2 HD PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" (305 MM) WIDE AND 7" (178 MM) IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE OF THE TYPE 2 HD PULL BOX.
2. PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.
3. THE CONCRETE SHALL BE CLASS "S." THREE (3) #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE PULL BOX IS REQUIRED IN CONCRETE.
4. THE PULL BOX SHALL BE SET ON A GRAVEL OR CRUSHED STONE BEDDING THAT WILL SERVE AS A SUMP. THE BEDDING SHALL EXTEND MINIMUM 18" BELOW THE BOTTOM OF THE PULL BOX.
5. INSTALL CONDUIT BUSHING ON THE END OF CONDUIT.
6. MAINTAIN SUFFICIENT SPACE BETWEEN ALL CONDUITS TO ALLOW PROPER INSTALLATION OF BUSHINGS.
7. ALL REINFORCING BARS SHALL BE GRADE 60.
8. PULL BOX LID SHALL BE LABELED "ARDOT", "ELECTRIC", AND "ALUMINUM".

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PULL BOX DETAILS

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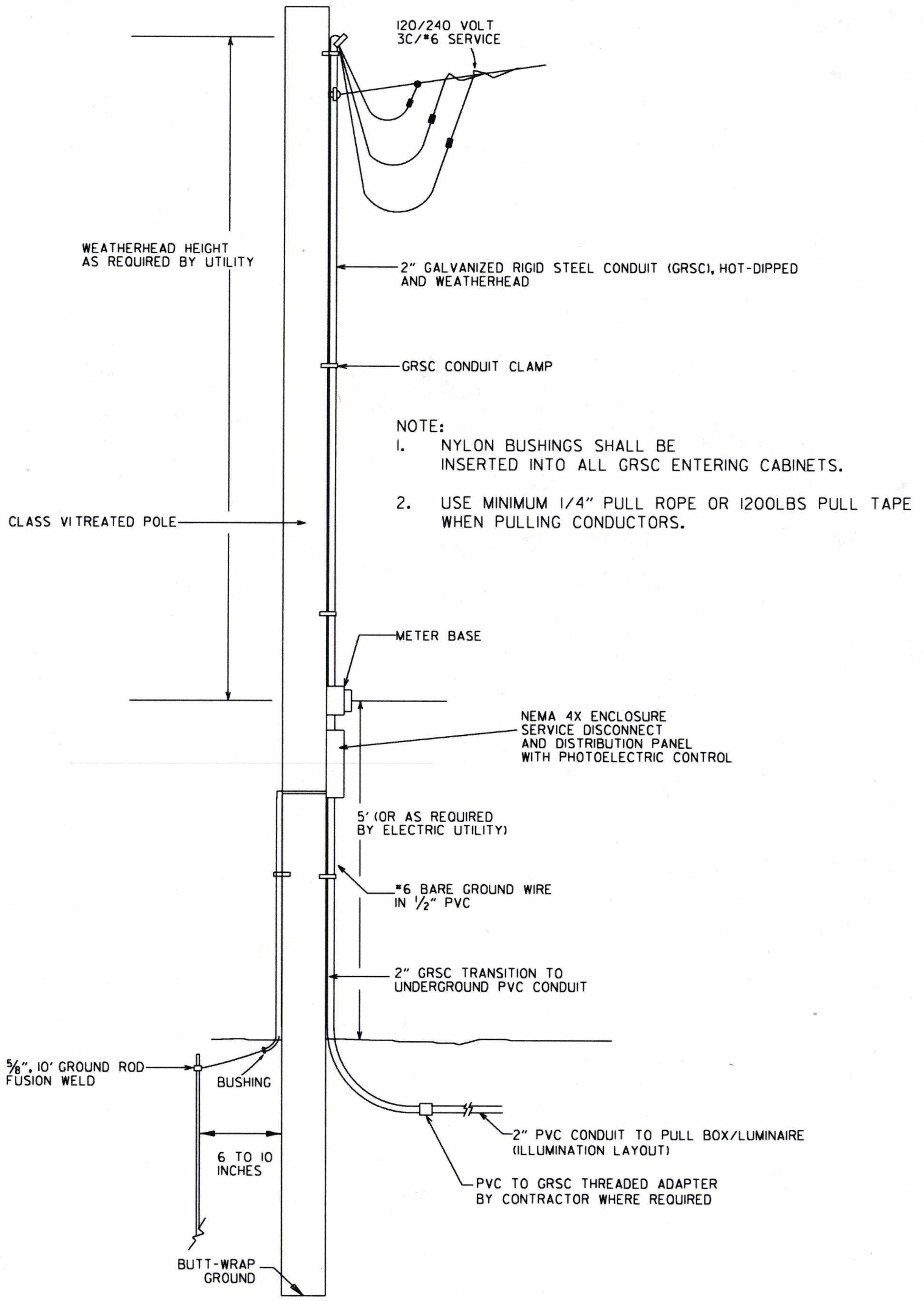
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 40 | 57 |

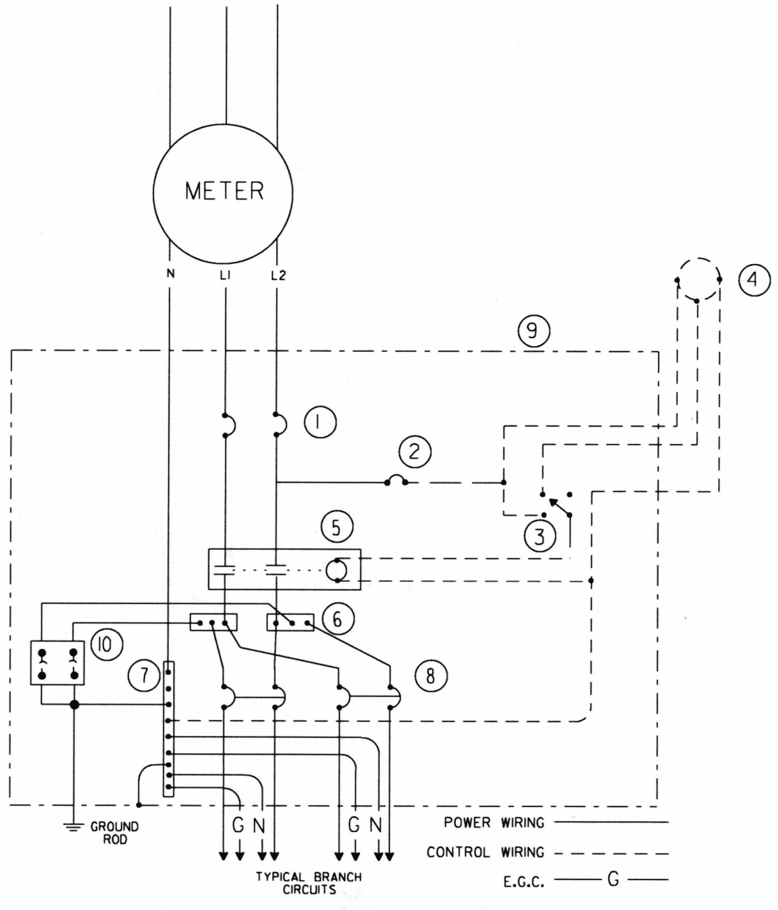
(2) WIRING DIAGRAM




NOTE:
1. NYLON BUSHINGS SHALL BE INSERTED INTO ALL GRSC ENTERING CABINETS.
2. USE MINIMUM 1/4" PULL ROPE OR 1200LBS PULL TAPE WHEN PULLING CONDUCTORS.

## LUMINAIRE SERVICE POINT ASSEMBLY

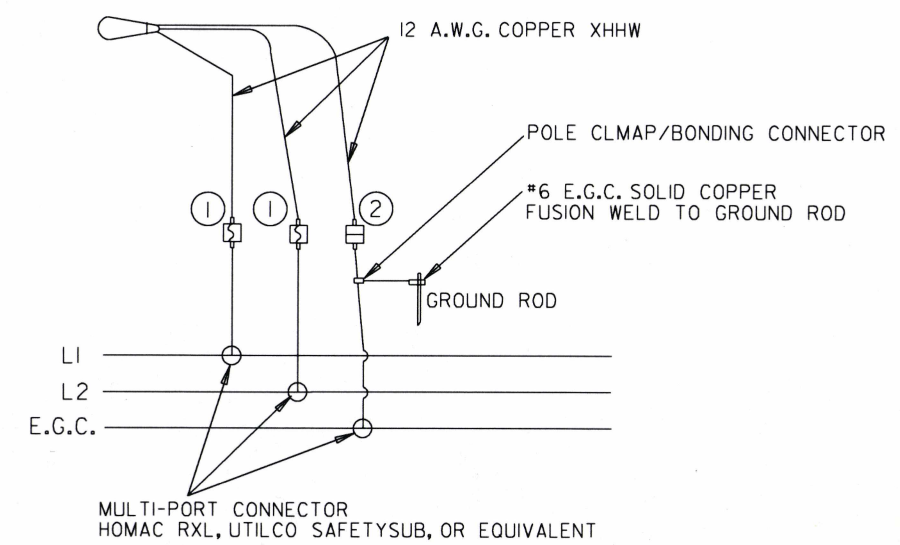
120V/240 VAC LUMINAIRE SERVICE POINT ASSEMBLY FOR ROADWAY LIGHTING




## TYPICAL PROPOSED ELECTRICAL SERVICE WIRING DIAGRAM

KEYED NOTES

1. MAIN DISCONNECT CIRCUIT BREAKER, 2P/100AMP
2. CIRCUIT BREAKER, 15 AMP
3. CONTROL STATION (HAND-OFF-AUTO)
4. PHOTO ELECTRIC CONTROL, 240 VAC
5. LIGHTING CONTACTOR, 240 VOLT COIL
6. POWER DISTRIBUTION TERMINAL BLOCKS
7. NEUTRAL/GROUND BUS
8. BRANCH CIRCUIT BREAKERS, 2P/20AMP
9. ENCLOSURE, NEMA 4X
10. SURGE PROTECTIVE DEVICE, CONNECT TO GROUNDING ELECTRODE CONDUCTOR




TYPICAL WIRING FOR LUMINAIRES
THREE-WIRE CIRCUIT-CENTER GROUNDED
LUMINIARES SERVED AT 240 VAC.

(120/240 VOLT SERVICE)

## LUMINAIRE WIRING SCHEMATICS

KEYED NOTES:

1. FUSED CONNECTOR - SHALL BE WATERTIGHT. USE A FUSED CONNECTOR FOR THE LINE WIRE ON ALL POLES.
2. UN-FUSED CONNECTOR - SHALL BE WATERTIGHT.
3. E.G.C. SHALL BE BONDED TO THE POLE AND GROUND ROD.

GENERAL NOTES:

1. ALL ELECTRICAL CONNECTIONS, INCLUDING DUMMY FUSES, SHALL BE WATERTIGHT AND SHALL BE DESIGNED AS BREAKAWAY (HOMAC FLOOD-SEAL, EATON BUSSMANN, OR EQUAL).
2. ALL ELECTRICAL CONNECTIONS FOR GROUND SHALL HAVE A GREEN COLOR MARKING AND SHALL HAVE A PERMANENTLY INSTALLED SOLID GROUND (HOMAC FLOOD-SEAL, EATON BUSSMANN, OR EQUAL).

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WIRING DIAGRAM

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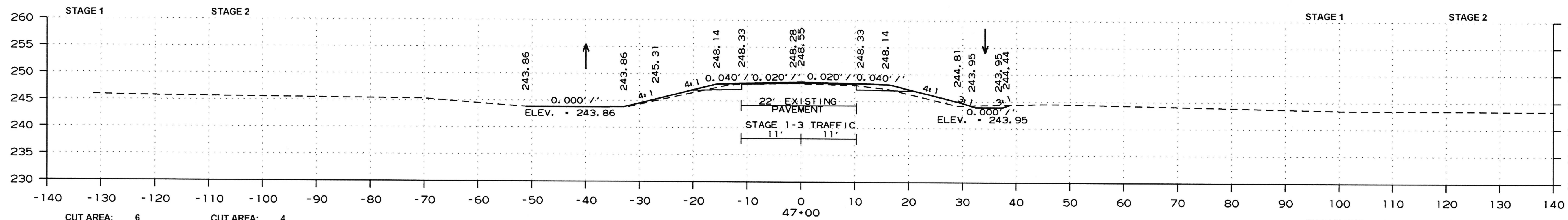
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 41 | 57 |

(2) CROSS SECTIONS

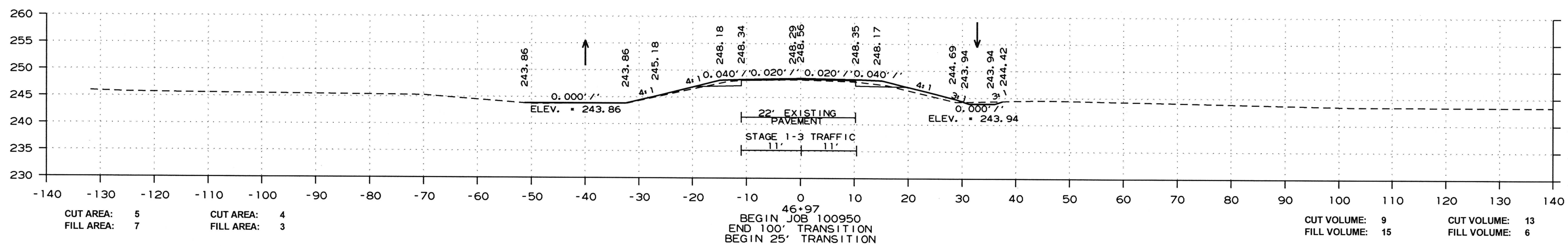



CUT AREA: 6
FILL AREA: 9

CUT AREA: 4
FILL AREA: 5

CUT VOLUME: 1
FILL VOLUME: 1

CUT VOLUME: 0
FILL VOLUME: 0

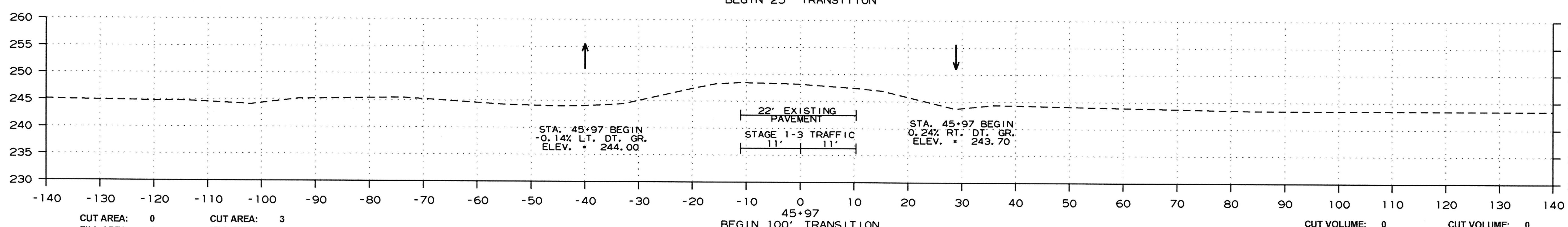



CUT AREA: 5
FILL AREA: 7

CUT AREA: 4
FILL AREA: 3

CUT VOLUME: 9
FILL VOLUME: 15

CUT VOLUME: 13
FILL VOLUME: 6




CUT AREA: 0
FILL AREA: 0

CUT AREA: 3
FILL AREA: 0

CUT VOLUME: 0
FILL VOLUME: 0

CUT VOLUME: 0
FILL VOLUME: 0

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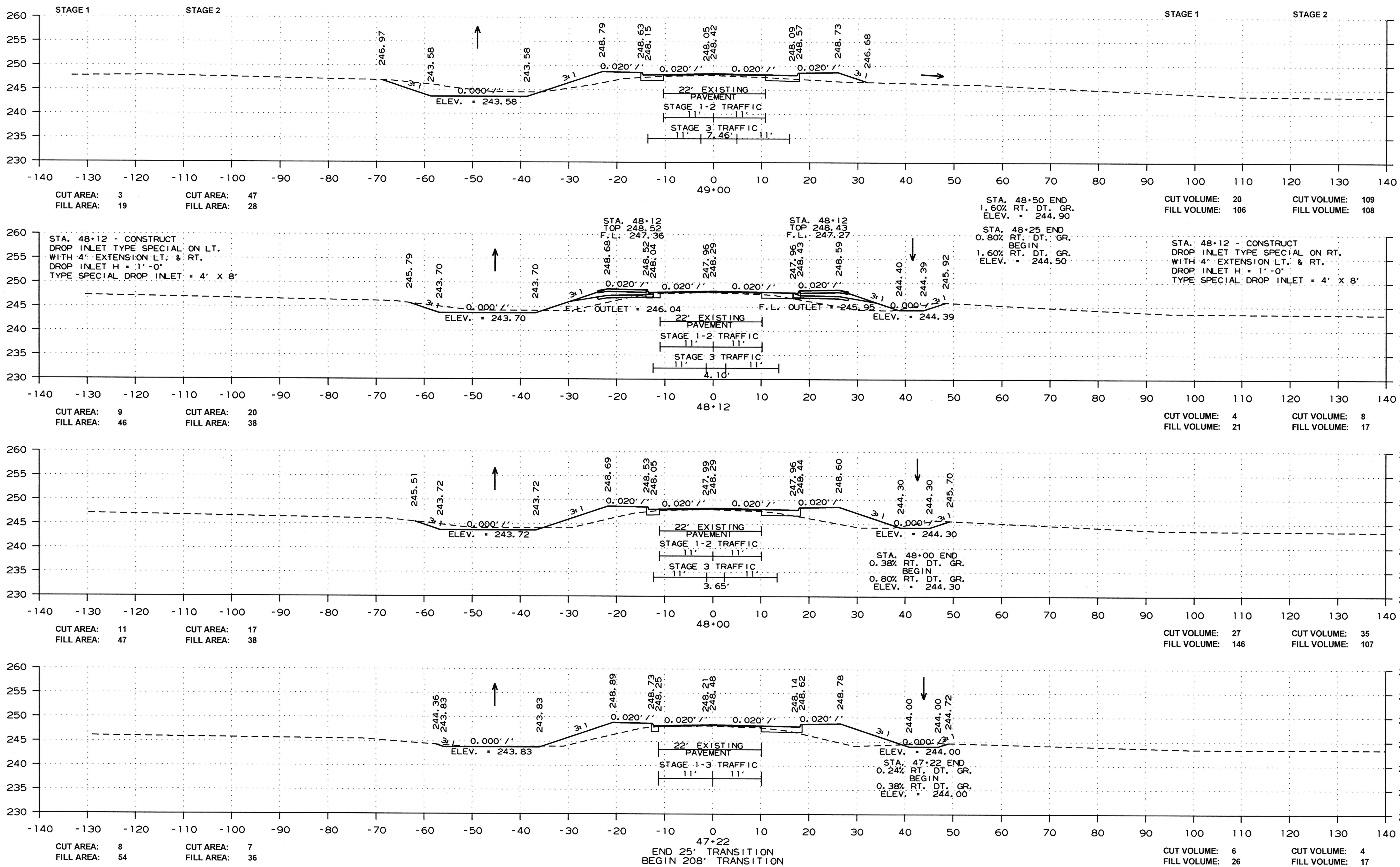
HWY. 163
CROSS SECTION STA. 45+97 TO STA. 47+00

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 42 | 57 |

(2) CROSS SECTIONS




HWY. 163
CROSS SECTION STA. 47+22 TO STA. 49+00

1/2/2019
R100950.DGN

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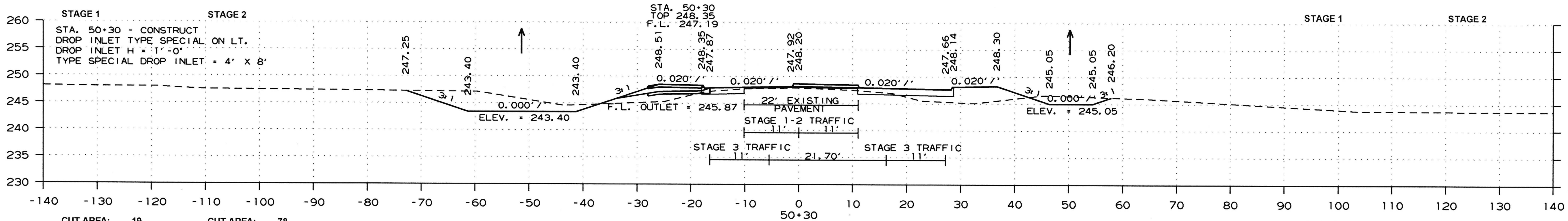
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 43 | 57 |

(2) CROSS SECTIONS

STA. 50+32.55 END
-0.14% LT. DT. GR.
BEGIN
-0.27% LT. DT. GR.
ELEV. = 243.40

STA. 50+69.69 END
-1.80% RT. DT. GR.
BEGIN
-2.55% RT. DT. GR.
ELEV. = 244.35

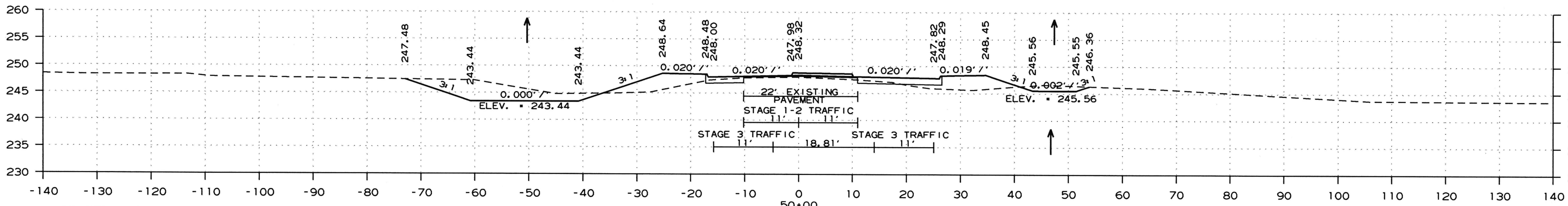



| | |
|---|---|
| CUT AREA: | 19 |
| FILL AREA: | 40 |

| | |
|---|---|
| CUT AREA: | 78 |
| FILL AREA: | 37 |

| | |
|---|---|
| CUT VOLUME: | 18 |
| FILL VOLUME: | 41 |

| | |
|---|---|
| CUT VOLUME: | 88 |
| FILL VOLUME: | 40 |




| | |
|---|---|
| CUT AREA: | 13 |
| FILL AREA: | 33 |

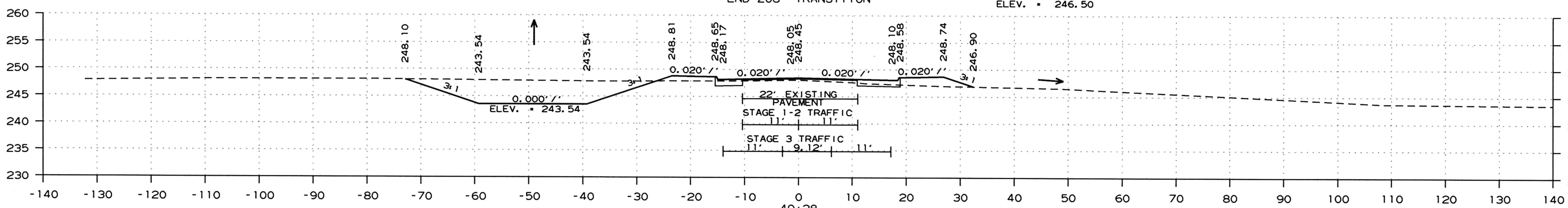
| | |
|---|---|
| CUT AREA: | 80 |
| FILL AREA: | 35 |

| | |
|---|---|
| CUT VOLUME: | 21 |
| FILL VOLUME: | 67 |

| | |
|---|---|
| CUT VOLUME: | 305 |
| FILL VOLUME: | 57 |

49+30
END 208' TRANSITION

STA. 49+50 BEGIN
-1.80% RT. DT. GR.
ELEV. = 246.50

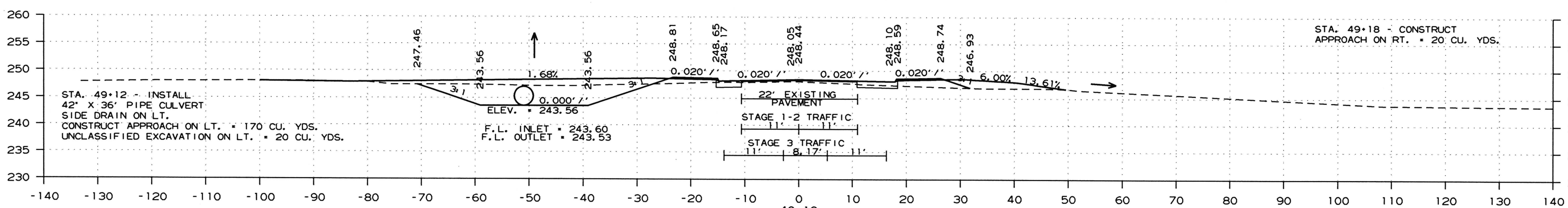



| | |
|---|---|
| CUT AREA: | 3 |
| FILL AREA: | 17 |

| | |
|---|---|
| CUT AREA: | 149 |
| FILL AREA: | 8 |

| | |
|---|---|
| CUT VOLUME: | 1 |
| FILL VOLUME: | 6 |

| | |
|---|---|
| CUT VOLUME: | 50 |
| FILL VOLUME: | 3 |




| | |
|---|---|
| CUT AREA: | 4 |
| FILL AREA: | 16 |

| | |
|---|---|
| CUT AREA: | 123 |
| FILL AREA: | 10 |

| | |
|---|---|
| CUT VOLUME: | 2 |
| FILL VOLUME: | 12 |

| | |
|---|---|
| CUT VOLUME: | 57 |
| FILL VOLUME: | 13 |

HWY. 163
CROSS SECTION STA. 49+18 TO STA. 50+30

1/2/2019

R100950.DGN

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 44 | 57 |

(2) CROSS SECTIONS

STAGE 1

CUT AREA: 68
FILL AREA: 55

STAGE 2

CUT AREA: 112
FILL AREA: 119

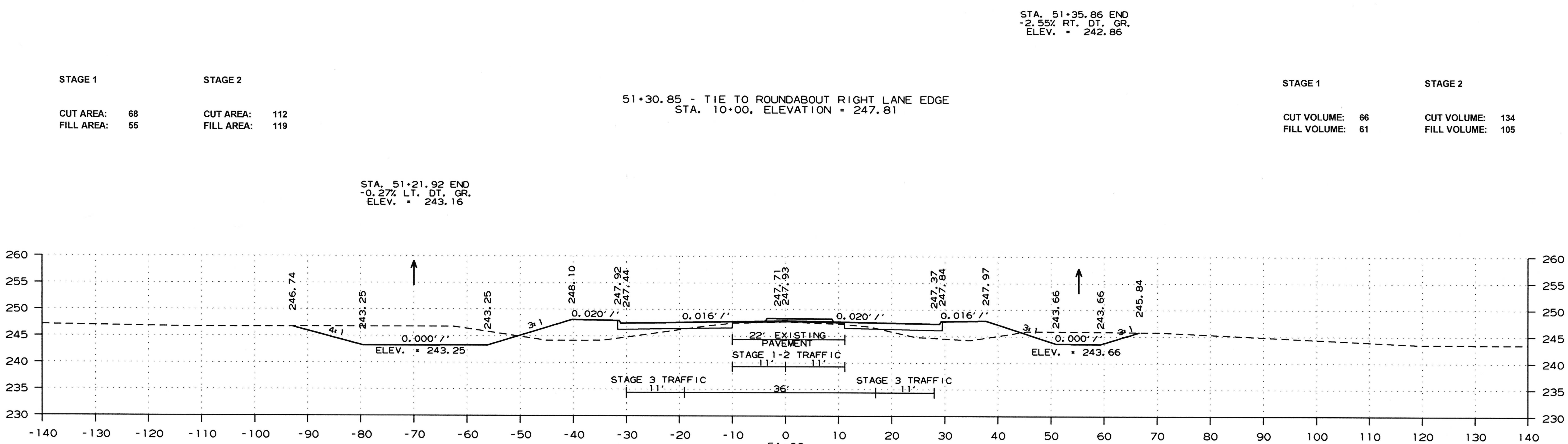
51+30.85 - TIE TO ROUNDABOUT RIGHT LANE EDGE
STA. 10+00, ELEVATION = 247.81

STAGE 1

CUT VOLUME: 66
FILL VOLUME: 61

STAGE 2

CUT VOLUME: 134
FILL VOLUME: 105

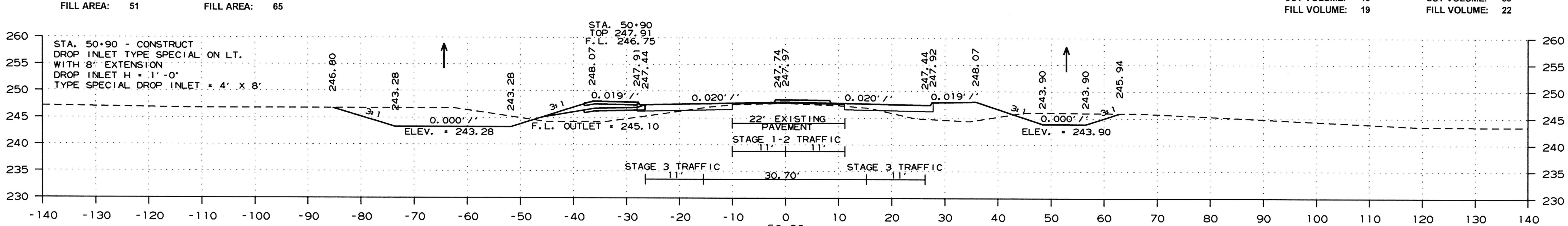



CUT AREA: 48
FILL AREA: 51

CUT AREA: 113
FILL AREA: 65

CUT VOLUME: 15
FILL VOLUME: 19

CUT VOLUME: 39
FILL VOLUME: 22




CUT AREA: 33
FILL AREA: 49

CUT AREA: 97
FILL AREA: 56

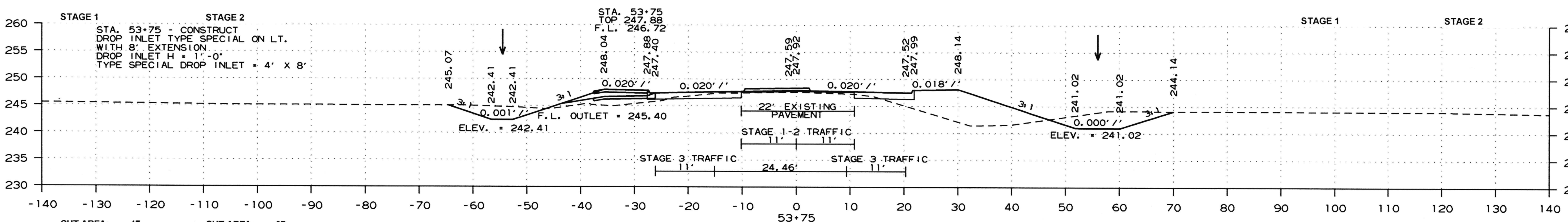
CUT VOLUME: 18
FILL VOLUME: 99

CUT VOLUME: 194
FILL VOLUME: 103

HWY. 163
CROSS SECTION STA. 50+90 TO STA. 51+30.85

1/2/2019

R100950.DGN



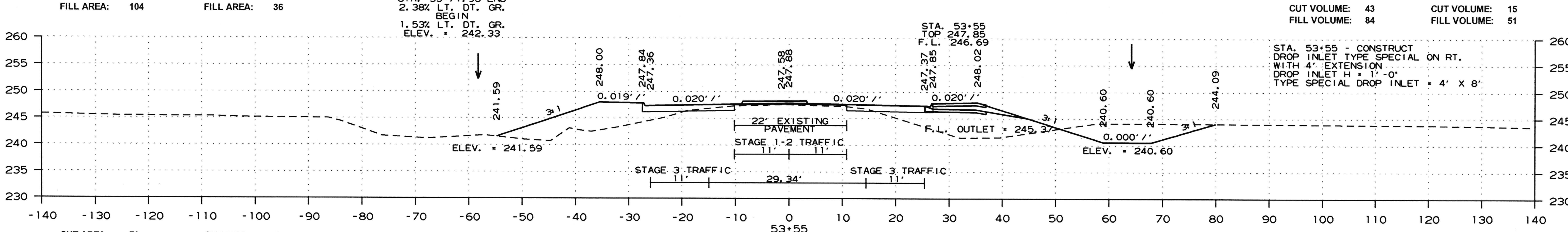

CUT AREA: 47
FILL AREA: 104

CUT AREA: 37
FILL AREA: 36

STA. 53+71.96 END
2.38% LT. DT. GR.
BEGIN
1.53% LT. DT. GR.
ELEV. = 242.33

STAGE 1
CUT VOLUME: 43
FILL VOLUME: 84

STAGE 2
CUT VOLUME: 15
FILL VOLUME: 51




STA. 53+55 - CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
WITH 4' EXTENSION
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

CUT AREA: 70
FILL AREA: 122

CUT AREA: 4
FILL AREA: 102

CUT VOLUME: 131
FILL VOLUME: 267

CUT VOLUME: 62
FILL VOLUME: 201

STA. 53+11.84 BEGIN
2.38% LT. DT. GR.
ELEV. = 240.90

53+10.85 - TIE TO ROUNDABOUT RIGHT LANE EDGE
STA. 12+32.48, ELEVATION = 247.79

CUT AREA: 90
FILL AREA: 205

CUT AREA: 72
FILL AREA: 144

CUT VOLUME: 0
FILL VOLUME: 0

CUT VOLUME: 0
FILL VOLUME: 0

STA. 53+05.19 BEGIN
2.17% RT. DT. GR.
ELEV. = 239.44

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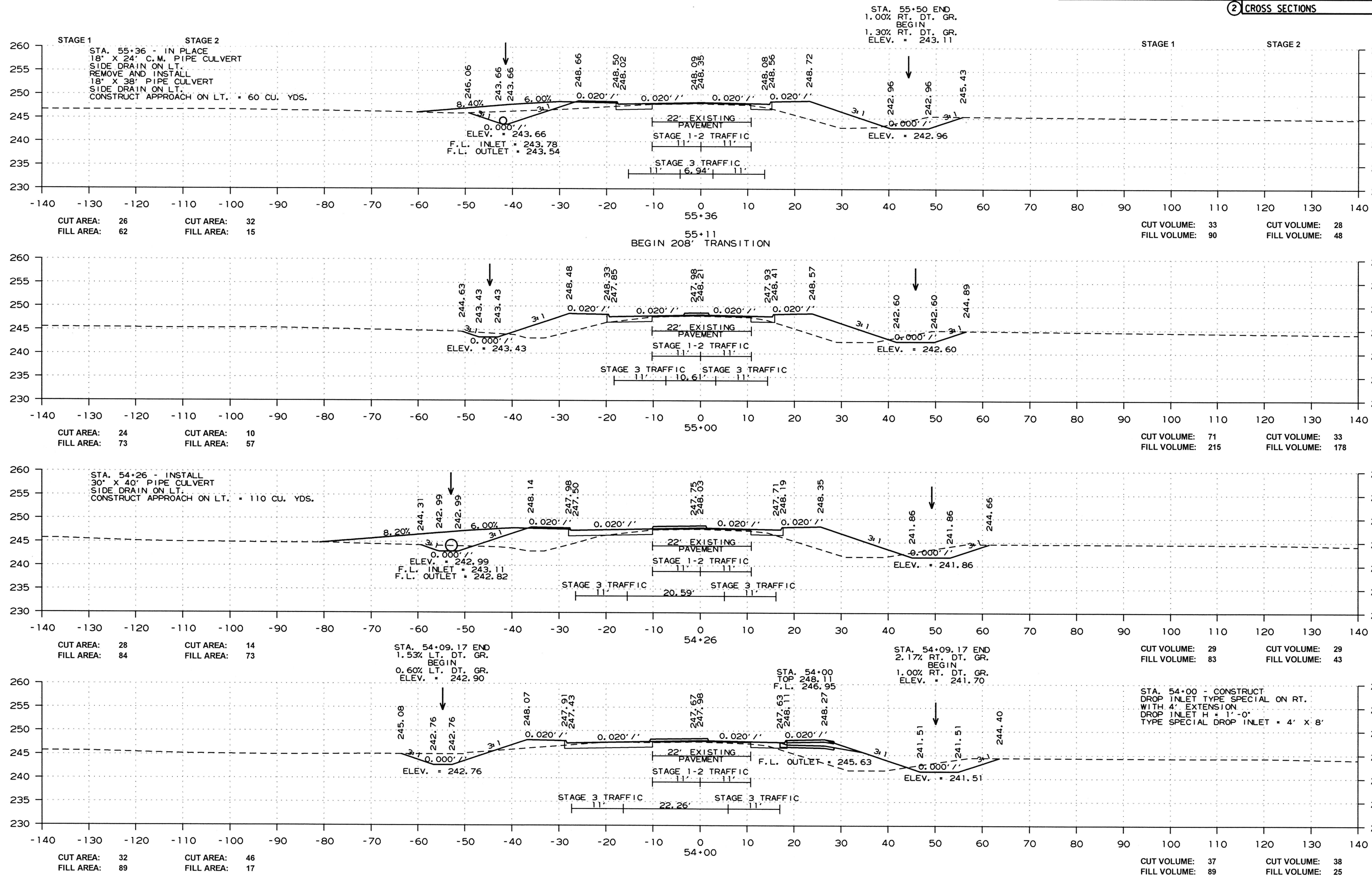
HWY. 163
CROSS SECTION STA. 53+10.85 TO STA. 53+75

| 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. | 100950 | | 46 | 57 |

(2) CROSS SECTIONS



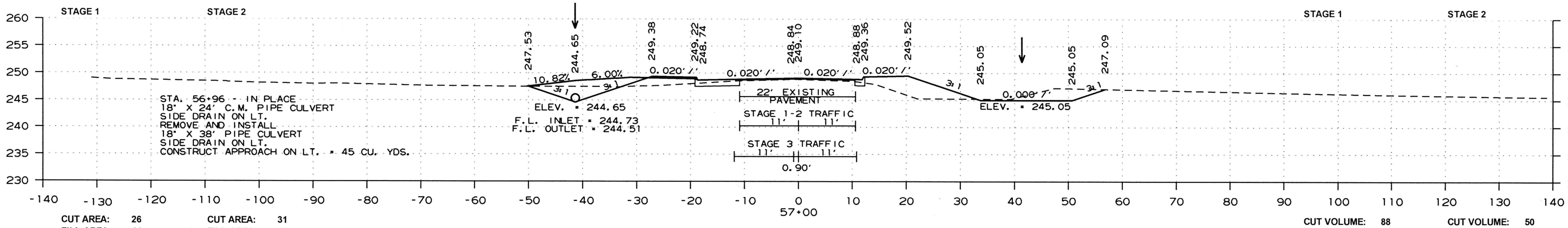

HWY. 163
CROSS SECTION STA. 54+00 TO STA. 55+36

1/2/2019

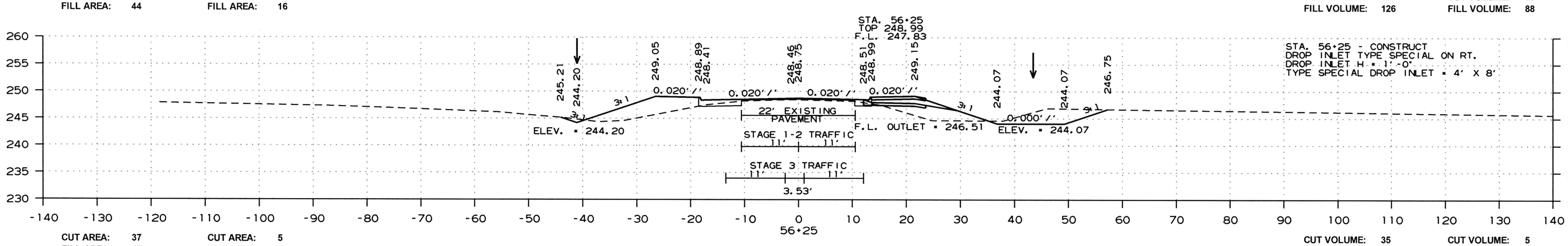
R100950.DGN

| 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. | | 100950 | 47 | 57 |

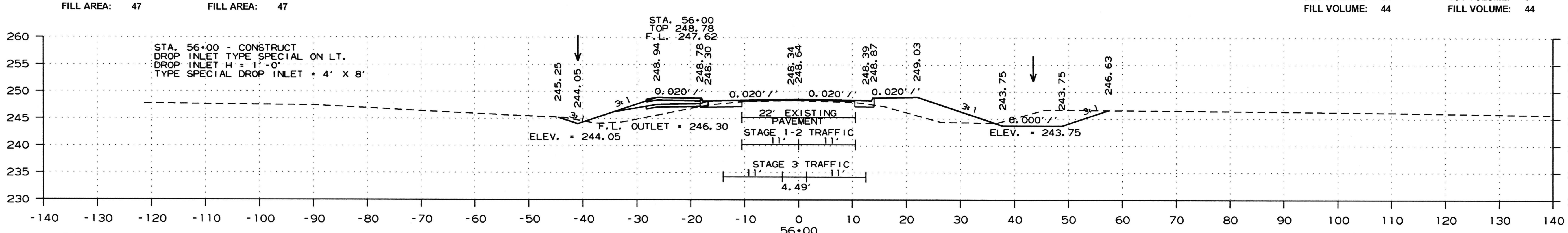
(2) CROSS SECTIONS



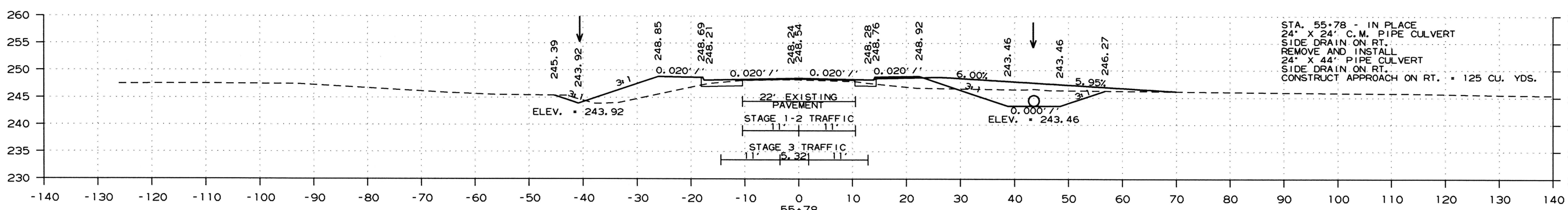

| CUT AREA: | 26 | CUT AREA: | 31 | CUT VOLUME: | 88 | CUT VOLUME: | 50 |
|---|---|---|---|---|---|---|---|
| FILL AREA: | 44 | FILL AREA: | 16 | FILL VOLUME: | 126 | FILL VOLUME: | 88 |




| CUT AREA: | 37 | CUT AREA: | 5 | CUT VOLUME: | 35 | CUT VOLUME: | 5 |
|---|---|---|---|---|---|---|---|
| FILL AREA: | 47 | FILL AREA: | 47 | FILL VOLUME: | 44 | FILL VOLUME: | 44 |




| CUT AREA: | 39 | CUT AREA: | 6 | CUT VOLUME: | 40 | CUT VOLUME: | 6 |
|---|---|---|---|---|---|---|---|
| FILL AREA: | 48 | FILL AREA: | 47 | FILL VOLUME: | 28 | FILL VOLUME: | 39 |



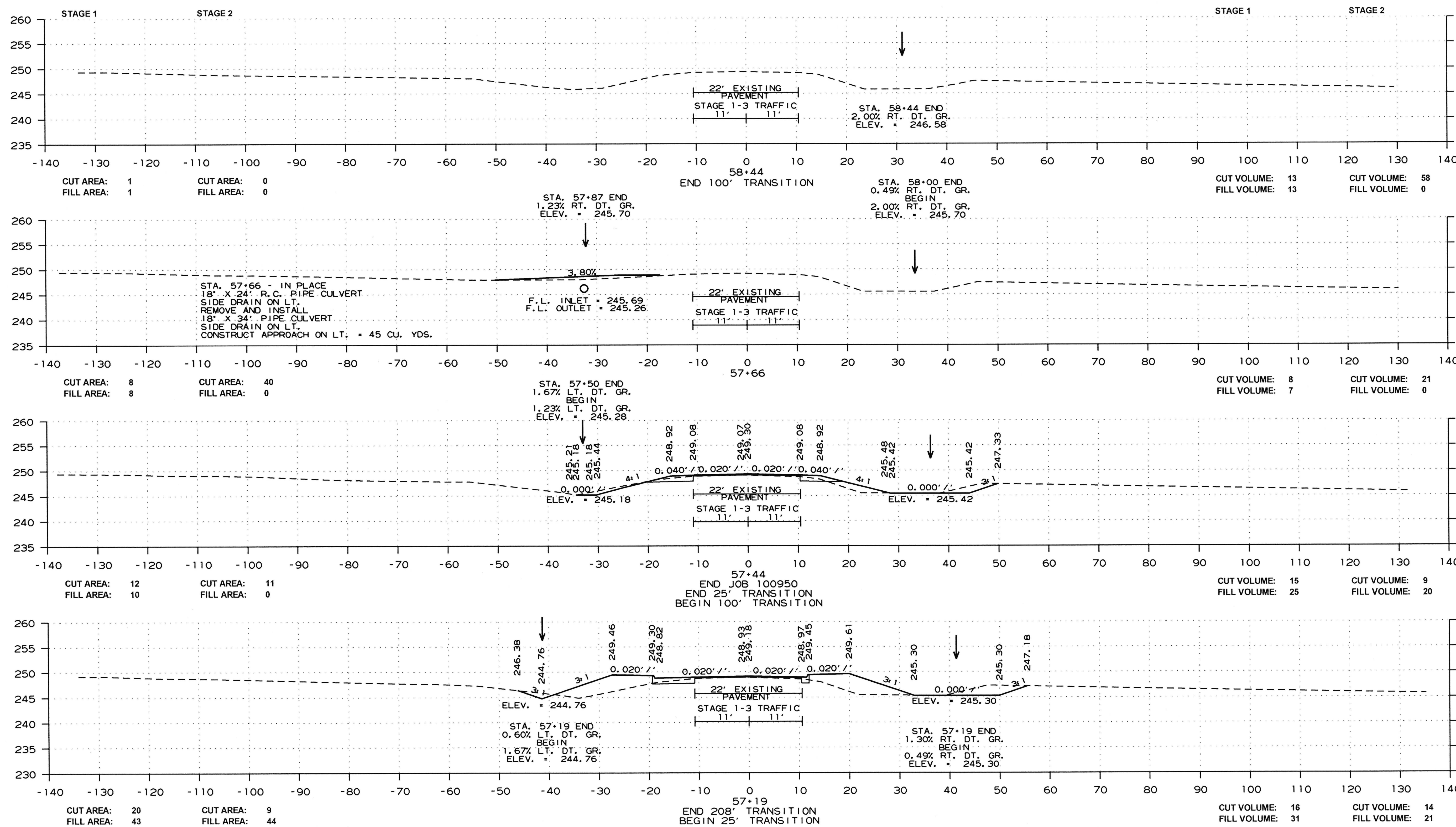

| CUT AREA: | 58 | CUT AREA: | 8 | CUT VOLUME: | 65 | CUT VOLUME: | 31 |
|---|---|---|---|---|---|---|---|
| FILL AREA: | 21 | FILL AREA: | 48 | FILL VOLUME: | 65 | FILL VOLUME: | 49 |

HWY. 163
CROSS SECTION STA. 55+78 TO STA. 57+00

1/2/2019
R100950.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. | | 100950 | 48 | 57 |

(2) CROSS SECTIONS



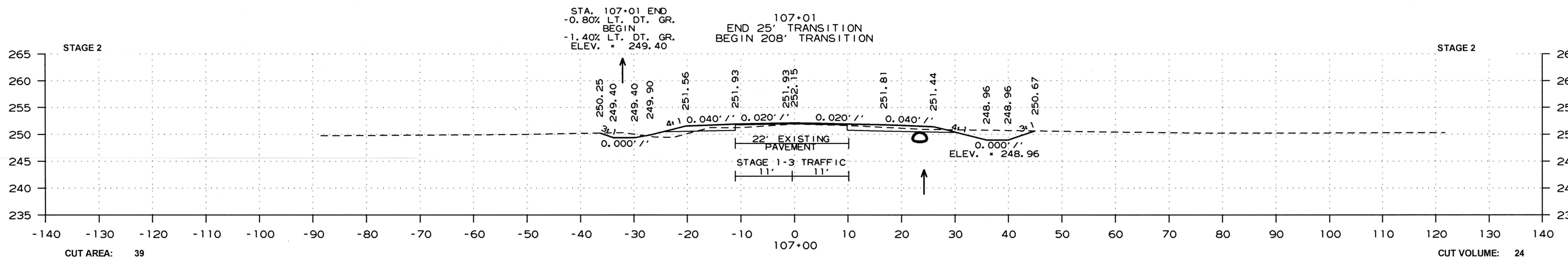

HWY. 163
CROSS SECTION STA. 57+19 TO STA. 58+44

1/2/2019

R100950.DGN

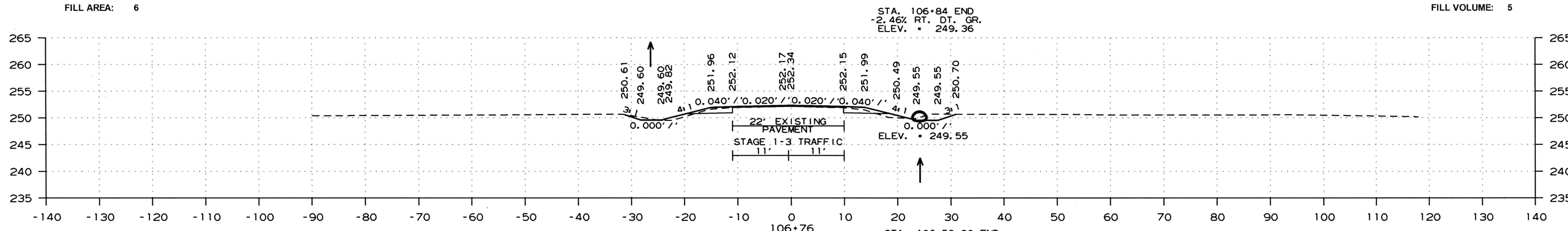
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 49 | 57 |

(2) CROSS SECTIONS



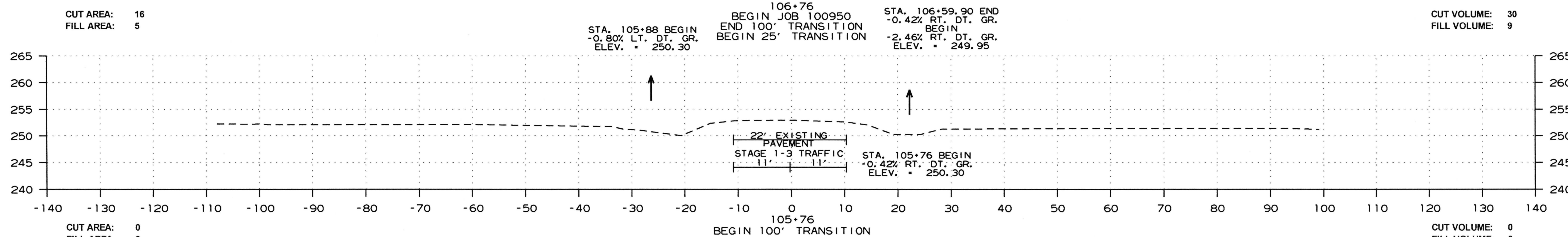

CUT AREA: 39
FILL AREA: 6

CUT VOLUME: 24
FILL VOLUME: 5




CUT AREA: 16
FILL AREA: 5

CUT VOLUME: 30
FILL VOLUME: 9




CUT AREA: 0
FILL AREA: 0

CUT VOLUME: 0
FILL VOLUME: 0

1/2/2019

R100950.DGN

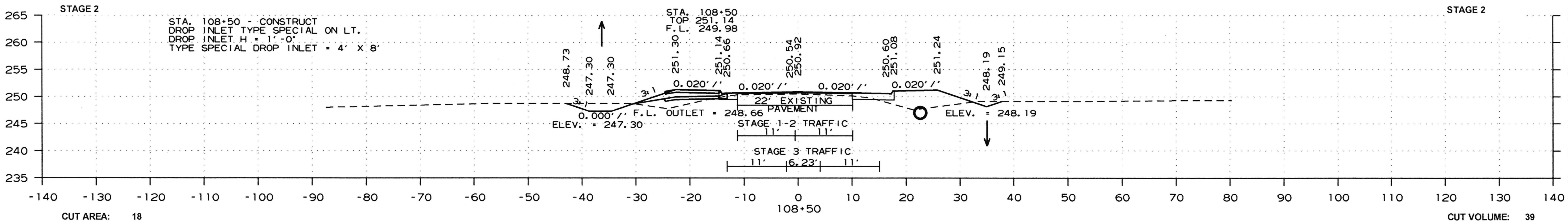
E. LAWSON RD.
CROSS SECTION STA. 105+76 TO STA. 107+00

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

| 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. | | 100950 | 50 | 57 |

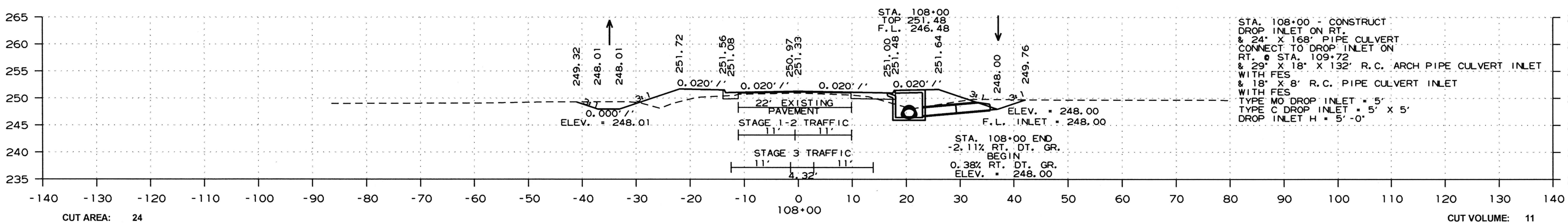
(2) CROSS SECTIONS

STAGE 2 STAGE 2



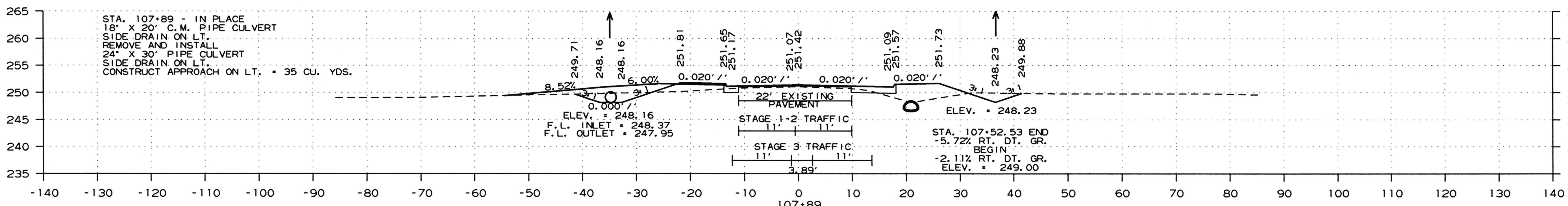

CUT AREA: 18
FILL AREA: 68

CUT VOLUME: 39
FILL VOLUME: 119



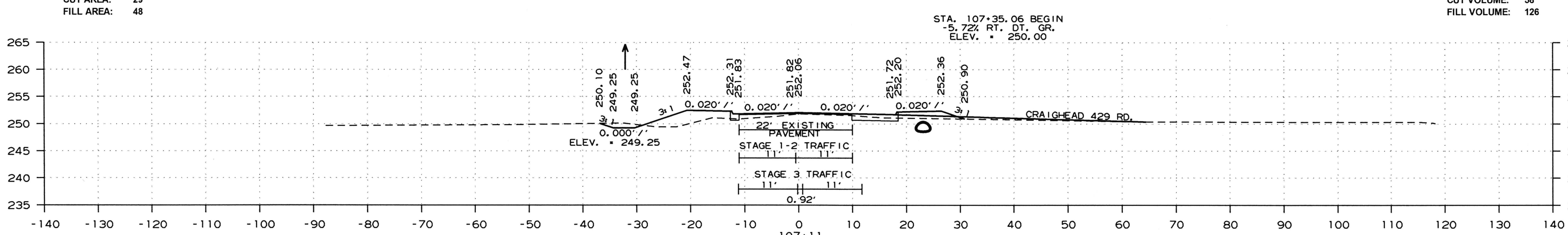

CUT AREA: 24
FILL AREA: 60

CUT VOLUME: 11
FILL VOLUME: 22




CUT AREA: 29
FILL AREA: 48

CUT VOLUME: 58
FILL VOLUME: 126




CUT AREA: 11
FILL AREA: 39

CUT VOLUME: 10
FILL VOLUME: 9

E. LAWSON RD.
CROSS SECTION STA. 107+11 TO STA. 108+50

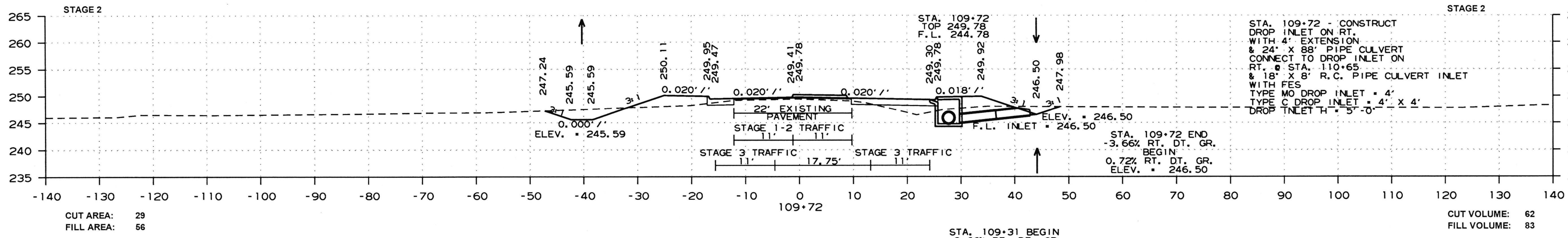
1/2/2019

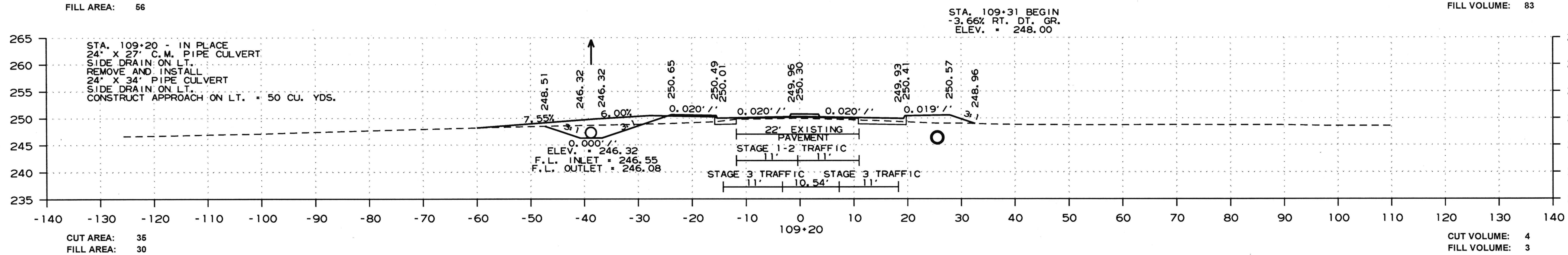
R100950.DGN

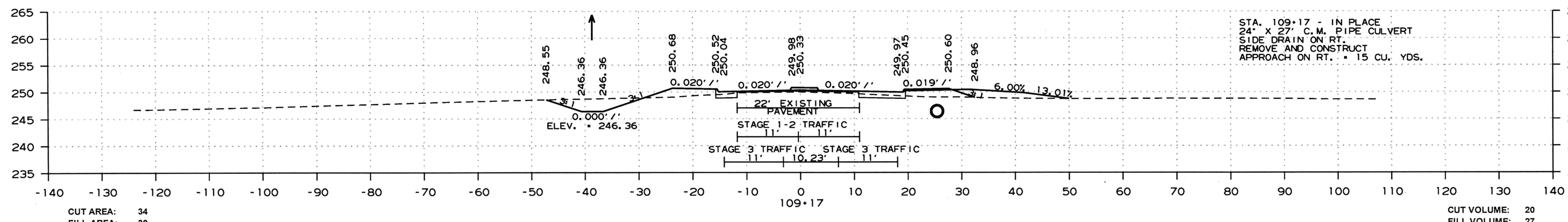
ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED. FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

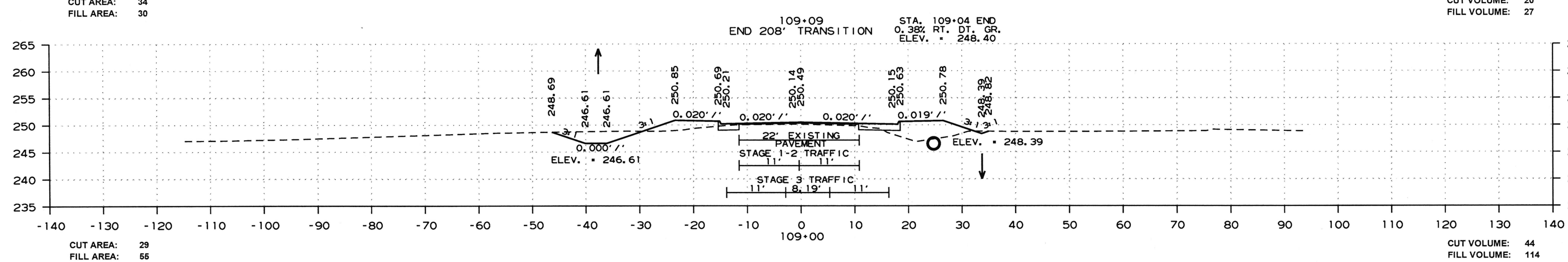
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 51 | 57 |

(2) CROSS SECTIONS




E. LAWSON RD.
CROSS SECTION STA. 109+00 TO STA. 109+72

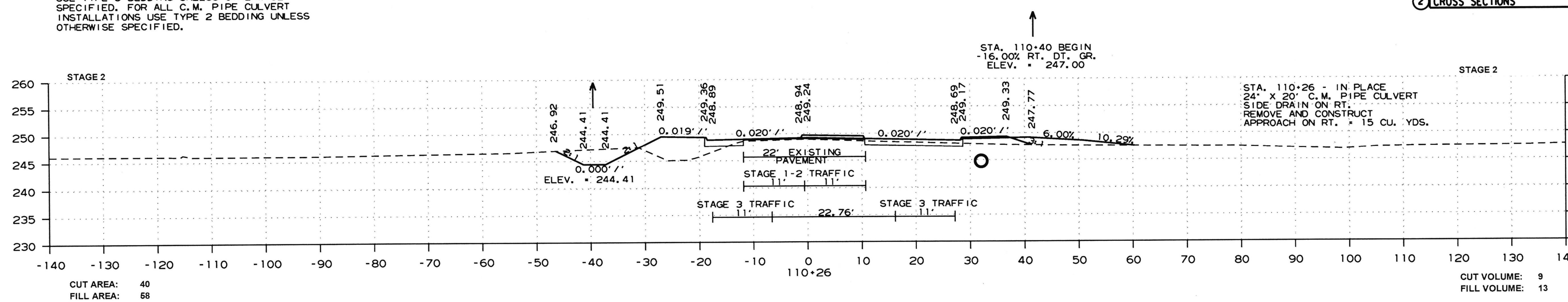
1/2/2019

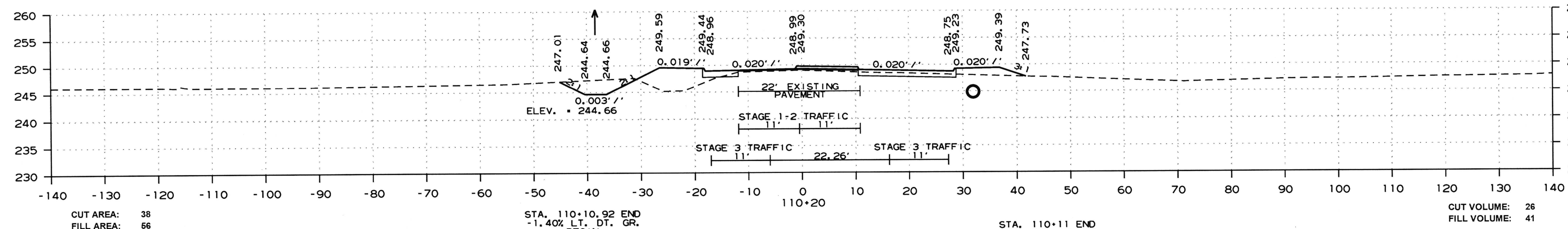
R100950.DGN

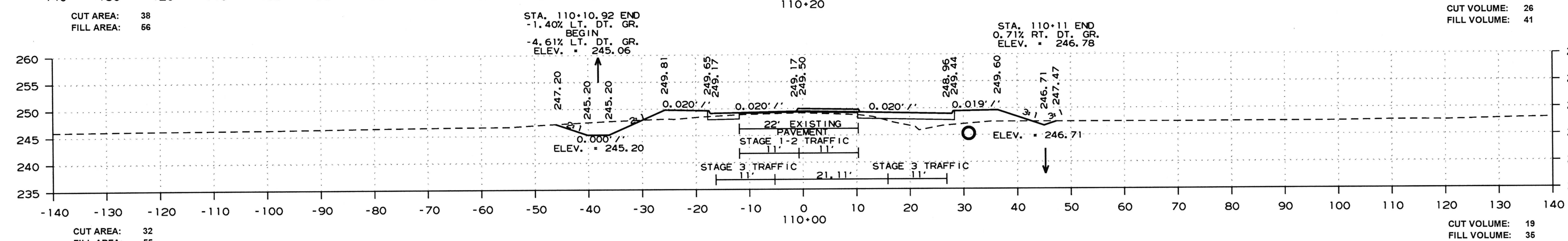
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | | JOB NO. | 100950 | 52 | 57 |

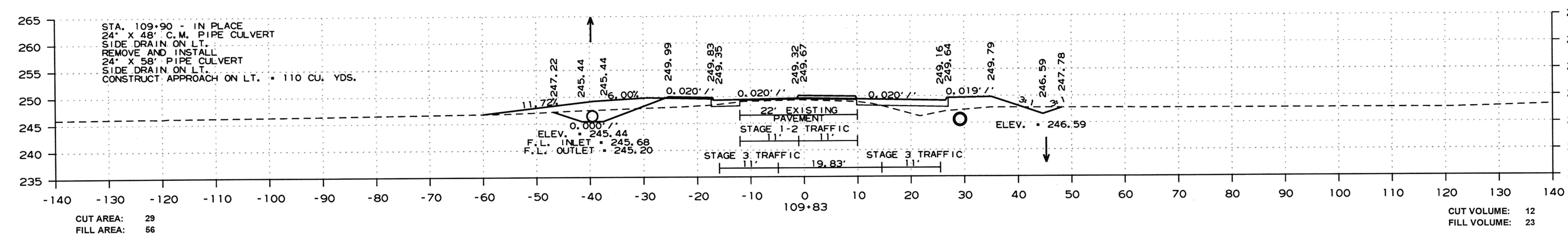
(2) CROSS SECTIONS

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




E. LAWSON RD.
CROSS SECTION STA. 109+83 TO STA. 110+26

4/9/2019

R100950.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. | | 100950 | 53 | 57 |

(2) CROSS SECTIONS

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

STA. 111+18.45 END
4.28% RT. DT. GR.
ELEV. = 240.87

STA. 111+09.80 END
-4.61% LT. DT. GR.
BEGIN
4.28% LT. DT. GR.
ELEV. = 240.50

STAGE 2

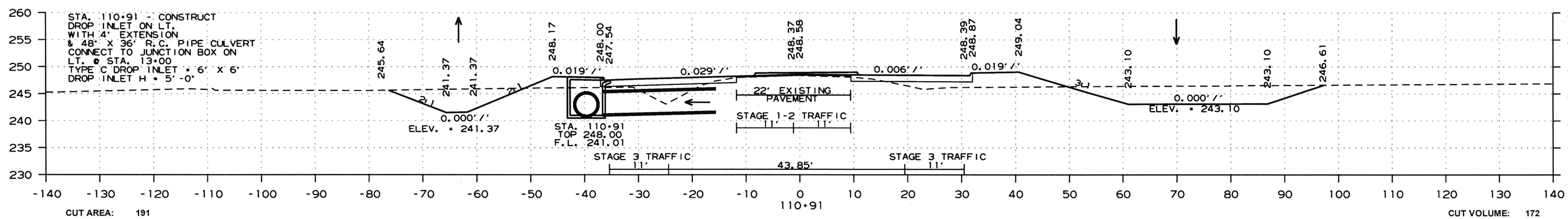
CUT AREA: 215
FILL AREA: 164

111+09.24 - TIE TO ROUNDABOUT RIGHT LANE EDGE
STA. 13+50.27, ELEVATION = 248.39

STAGE 2

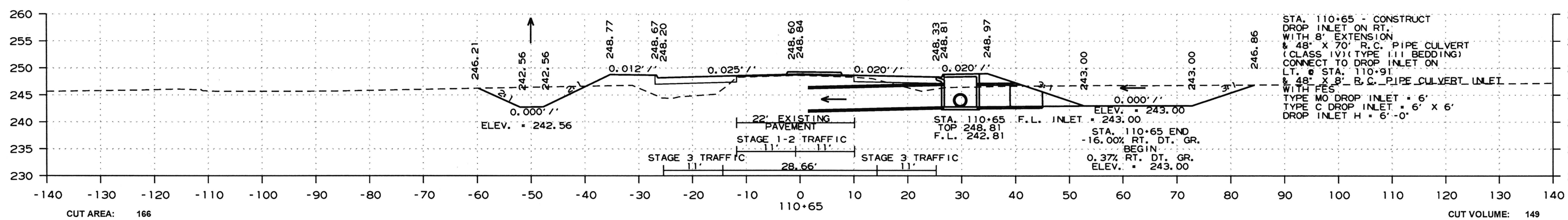
CUT VOLUME: 137
FILL VOLUME: 89

STA. 111+08.46 END
0.37% RT. DT. GR.
ELEV. = 243.16




CUT AREA: 191
FILL AREA: 100

CUT VOLUME: 172
FILL VOLUME: 93




CUT AREA: 166
FILL AREA: 93

CUT VOLUME: 149
FILL VOLUME: 109

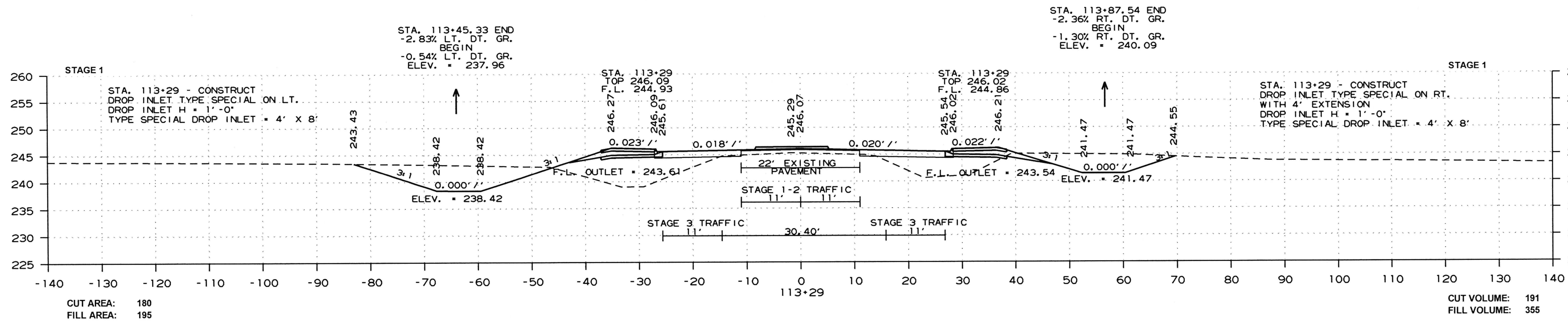
E. LAWSON RD.
CROSS SECTION STA. 110+65 TO STA. 111+09.24

1/2/2019

R100950.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. | | 100950 | 54 | 57 |

(2) CROSS SECTIONS




STA. 112+96.62 BEGIN
-2.83% LT. DT. GR.
ELEV. = 239.34

STA. 112+79.93 BEGIN
-2.36% RT. DT. GR.
ELEV. = 242.63

112+89.27 - TIE TO ROUNDABOUT RIGHT LANE EDGE
STA. 11+17.79, ELEVATION = 246.73

CUT AREA: 80
FILL AREA: 288

CUT VOLUME: 0
FILL VOLUME: 0

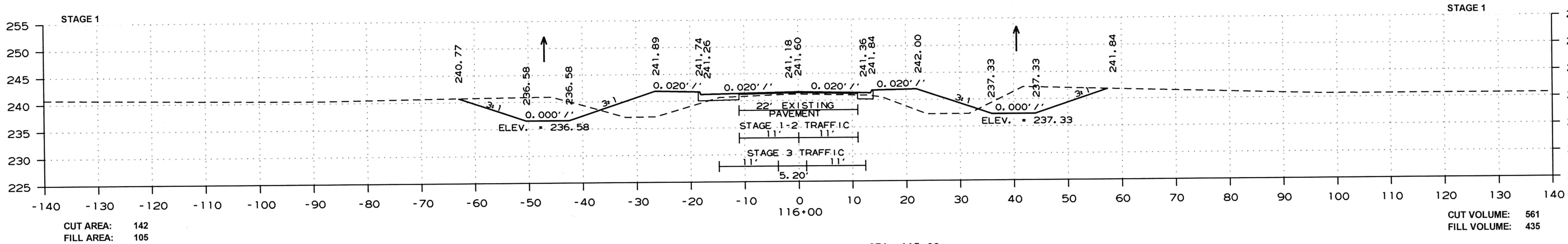
1/2/2019

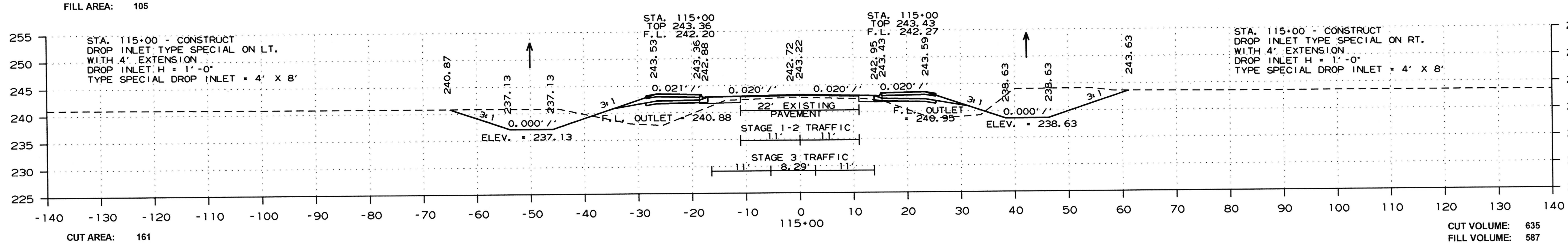
R100950.DGN

HWY. 158
CROSS SECTION STA. 112+89.27 TO STA. 113+29

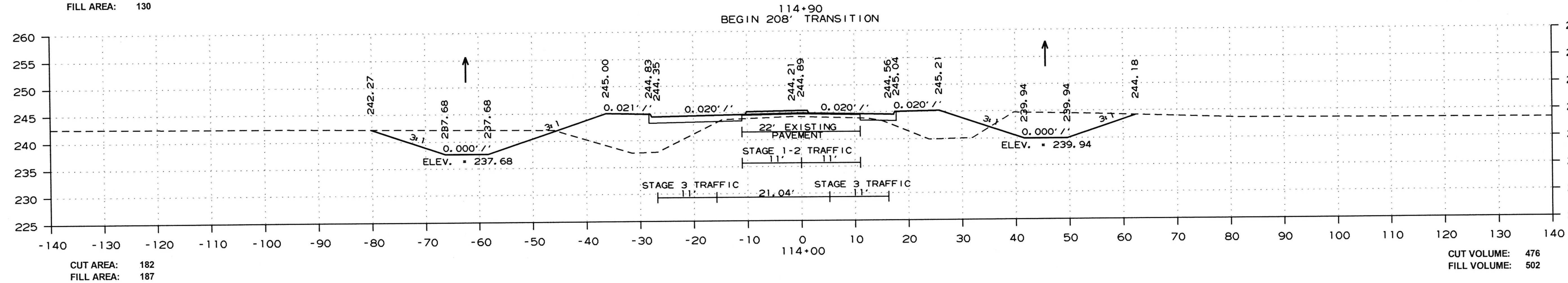
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 55 | 57 |

(2) CROSS SECTIONS




114+90
BEGIN 208' TRANSITION



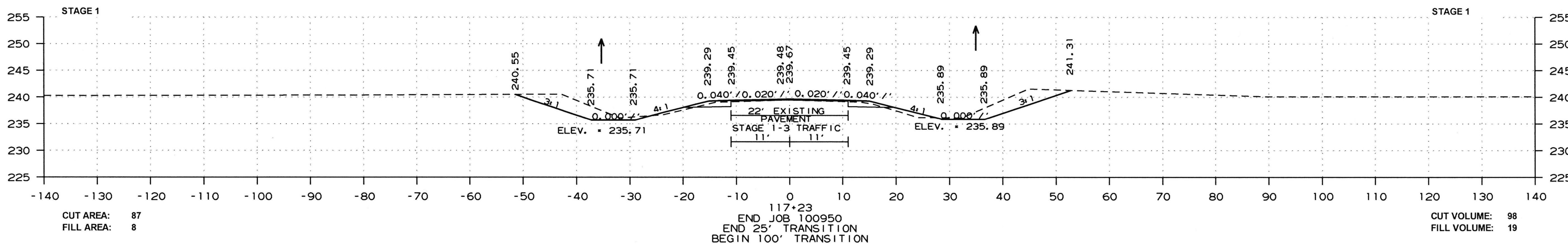

HWY. 158
CROSS SECTION STA. 114+00 TO STA. 116+00

1/2/2019

R100950.DGN

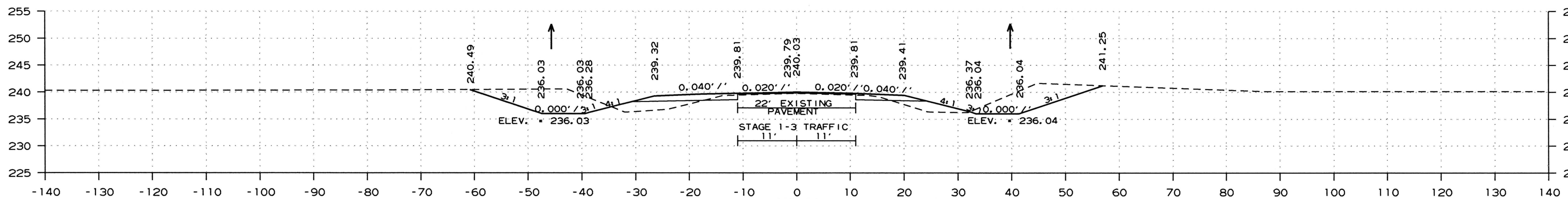
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 56 | 57 |

(2) CROSS SECTIONS



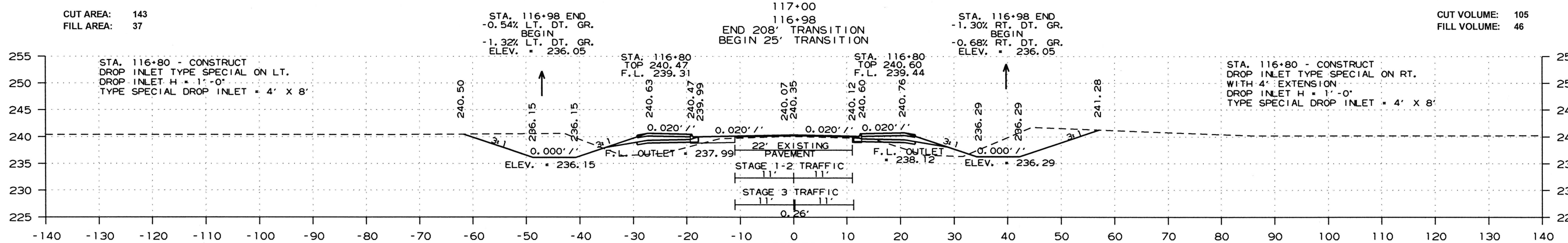

CUT AREA: 87
FILL AREA: 8

CUT VOLUME: 98
FILL VOLUME: 19




CUT AREA: 143
FILL AREA: 37

CUT VOLUME: 105
FILL VOLUME: 46




CUT AREA: 141
FILL AREA: 86

CUT VOLUME: 419
FILL VOLUME: 283

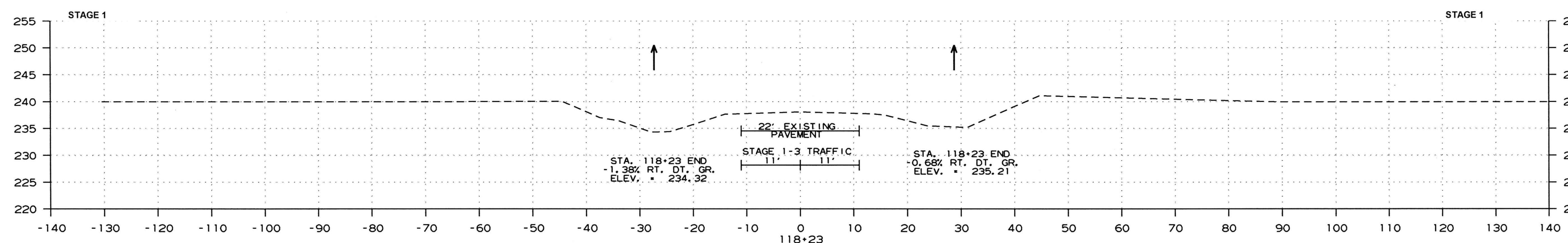
1/2/2019

R100950.DGN

HWY. 158
CROSS SECTION STA. 116+80 TO STA. 117+23

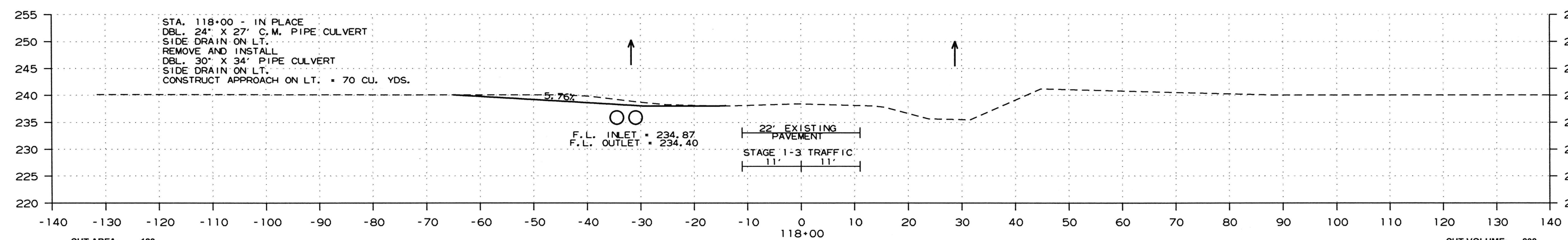
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 100950 | 57 | 57 |

(2) CROSS SECTIONS




CUT AREA: 60
FILL AREA: 5

CUT VOLUME: 78
FILL VOLUME: 3



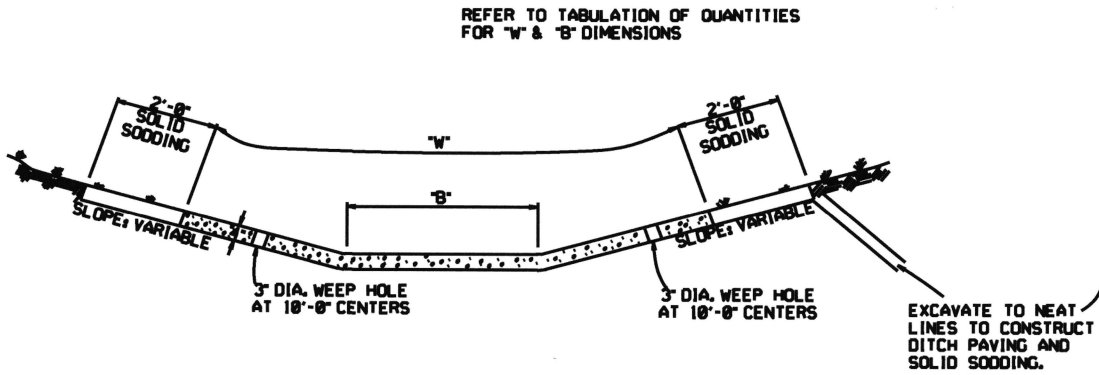

CUT AREA: 122
FILL AREA: 1

CUT VOLUME: 298
FILL VOLUME: 13

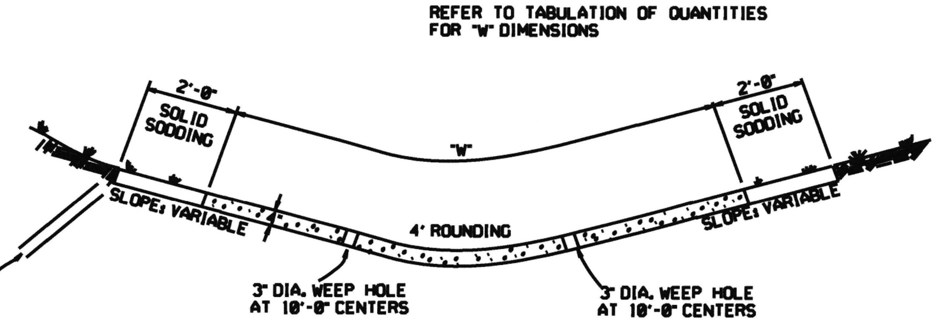
HWY. 158
CROSS SECTION STA. 118+00 TO STA. 118+23

1/2/2019

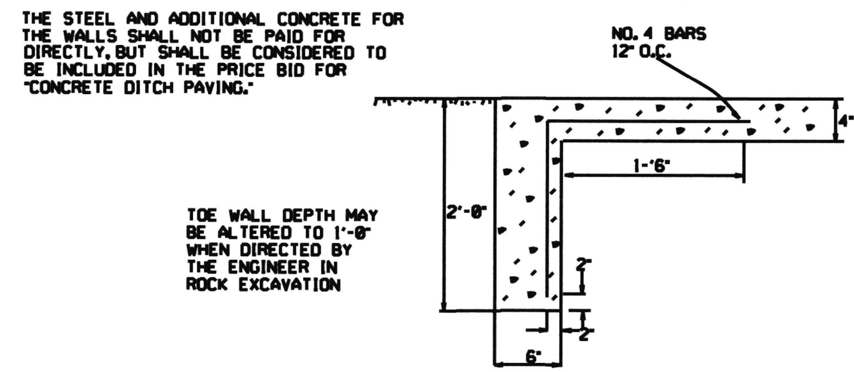
R100950.DGN



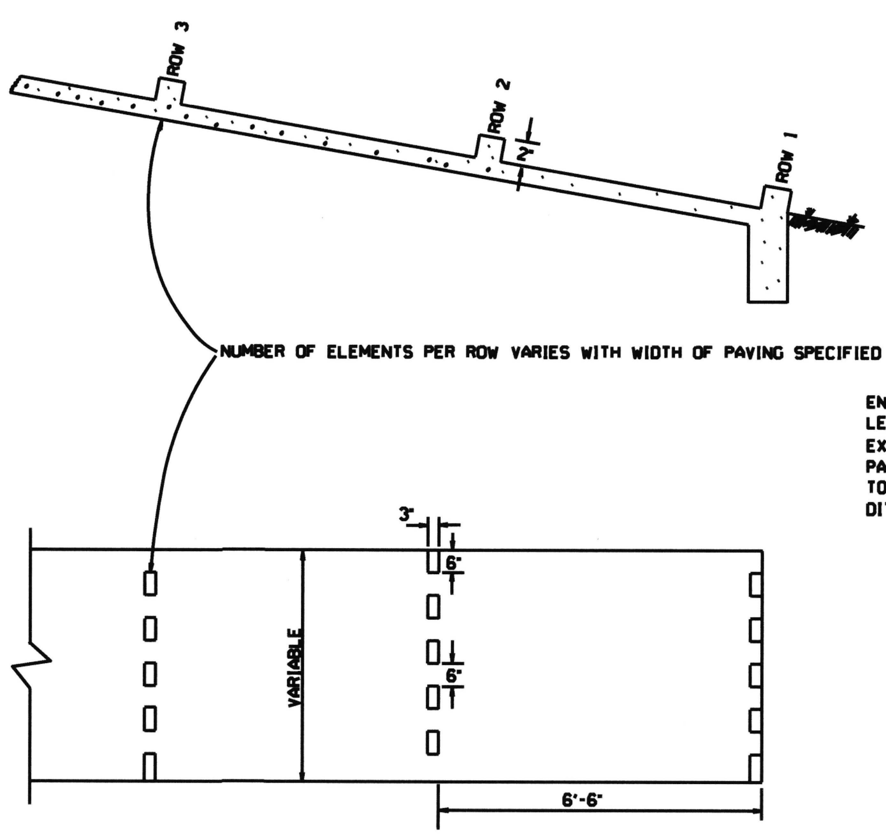

TYPE A




TYPE B




TOE WALL DETAIL FOR CONCRETE DITCH PAVING




ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

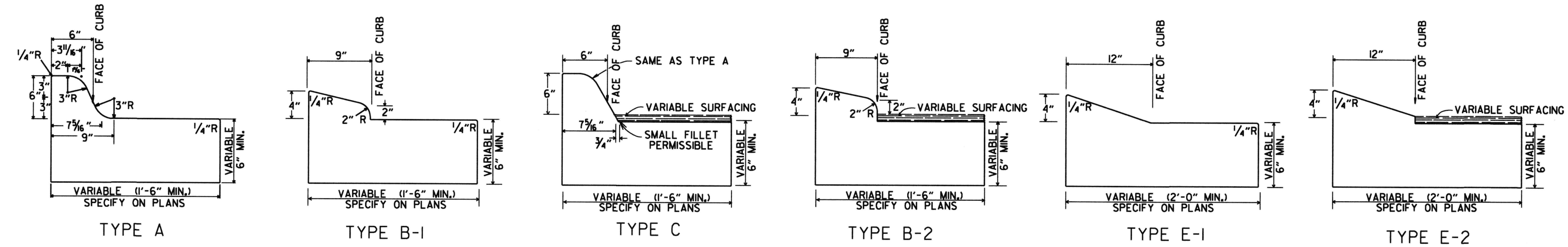
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

| DATE | REVISION | DATE FILM'D |
|---|---|---|
| 12-8-16 | CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE | |
| 11-17-10 | ADDED GENERAL NOTE | |
| 6-2-94 | ADDED GENERAL NOTE ABOUT SOLID SODDING | |
| 11-30-8 | ELIMINATED MIN. ROWS OF ELEMENTS | 111-30-89 |
| 7-15-88 | REVISED DISSIPATOR NOTE | 653-7-15-88 |
| 4-3-87 | REVISED ENERGY DISSIPATOR | 671-4-3-87 |
| 1-9-87 | MODIFIED NOTE ON ENERGY DISS. | 532-1-9-87 |
| 11-3-86 | ADDED NOTE TO ENERGY DISS. | 599-12-1-86 |
| 11-1-84 | ENERGY DISSIPATOR DETAILS ADDED | 508-11-1-84 |
| 11-1-84 | EXCAVATION DETAILS ADDED TYPED A & B | |
| 10-2-72 | REVISED AND REDRAWN | 508-10-2-72 |

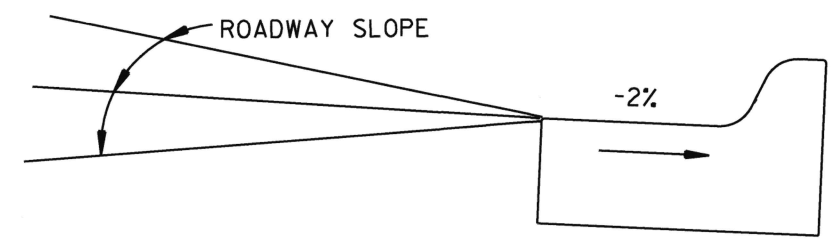
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

STANDARD DRAWING CDP-1

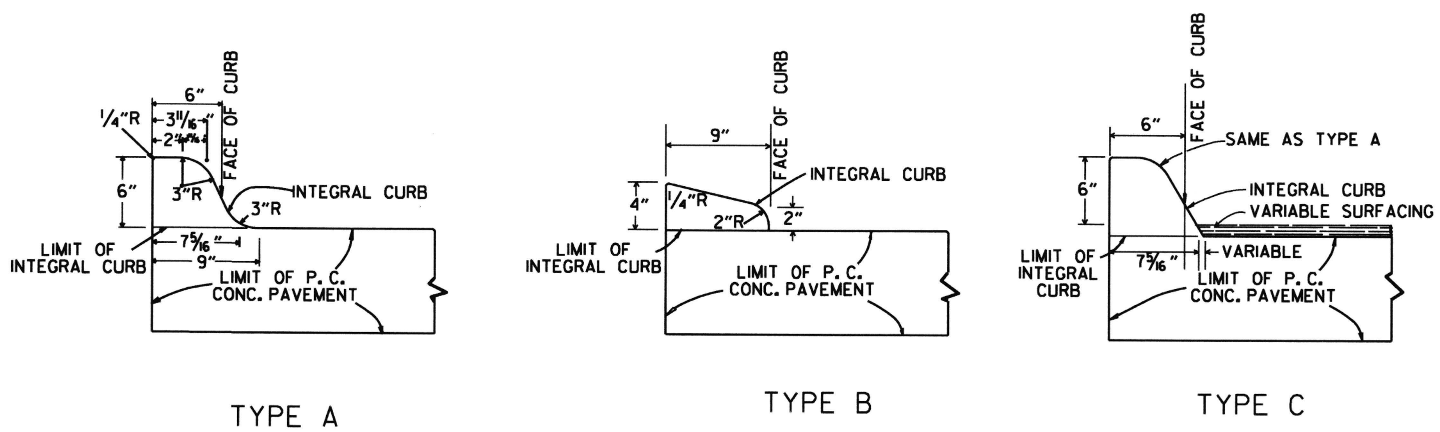



# CONCRETE COMBINATION CURB AND GUTTER

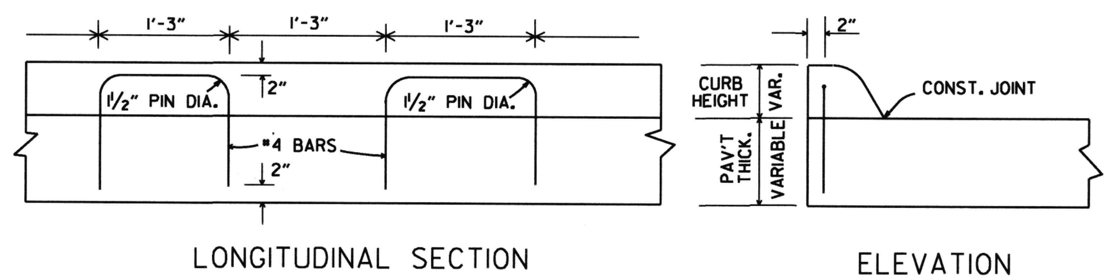



## DETAIL OF GUTTER SLOPE

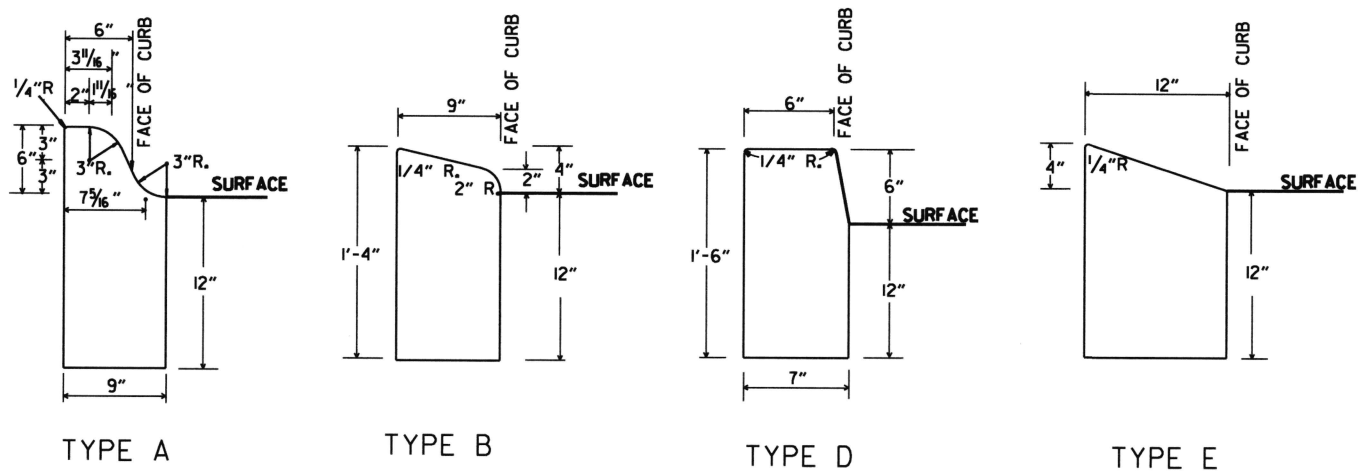
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



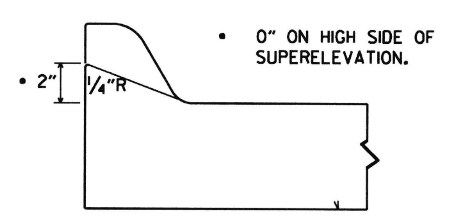

# INTEGRAL CURB




# ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB




# CONCRETE CURB




NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

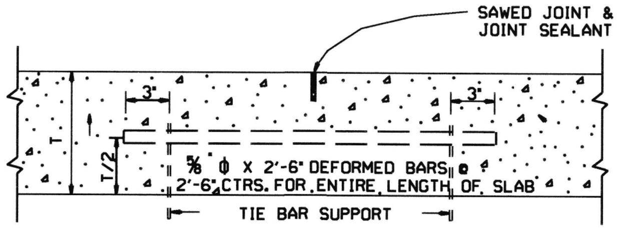
# DETAILS OF MODIFIED CURB

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 11-29-07 | REVISED GUTTER SLOPE & MODIFIED CURB DETAILS | |
| 11-10-05 | ADDED DETAILS OF TYPE E CURBS | |
| 11-16-01 | REVISED CONCRETE CURB TYPE B | |
| 11-18-98 | REVISED MODIFIED CURB | |
| 6-2-94 | ADDED NOTE TO SPECIAL MODIFIED CURB | |
| 8-5-93 | CORRECTED GUTTER SLOPE | 8-5-93 |
| 10-1-92 | ADDED DETAILS OF GUTTER SLOPE | 10-1-92 |
| 5-24-90 | ADDED DETAILS OF MODIFIED CURB | 5-24-90 |
| 11-30-89 | VARIBLE DEPTH TYPE A & B 1 | 11-30-89 |
| 7-15-88 | REVISED MODIFIED CURB | 630-7-15-88 |
| 11-1-73 | REVISED MODIFIED CURB | 500-11-1-73 |
| 10-2-72 | REVISED AND REDRAWN | 512-10-2-72 |

ARKANSAS STATE HIGHWAY COMMISSION

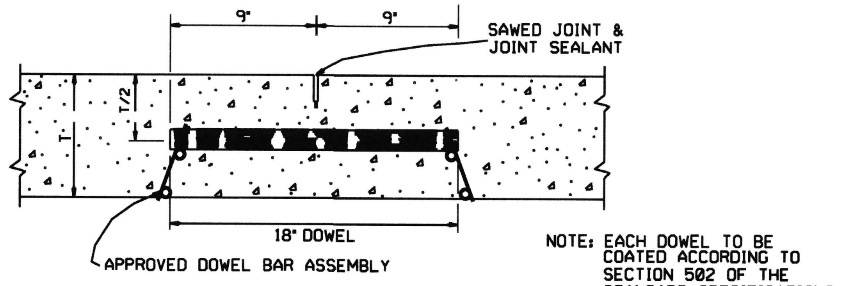
# CURBING DETAILS

STANDARD DRAWING CG-1



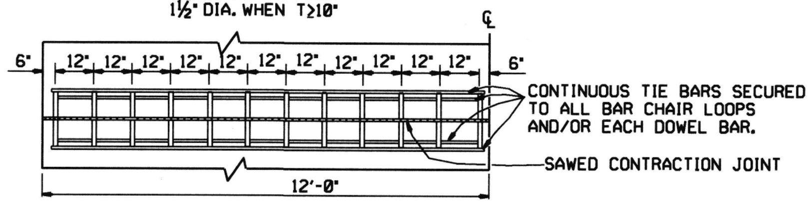

LONGITUDINAL JOINT

NOTE: THE TIE BAR SUPPORT SHOWN ABOVE MAY BE ELIMINATED IF OTHER APPROVED METHODS FOR PLACING AND SUPPORTING THE TIE BARS ARE PROVIDED.
TIE BARS SHALL BE 15" FROM TRANSVERSE JOINTS.




NOTE: EACH DOWEL TO BE COATED ACCORDING TO SECTION 502 OF THE STANDARD SPECIFICATIONS.

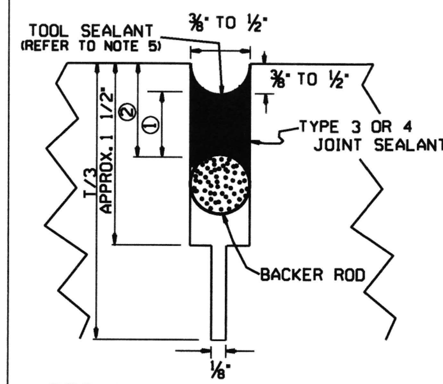
ROUND STEEL BAR DOWEL
1¼" DIA. WHEN T<10"
1½" DIA. WHEN T≥10"



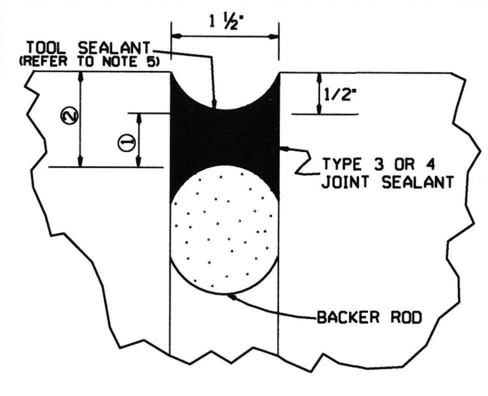

ONE-HALF 24' PAVEMENT
12 DOWELS
PLAN

NOTE: FOR 20' PAVEMENT USE 20 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR 15' PAVEMENT USE 15 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR 26' PAVEMENT USE 26 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR PAVEMENT WIDTHS OTHER THAN THOSE SHOWN ABOVE, USE DOWELS AT 12" CTRS. WITH 6" MAX. SPACING FROM C.L. TO FIRST BAR. DISTANCE FROM EDGE OF SLAB TO FIRST BAR SHALL BE ADJUSTED TO MAINTAIN 12" DOWEL BAR SPACING

CONTRACTION JOINT DETAILS




DETAIL OF SAWED CONTRACTION JOINT



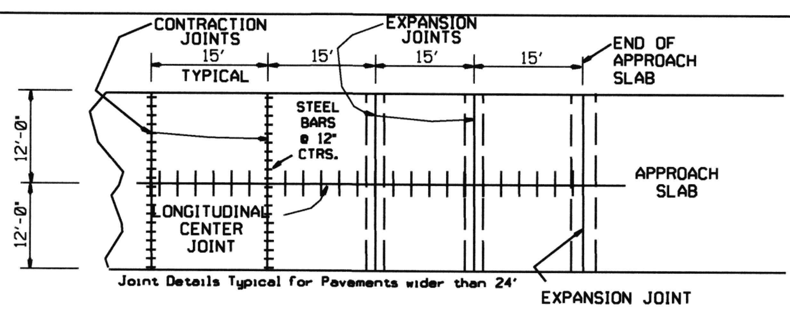

DETAIL OF EXPANSION JOINT

JOINT CONFIGURATION FOR TYPE 3 OR 4 JOINT SEALANT

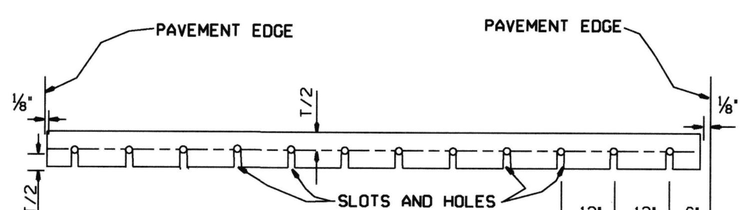
| JOINT WIDTH | SEALANT THICKNESS ① | BACKER ROD DIAMETER | BACKER ROD PLACEMENT DEPTH ② |
|---|---|---|---|
| INCHES | | | |
| ¼ | ¼ | ⅜ | ½ |
| ⅜ | ¼ | ½ | ½ |
| ½ | ¼ | ⅝ | ½ |
| ⅝ | 5/16 | ¾ | 9/16 |
| ¾ | ⅜ | ⅞ | ⅞ |
| 1 ½ | ¾ | 2 | 1 ¼ |

JOINT CONFIGURATION FOR TYPE 5 JOINT SEALANT

| JOINT WIDTH | SEALANT THICKNESS ① | BACKER ROD DIAMETER | BACKER ROD PLACEMENT DEPTH ② |
|---|---|---|---|
| INCHES | | | |
| ¼ | ½ | ⅜ | ¾ |
| ⅜ | ¾ | ½ | 1 |

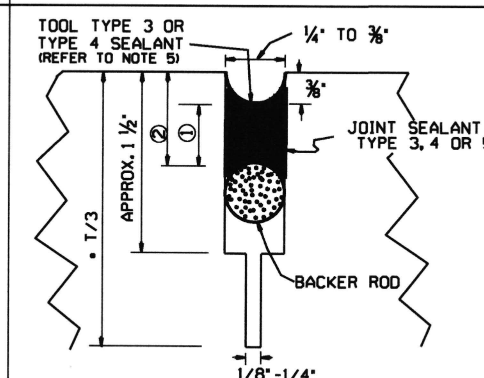



PLAN SHOWING EXPANSION JOINTS AT BRIDGE APPROACH SLABS



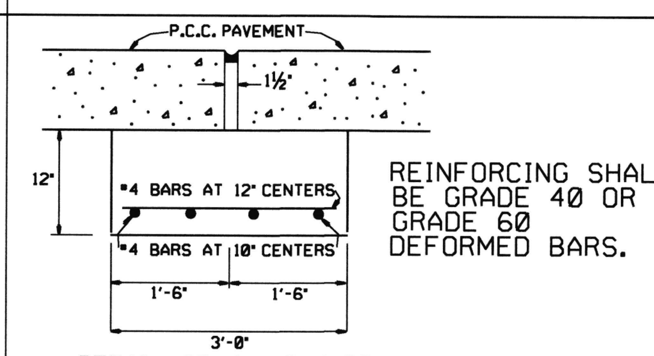

ELEVATION

NOTE: ALL DOWEL BARS SHALL CONFORM TO THE DETAILS FOR CONTRACTION JOINTS.




•NOTE: T/3 SAW CUT NOT REQUIRED FOR LONGITUDINAL CONSTRUCTION JOINT.

DETAIL OF SAWED LONGITUDINAL JOINT AND LONGITUDINAL CONSTRUCTION JOINT

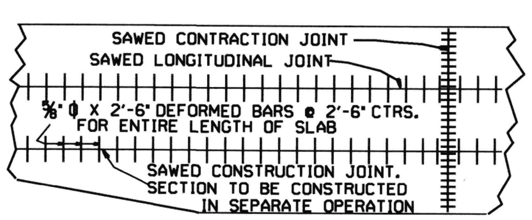


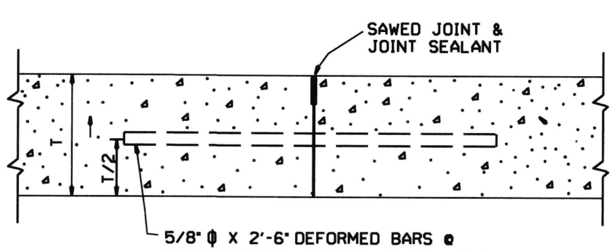

REINFORCING SHALL BE GRADE 40 OR GRADE 60 DEFORMED BARS.

DETAIL OF JOINT SUPPORT FOR EXPANSION JOINTS

GENERAL NOTES

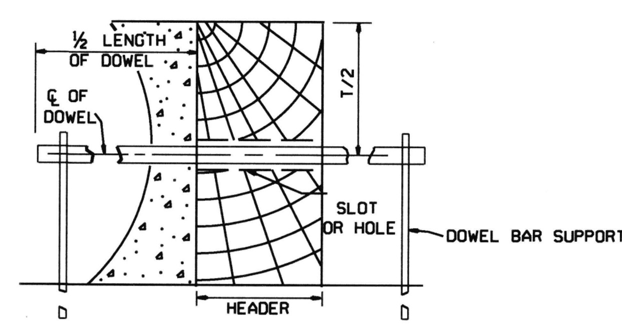
1. "T" DENOTES THICKNESS OF SLAB.
2. DOWEL BARS SHALL BE PLACED IN ACCORDANCE WITH THE DIMENSIONS SHOWN. A TOLERANCE OF PLUS OR MINUS ONE INCH WILL BE ALLOWED FOR THE VERTICAL AND LATERAL PLACEMENT AND A TOLERANCE OF PLUS OR MINUS ¼" WILL BE ALLOWED FOR THE TILT AND SKEW. DOWEL BARS SHALL BE FIELD COATED FOR A MINIMUM DISTANCE OF 2" GREATER THAN HALF THE LENGTH OF THE BAR WITH AN APPROVED GREASE AS A BOND BREAKER JUST PRIOR TO PLACEMENT OF CONCRETE.
3. THE EXPANSION JOINT SUPPORT MAY BE CONSTRUCTED WITH CLASS "A", "S" OR PAVING CONCRETE. PAYMENT FOR THE JOINT SUPPORT SHALL BE FOR THE CONTRACT UNIT PRICE BID FOR THE CLASS OF CONCRETE SPECIFIED IN THE PLANS. PAYMENT FOR ALL OTHER WORK AND MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE JOINT SUPPORT SHALL BE INCLUDED IN THE PRICE BID FOR THE ABOVE ITEMS.
4. CONTRACTION JOINTS SHALL BE CONSTRUCTED ON 15' CENTERS.
5. TOOLING NOT REQUIRED FOR SELF-LEVELING SILICONE.
6. UNLESS OTHERWISE SPECIFIED IN THE PLANS, CONCRETE SHOULDERS SHALL BE CONSTRUCTED ACCORDING TO THE DETAILS SHOWN HEREON. CONTRACTION JOINTS SHALL MATCH CONTRACTION JOINTS IN THE LANES.
7. TIE WIRES IN DOWEL BAR ASSEMBLIES SHALL NOT BE CUT PRIOR TO PLACEMENT OF PAVING CONCRETE.




NOTE: TIE BARS SHALL BE 15" FROM TRANSVERSE JOINTS.

LONGITUDINAL CONSTRUCTION JOINT




SECTION

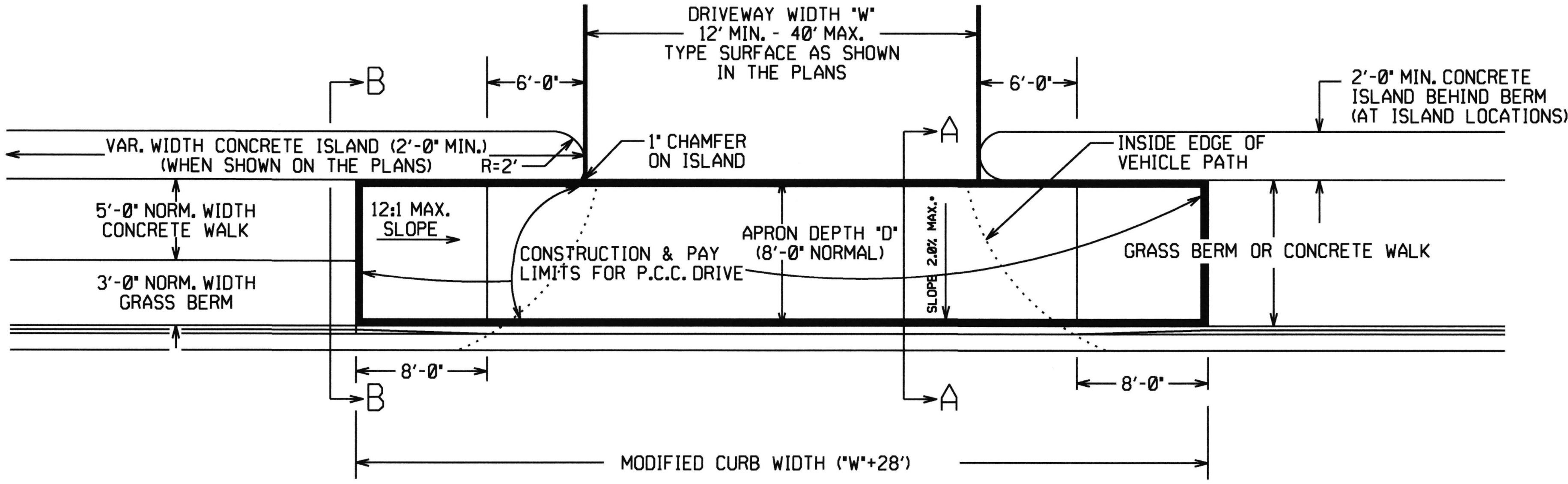
TRANSVERSE CONSTRUCTION JOINT

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 11-07-19 | REV. EXP. JOINT REF ON APP. SLAB | |
| 5-25-06 | ADDED GENERAL NOTE 7 | |
| 10-9-03 | REMOVED TIE BAR COATING & REVISED GENERAL NOTES | |
| 11-16-01 | ADDED TOOL SEALANT AND NOTE 5; REVISED NOTE 3 | |
| 4-26-96 | REVISED CONTRACTION JOINT NOTE | |
| 11- 3-94 | ADDED NOTE RE: REINF. BARS | |
| 4- 1-93 | REVISED DOWEL BARS & GEN. NOTES | 4- 1-93 |
| 10- 1-92 | REVISED DOWEL SPACING | 10- 1-92 |
| 8- 15-91 | ADDED SPAC FOR CONTR JTS & DEL KEYWAY | |
| 05-24-90 | REVISED TIE BAR, DOWEL & JOINT SIZE | |
| 01-25-90 | ADDED EXPANSION JOINT | 01-25-90 |
| 11-30-89 | CHANGED T/4+1 TO T/3+1 | 11-30-89 |
| 03-23-89 | ALTERED SAWED JOINT & ADDED NOTE | 512-03-23-89 |
| 07-15-88 | REVISED AND REDRAWN | 632-07-15-88 |

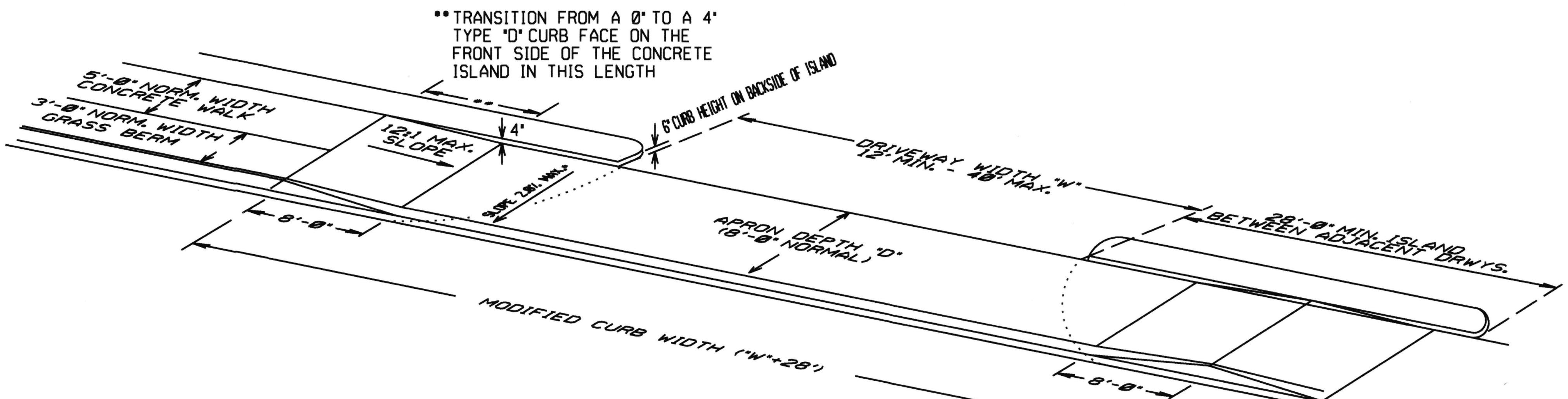
ARKANSAS STATE HIGHWAY COMMISSION

TRANSVERSE & LONGITUDINAL JOINTS FOR CONCRETE PAVEMENT (NON-REINFORCED)

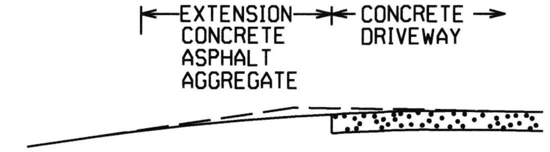
STANDARD DRAWING CPTJ - 6A




PLAN VIEW




ISOMETRIC VIEW




EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

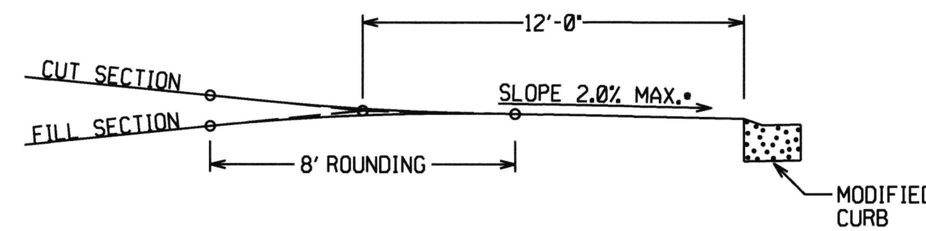
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE (1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

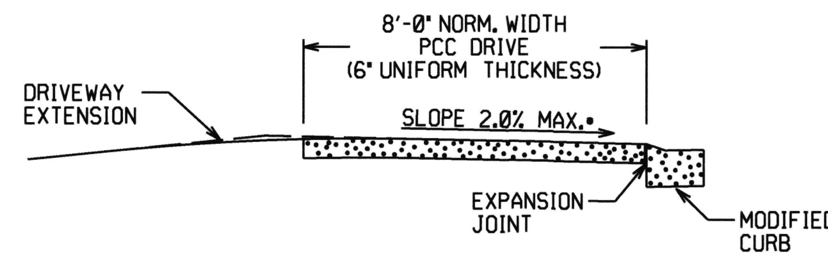
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

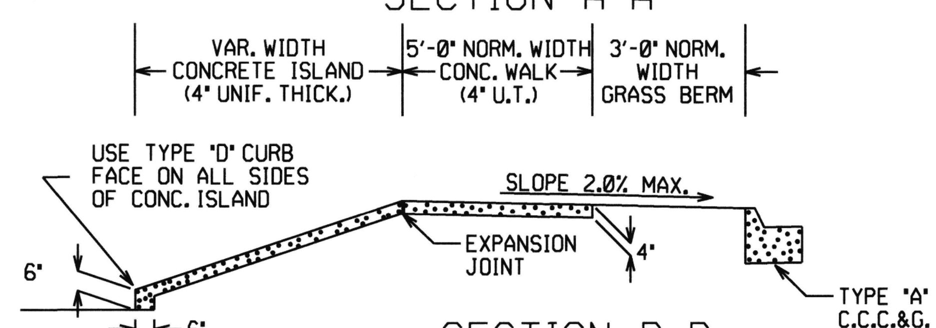



DRIVEWAY VERTICAL ALIGNMENT DETAILS

• NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



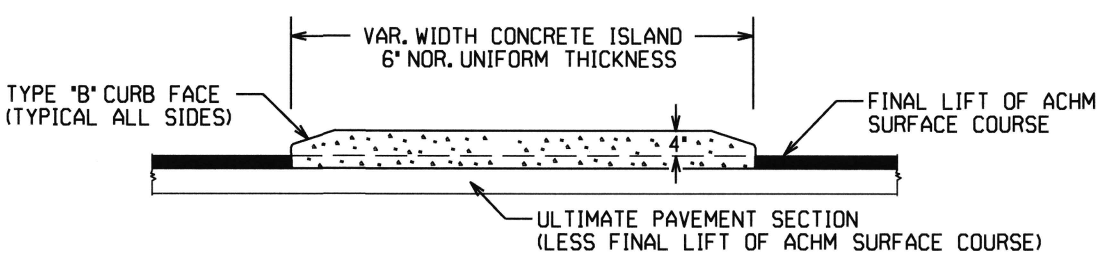

SECTION A-A

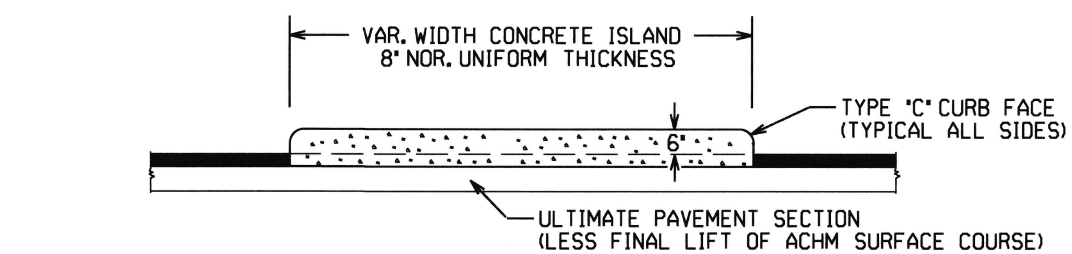



SECTION B-B

CURBED ISLAND BEHIND WALK

REFER TO PLANS FOR TYPE OF CURB FACE TO BE USED. NO DIRECT PAYMENT WILL BE MADE FOR THE CURB FACES SHOWN ON THE ISLAND DETAILS. PAYMENT FOR THE CURB FACE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM "CONCRETE ISLAND".



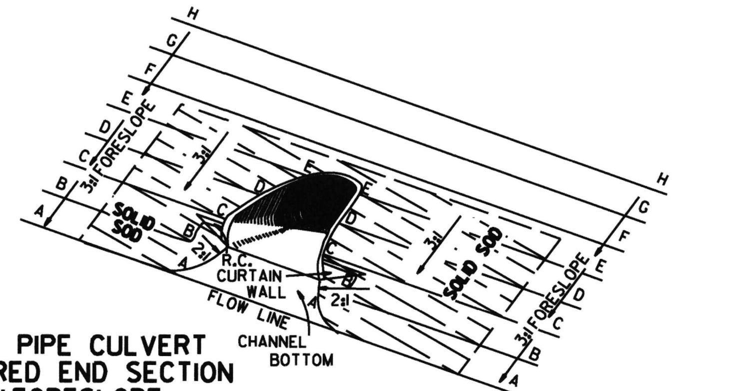

CURBED ISLANDS FOR CHANNELIZATION

| DATE REV | DATE FILMED | DESCRIPTION |
|---|---|---|
| 11-07-19 | | REVISED WALK DETAILS |
| 2-27-14 | | REVISED PLAN & ISOMETRIC VIEW |
| 11-29-07 | | ADDED CHANNELIZATION ISLAND WITH TYPE C CURB FACE & REVISED DRIVEWAY SLOPE NOTE & VERTICAL ALIGNMENT DETAIL |
| 11-10-05 | | REV. APRON SLOPE & DEPTH OF AGG. BASE. |
| 8-22-02 | | ADDED ISLAND DETAILS & NOTES |
| 3-30-00 | | REV. MOD. CURB WIDTH & TRANS. NOTE |
| 11-19-98 | | REVISED NOTES |
| 11-18-98 | | REDRAWN AND REISSUED |

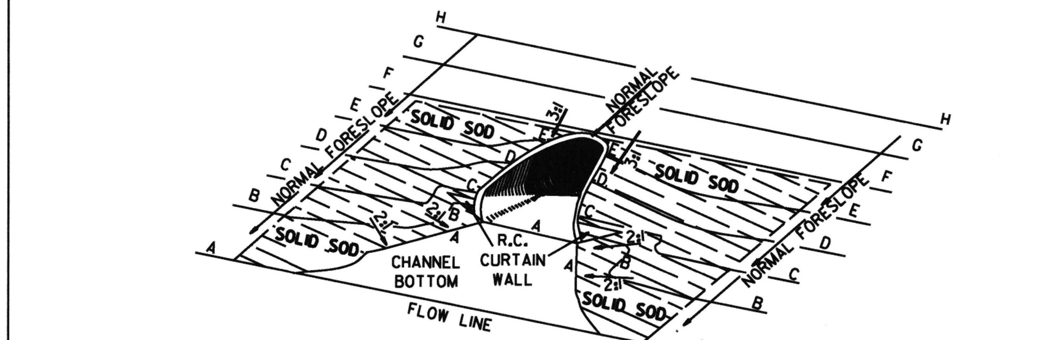
ARKANSAS STATE HIGHWAY COMMISSION

**DETAILS OF DRIVEWAYS & ISLANDS**

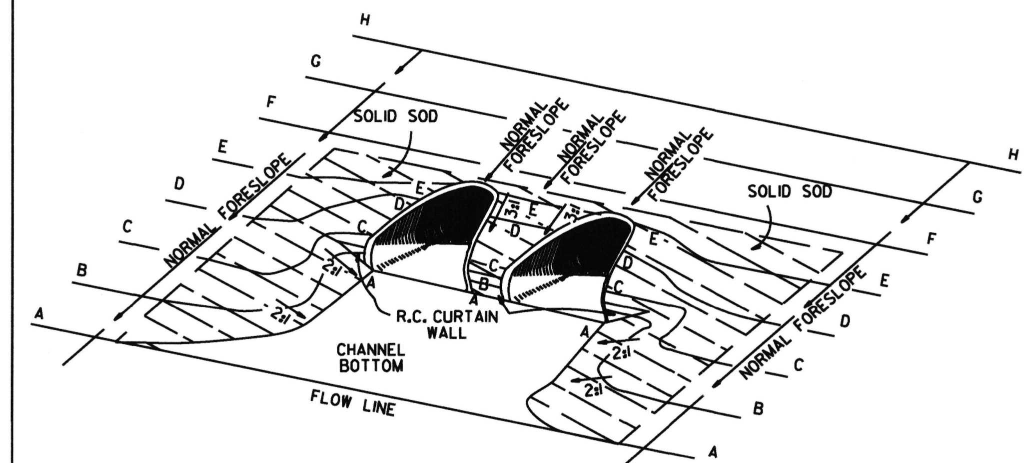
STANDARD DRAWING DR-1



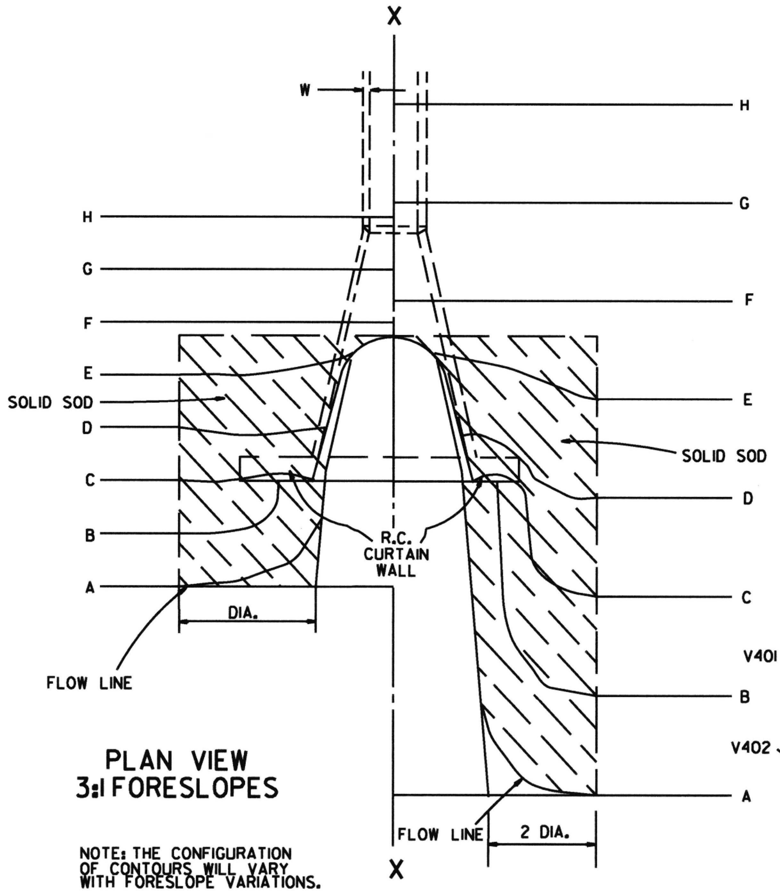

TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE




TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES




TYPICAL MULTIPLE PIPE CULVERT
WITH FLARED END SECTIONS
& FLATTENED ADJACENT SLOPES




PLAN VIEW
3:1 FORESLOPES

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

PLAN VIEW
FLATTENED FORESLOPES

## R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

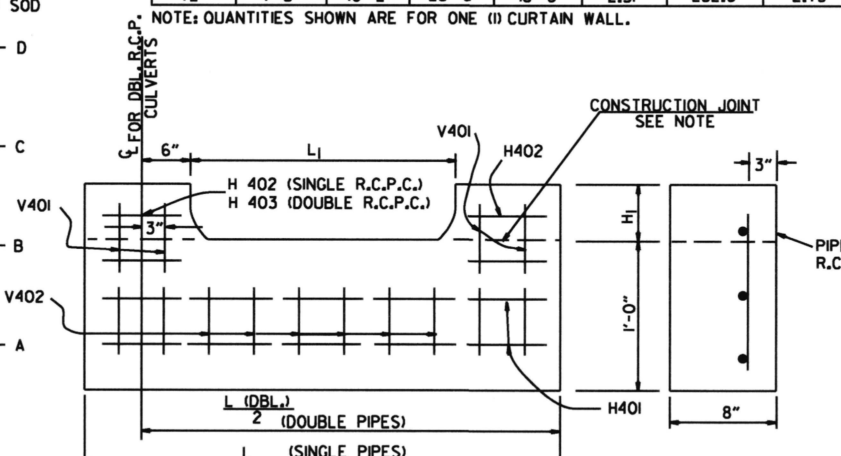
| PIPE DIA. | $H_1$ | $L_1$ | L | L (DBL.)/2 | SINGLE R.C.P.C. CONC. | SINGLE R.C.P.C. REINF. STEEL | DOUBLE R.C.P.C. CONC. | DOUBLE R.C.P.C. REINF. STEEL |
|---|---|---|---|---|---|---|---|---|
| | | | | | CU. YDS. | LBS. | CU. YDS. | LBS. |
| 18" | 11½" | 3'-5" | 8'-0" | 6'-3" | 0.31 | 27.7 | 0.45 | 39.5 |
| 24" | 1'-0½" | 4'-6" | 9'-6" | 7'-6" | 0.37 | 33.4 | 0.53 | 48.0 |
| 30" | 1'-3½" | 5'-7" | 11'-0" | 9'-0" | 0.45 | 39.0 | 0.67 | 59.0 |
| 36" | 1'-7" | 6'-8" | 13'-0" | 10'-6" | 0.58 | 52.6 | 0.83 | 73.9 |
| 42" | 2'-1½" | 7'-3" | 15'-6" | 12'-0" | 0.82 | 77.1 | 1.10 | 100.7 |
| 48" | 2'-5" | 7'-10" | 17'-0" | 13'-0" | 0.98 | 94.9 | 1.27 | 120.4 |
| 54" | 2'-9½" | 8'-5" | 18'-6" | 14'-0" | 1.16 | 115.8 | 1.47 | 143.7 |
| 60" | 3'-4" | 9'-0" | 20'-6" | 15'-6" | 1.47 | 149.7 | 1.84 | 180.3 |
| 72" | 4'-5" | 10'-2" | 25'-6" | 18'-6" | 2.31 | 232.6 | 2.73 | 271.0 |

NOTE: QUANTITIES SHOWN ARE FOR ONE (1) CURTAIN WALL.

## REINFORCING STEEL SCHEDULE

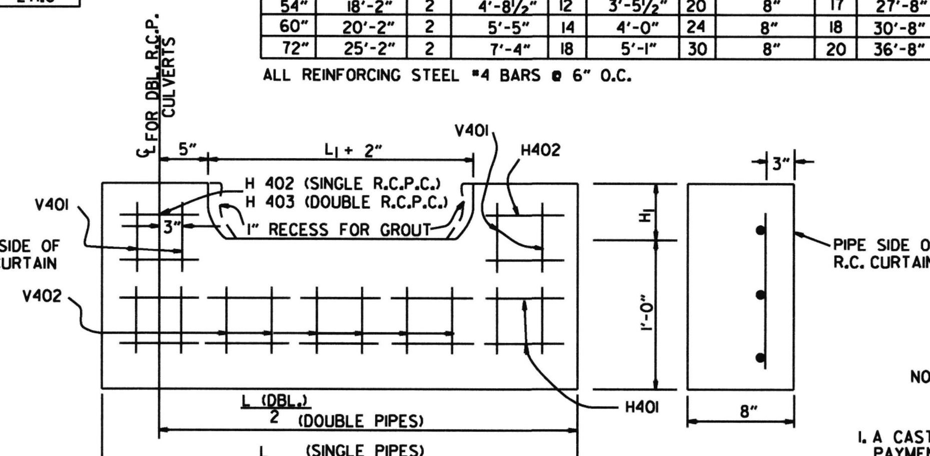
| PIPE DIA. | SINGLE R.C. PIPE CULVERT H401 L | NO. | H402 L | NO. | V401 L | NO. | V402 L | NO. | DOUBLE R.C. PIPE CULVERT H401 L | NO. | H402 L | NO. | H403 L | NO. | V401 L | NO. | V402 L | NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18" | 7'-8" | 2 | 1'-11½"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

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




CAST-IN-PLACE

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




PRECAST

NOTE: THE PRECAST CURTAIN WALL WILL BE SET AND BACKFILLED WITH COMPACTED MATERIAL. THE FLARED END SECTION SHALL THEN BE SET IN PLACE AND THE 1" RECESS FILLED WITH GROUT. WHERE "L" EXCEEDS 11' THE CURTAIN WALL MAY BE CAST IN TWO (2) OR MORE SECTIONS. THE METHOD OF JOINING THE SECTIONS FOR INSTALLATION SHALL BE APPROVED BY THE ENGINEER.

R.C. CURTAIN WALL DETAILS

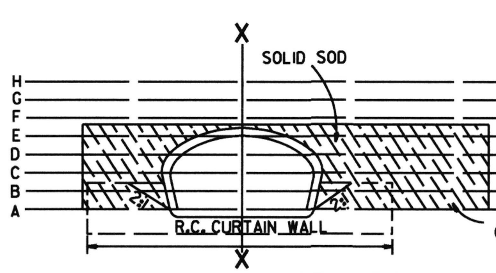
## SOLID SODDING

| PIPE DIA. | SINGLE R.C.P.C. 3:1 | SINGLE R.C.P.C. 4:1 | SINGLE R.C.P.C. 6:1 | DOUBLE R.C.P.C. 3:1 | DOUBLE R.C.P.C. 4:1 | DOUBLE R.C.P.C. 6:1 |
|---|---|---|---|---|---|---|
| | SQ. YDS. | | | SQ. YDS. | | |
| 18" | 5 | 7 | 12 | 6 | 8 | 13 |
| 24" | 8 | 12 | 19 | 9 | 13 | 20 |
| 30" | 13 | 18 | 29 | 14 | 19 | 30 |
| 36" | 17 | 26 | 41 | 18 | 28 | 43 |
| 42" | 23 | 35 | 55 | 25 | 37 | 57 |
| 48" | 29 | 46 | 68 | 31 | 48 | 70 |
| 54" | 35 | 57 | 85 | 37 | 59 | 87 |
| 60" | 45 | 62 | 104 | 48 | 65 | 107 |
| 72" | 64 | 92 | 156 | 67 | 95 | 159 |

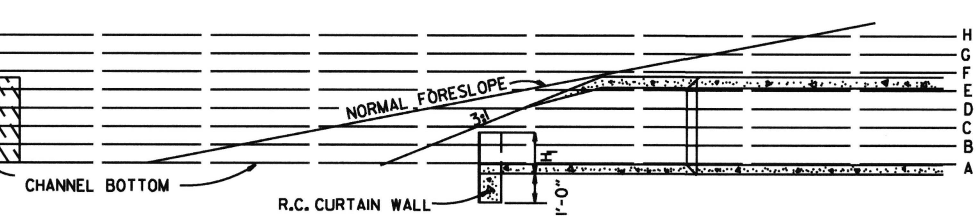
NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W/10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.




END VIEW



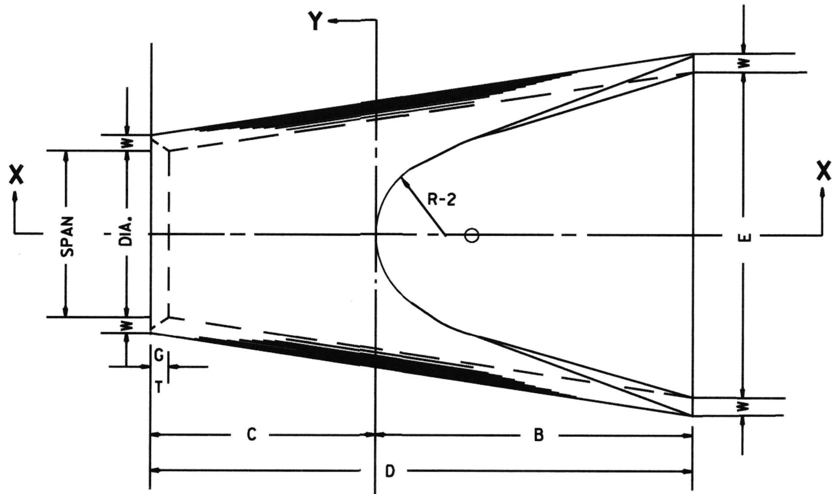

SECTIONAL VIEW "X-X"

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

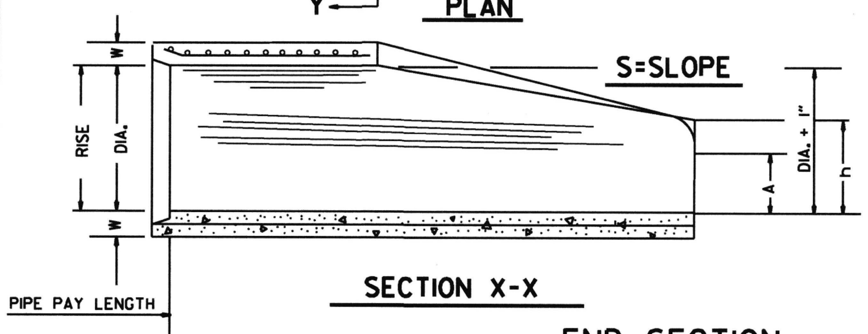
ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-1



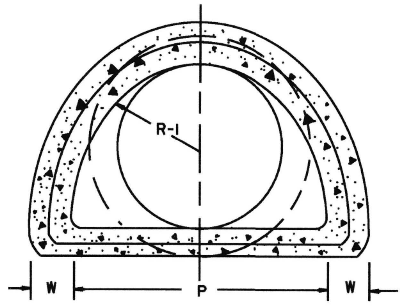

PLAN



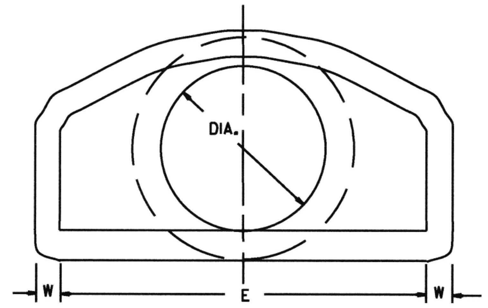

SECTION X-X

## TABLE OF DIMENSIONS

| DIA. | WALL | A | B | C | D | E | S | DIA. + 1" | P | R-1 | R-2 | G-T | WT. | h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 18" | 2 1/2" | 9" | 2'-3" | 3'-10" | 6'-1" | 3'-0" | 3:1 | 19" | 29" | 15 1/2" | 12" | 2" | 1000 | 1'-0 1/2" |
| | | | | | | | | | | | | | | |
| 24" | 3" | 9 1/2" | 3'-7 1/2" | 2'-6" | 6'-1 1/2" | 4'-0" | 3:1 | 25" | 33 3/16" | 16 13/16" | 14" | 2 1/2" | 1600 | 1'-1 1/2" |
| | | | | | | | | | | | | | | |
| 30" | 3 1/2" | 1'-0" | 4'-6" | 1'-7 3/4" | 6'-1 3/4" | 5'-0" | 3:1 | 31" | 37" | 18 1/2" | 15" | 3 1/4" | 1940 | 1'-4 5/8" |
| 36" | 4" | 1'-3" | 5'-3" | 2'-10 3/4" | 8'-1 3/4" | 6'-0" | 3:1 | 37" | 47 13/16" | 24 5/16" | 20" | 3 1/2" | 4100 | 1'-8" |
| 42" | 4 1/2" | 1'-9" | 5'-3" | 2'-11" | 8'-2" | 6'-6" | 3:1 | 43" | 53 7/8" | 27 1/2" | 22" | 3 1/2" | 5380 | 2'-2 1/2" |
| 48" | 5" | 2'-0" | 6'-0" | 2'-2" | 8'-2" | 7'-0" | 3:1 | 49" | 56 1/2" | 28 1/2" | 22" | 3 1/2" | 6550 | 2'-6" |
| 54" | 5 1/2" | 2'-4" | 6'-6" | 1'-10" | 8'-4" | 7'-6" | 3:1 | 55" | 65 1/2" | 33 1/8" | 24" | 4" | 8750 | 2'-10 1/2" |
| 60" | 6" | 2'-10" | 6'-6" | 1'-10" | 8'-4" | 8'-0" | 3:1 | 61" | 72 1/2" | 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" |




SECTION Y-Y




END VIEW

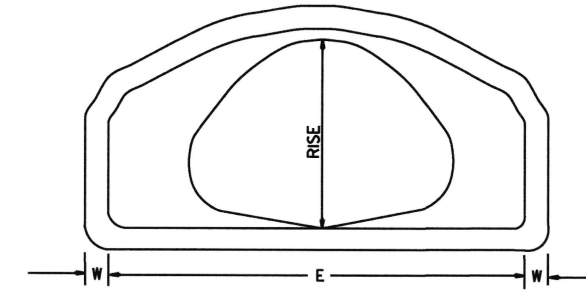
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

## END SECTION
## FOR REINFORCED CONCRETE PIPE CULVERTS

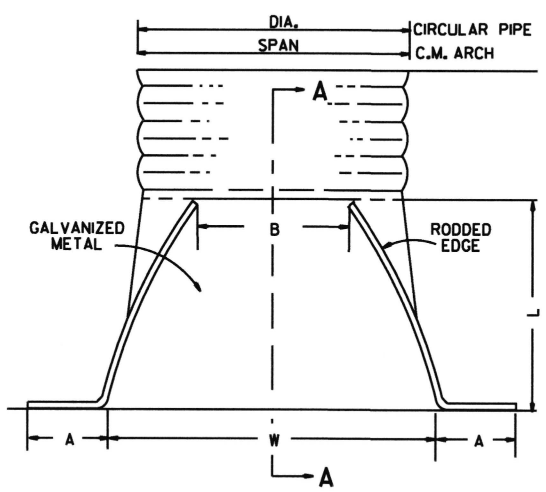
## ARCH PIPE

| 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" | 1 1/2" | 2 1/2:1 |
| 18 | 22 | 22 | 13 1/2 | 14 | 2 1/2" | 5" | 2'-0" | 4'-1" | 6'-1" | 3'-6" | 32 1/8" | 13" | 2 1/2" | 2 1/2:1 |
| 21 | 26 | 26 | 15 1/2 | 16 | 2 3/4" | 7" | 2'-3" | 3'-10" | 6'-1" | 4'-0" | 34 1/8" | 14" | 2 1/2" | 2 1/2:1 |
| 24 | 28 1/2 | 29 | 18 | 18 | 3" | 9" | 2'-3" | 3'-10" | 6'-1" | 5'-0" | 36 13/16" | 15" | 2 1/2" | 2 1/2:1 |
| 30 | 36 1/4 | 36 | 22 1/2 | 23 | 3 1/2" | 10" | 3'-1" | 3'-0 1/2" | 6'-1 1/2" | 6'-0" | 47 13/16" | 20" | 3" | 2 1/2:1 |
| 36 | 43 3/4 | 44 | 26 5/8 | 27 | 4" | 10 1/2" | 4'-0" | 2'-1 1/2" | 6'-1 1/2" | 6'-6" | 54 5/16" | 22" | 3 1/2" | 2 1/2:1 |
| 42 | 51 1/8 | 51 | 31 5/16 | 31 | 4 1/2" | 11 1/2" | 4'-7" | 1-10 1/4" | 6'-5 1/4" | 7'-2" | 59 1/2" | 23" | 3 3/4" | 2 1/2:1 |
| 48 | 58 1/2 | 59 | 36 | 36 | 5" | 1'-3" | 5'-3" | 2'-10 3/4" | 8'-1 3/4" | 7'-10" | 70 5/16" | 24" | 4 1/4" | 2 1/2:1 |
| 54 | 65 | 65 | 40 | 40 | 5 1/2" | 1'-7" | 5'-3" | 2'-11" | 8'-2" | 8'-6" | 72 1/16" | 24" | 4 3/4" | 2 1/4:1 |
| 60 | 73 | 73 | 45 | 45 | 6" | 1'-10" | 5'-6" | 2'-8" | 8'-2" | 9'-0" | 77 13/16" | 24" | 5" | 2 1/4:1 |

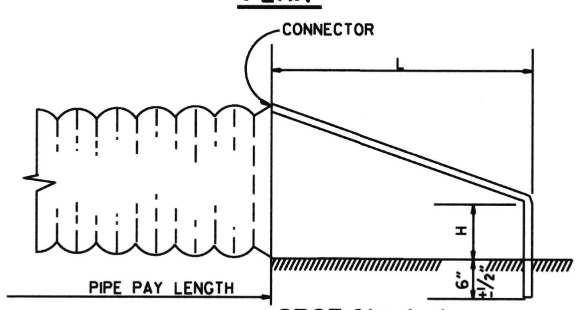
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.




END VIEW
CONCRETE ARCH PIPE

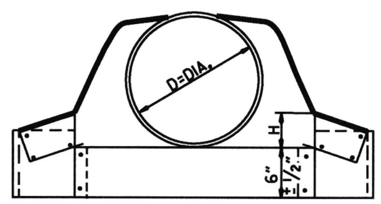



PLAN




SECTION A-A

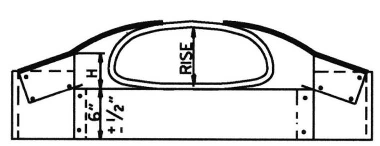
NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.




CIRCULAR PIPE

## CIRCULAR PIPE

| D. DIA. | GAUGE | A 1" ± | B. MAX. | H 1" ± | L 1 1/2" ± | W 2" ± | S |
|---|---|---|---|---|---|---|---|
| | | INCHES | | | | | |
| 12 | 16 | 6 | 6 | 6 | 21 | 24 | 2 1/2:1 |
| 15 | 16 | 7 | 8 | 6 | 26 | 30 | 2 1/2:1 |
| 18 | 16 | 8 | 10 | 6 | 31 | 36 | 2 1/2:1 |
| 21 | 16 | 9 | 12 | 6 | 36 | 42 | 2 1/2:1 |
| 24 | 16 | 10 | 13 | 6 | 41 | 48 | 2 1/2:1 |
| 30 | 14 | 12 | 16 | 8 | 51 | 60 | 2 1/2:1 |
| 36 | 14 | 14 | 19 | 9 | 60 | 72 | 2 1/2:1 |
| 42 | 12 | 16 | 22 | 11 | 69 | 84 | 2 1/2:1 |
| 48 | 12 | 18 | 27 | 12 | 78 | 90 | 2 1/2:1 |
| 54 | 12 | 18 | 30 | 12 | 84 | 102 | 2:1 |
| 60 | 12 | 18 | 33 | 12 | 87 | 114 | 1 3/4:1 |
| 66 | 12 | 18 | 36 | 12 | 87 | 120 | 1 1/2:1 |
| 72 | 12 | 18 | 39 | 12 | 87 | 126 | 1 1/3:1 |

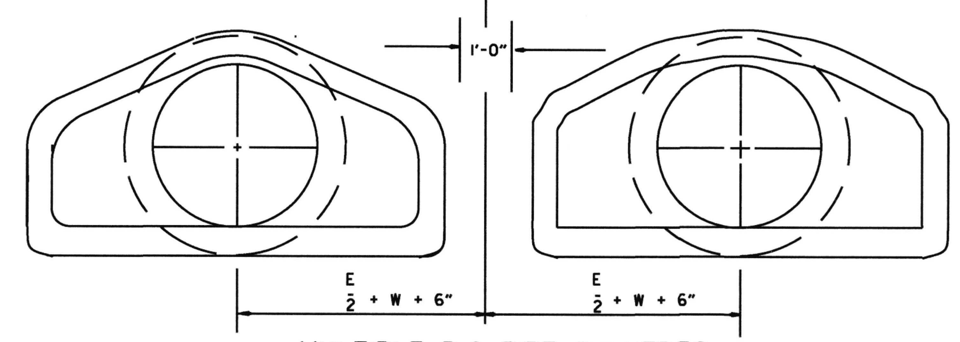



C.M. ARCH PIPE

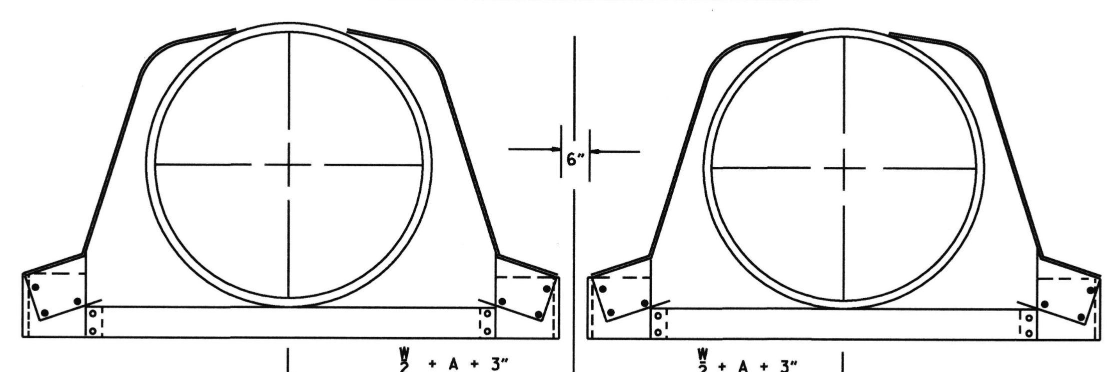
## C.M. ARCH PIPE

| EQUIV. DIA. | SPAN | RISE | A 1" ± | B MAX. | H 1" ± | L 1 1/2" ± | W 2" ± | S | GAUGE |
|---|---|---|---|---|---|---|---|---|---|
| | INCHES | | | | | | | | |
| 15" | 17 | 13 | 7 | 9 | 6 | 19 | 30 | 2 1/2:1 | 16 |
| 18" | 21 | 15 | 7 | 10 | 6 | 23 | 36 | 2 1/2:1 | 16 |
| 21" | 24 | 18 | 8 | 12 | 6 | 28 | 42 | 2 1/2:1 | 16 |
| 24" | 28 | 20 | 9 | 14 | 6 | 32 | 48 | 2 1/2:1 | 16 |
| 30" | 35 | 24 | 10 | 16 | 6 | 39 | 60 | 2 1/2:1 | 14 |
| 36" | 42 | 29 | 12 | 18 | 8 | 46 | 75 | 2 1/2:1 | 14 |
| 42" | 49 | 33 | 13 | 21 | 9 | 53 | 85 | 2 1/2:1 | 12 |
| 48" | 57 | 38 | 18 | 26 | 12 | 63 | 90 | 2 1/2:1 | 12 |
| 54" | 64 | 43 | 18 | 30 | 12 | 70 | 102 | 2 1/4:1 | 12 |
| 60" | 71 | 47 | 18 | 33 | 12 | 77 | 114 | 2 1/4:1 | 12 |

## END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS




MULTIPLE R.C. PIPE CULVERTS



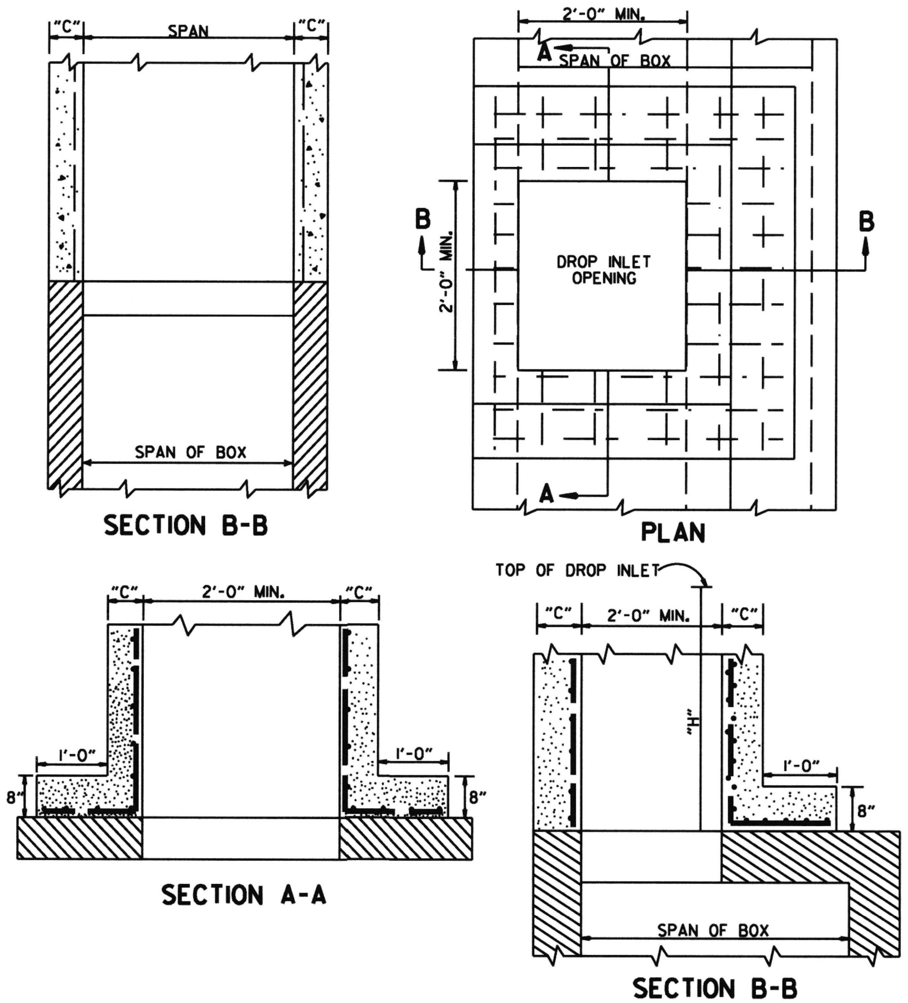

MULTIPLE C.M. PIPE CULVERTS

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

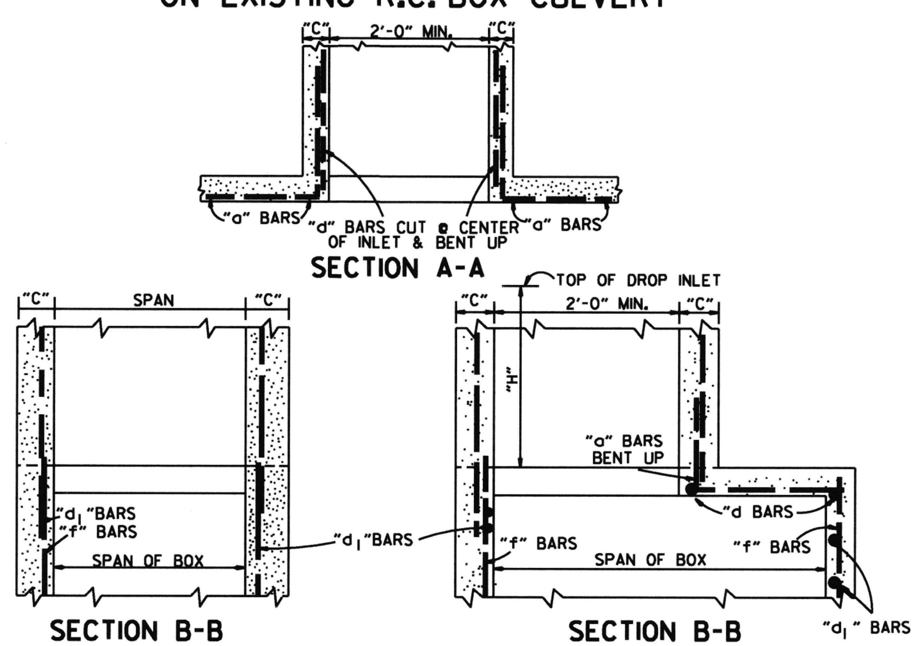
ARKANSAS STATE HIGHWAY COMMISSION

# FLARED END SECTION

STANDARD DRAWING FES-2



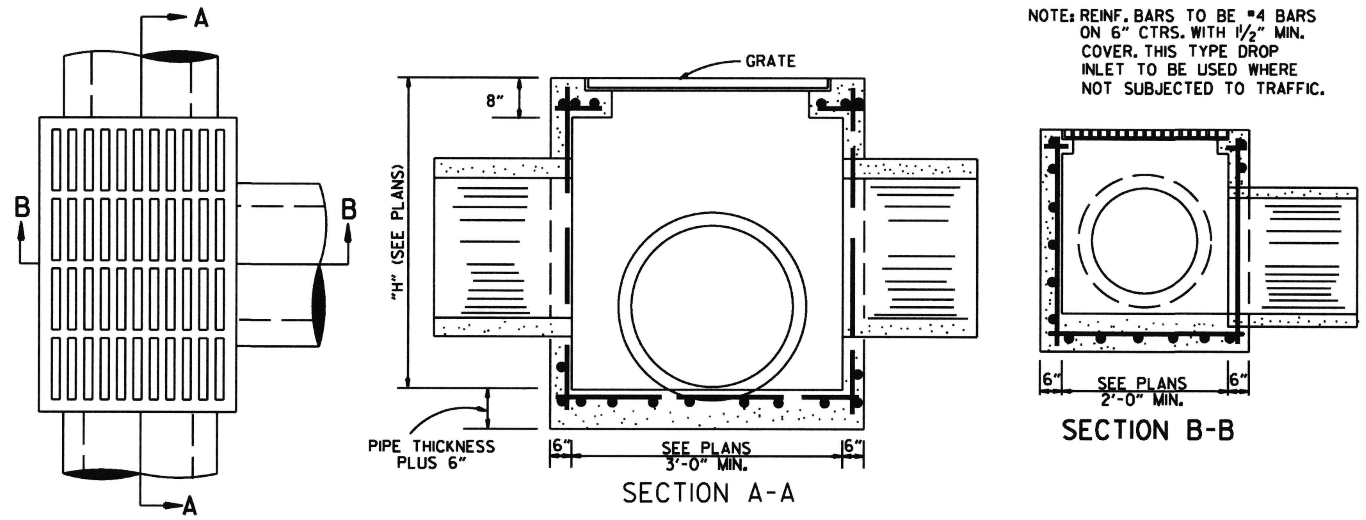

METHOD OF CONSTRUCTING DROP INLET
ON EXISTING R.C. BOX CULVERT



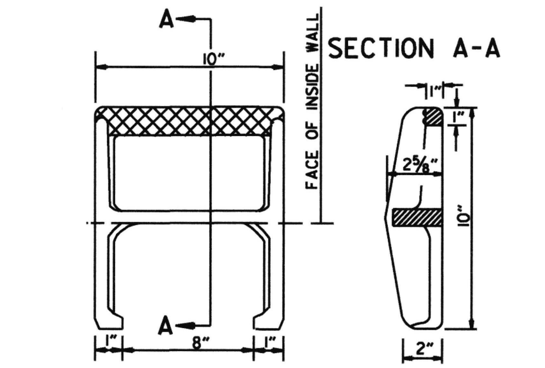

METHOD OF CONSTRUCTING DROP INLET
ON NEW R.C. BOX CULVERT

NOTE: "C" DIMENSIONS AND REINFORCING BAR SIZES, SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWING FOR DROP INLET.

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE DROP INLET TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.




DROP INLET (TYPE E)

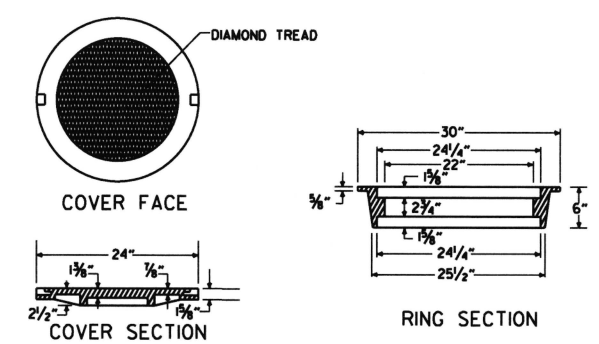



APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

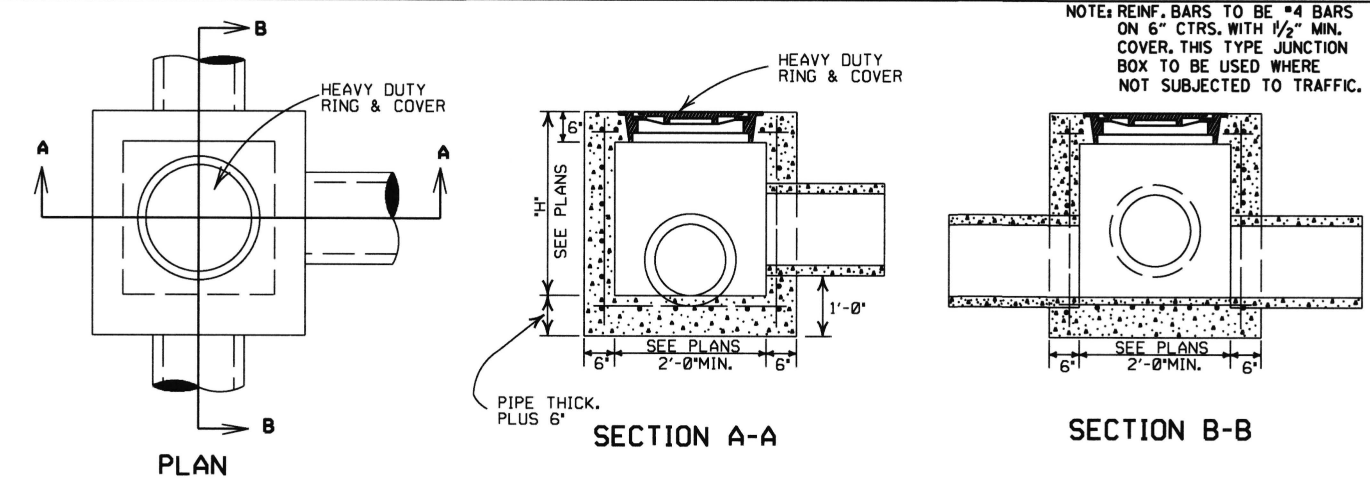
DETAIL OF
STEP FOR DROP INLET



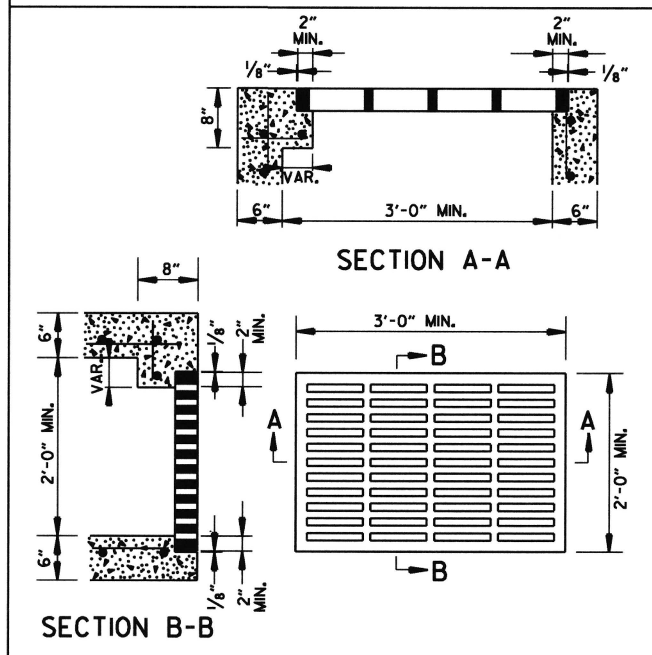

APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE JUNCTION BOX TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

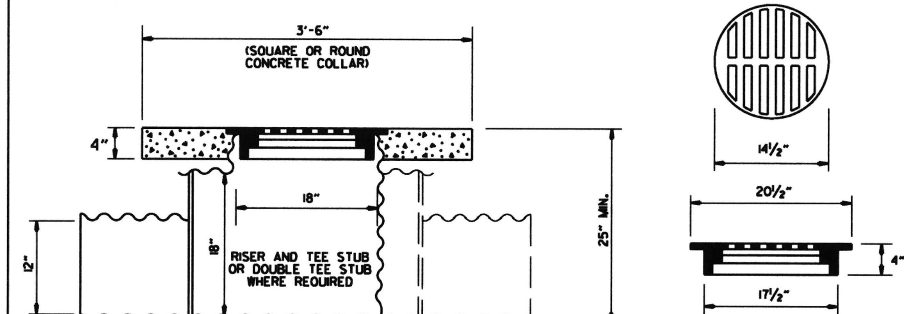



JUNCTION BOX (TYPE E)




APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET




NOTE: CONCRETE COLLAR TO BE CAST IN PLACE. 12" PIPE CULVERTS TO BE MEASURED AND PAID FOR AS " 12" SIDE DRAIN ".

USE NEENAH R-5901-C OR EQUIVALENT BICYCLE SAFE FRAME AND GRATE

DETAIL OF YARD DRAIN

GENERAL NOTES:

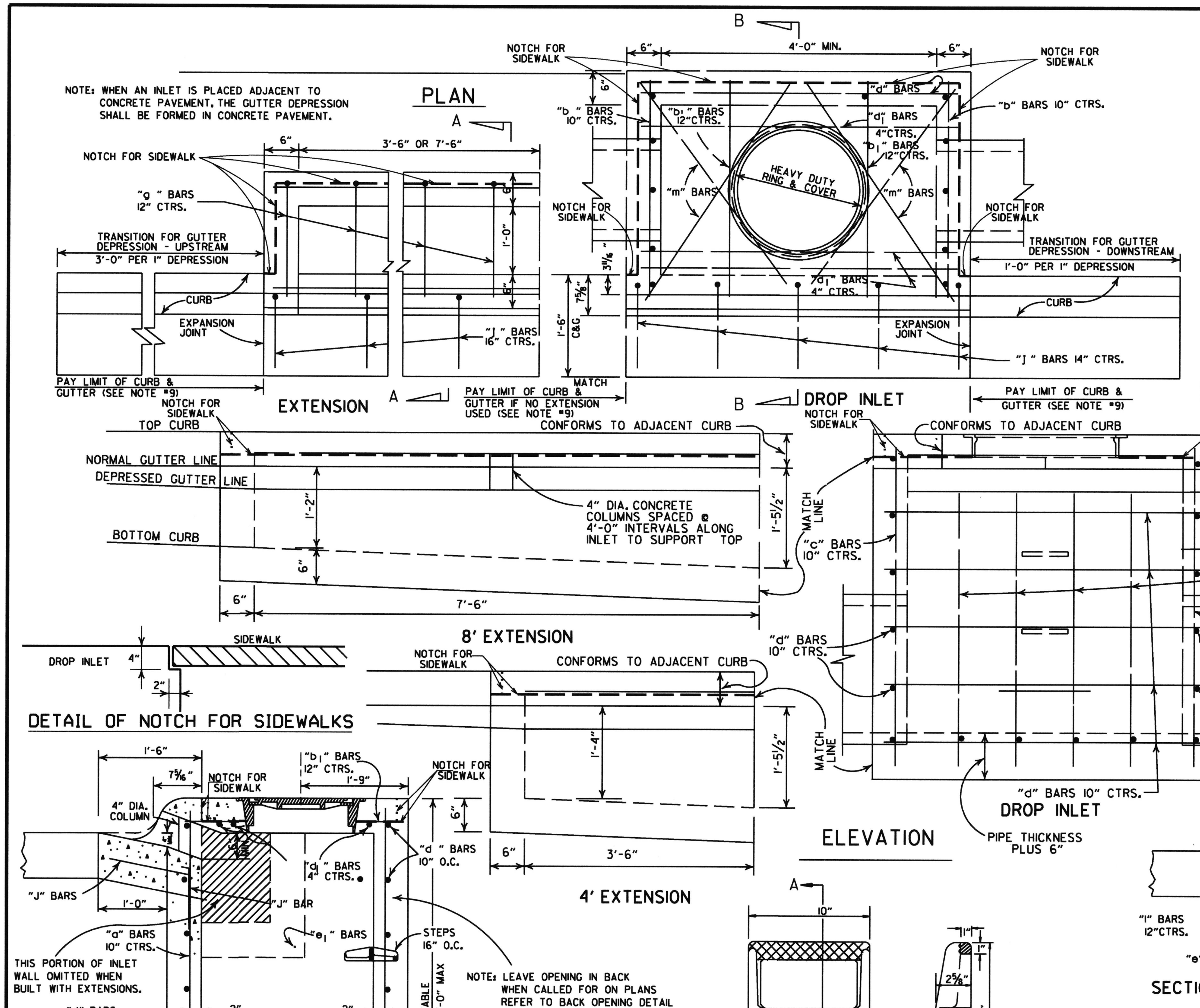
1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B. GRATE MAY BE USED WITHOUT FRAME.
5. GRATE AND FRAME SHALL NOT BE PAINTED.
6. GRATE SHALL BE BICYCLE SAFE.
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
9. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
10. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

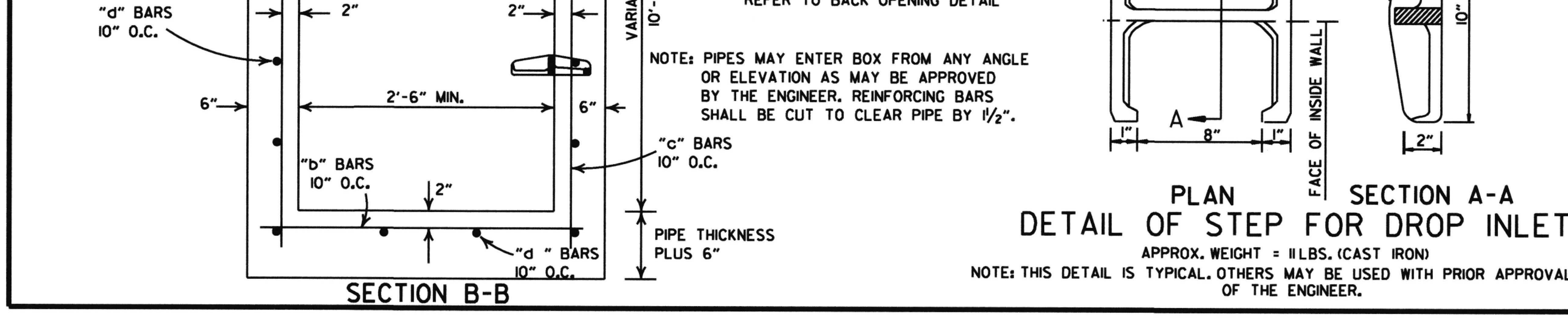
| DATE REV. | REVISION | DATE FILMED |
|---|---|---|
| 11-16-01 | ADDED NOTE 10 | |
| 1-12-00 | REVISED HEAVY DUTY RING & COVER | |
| 7-02-98 | CHANGED GRATE DETAIL, DELETED DI (TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E) | |
| 6-26-97 | ADDED DIMENSION TO TYPE IV-A | |
| 10-18-96 | ADDED DETAIL OF YARD DRAIN | |
| 8-15-91 | DELETE TYPE IV GRATE | |
| 7-15-88 | REVISED STEP DETAIL | |
| 5-20-83 | REVISED DETAILS OF GRATES (TYPE IV & IV-A) | |
| 2-4-83 | ADDED GENERAL NOTE NO. 4 | |
| 3-2-81 | ADDED TYPE IV-A GRATE | |
| 5-22-74 | DELETED INLET (TYPE F) & GRATE (TYPE III) | |
| 10-2-72 | REVISED AND REDRAWN | |

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS
& JUNCTION BOXES

STANDARD DRAWING FPC-9




## 4'-0" LENGTH DROP INLET / DROP INLET EXTENSION

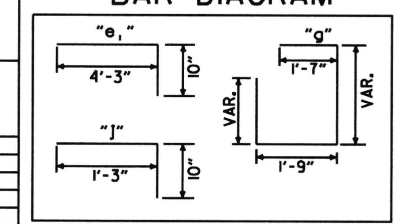
| PIPE SIZE | MIN. WIDTH | HEIGHT 5'-0" CLASS A CONC. | HEIGHT 5'-0" REINF. STEEL | PLUS OR MINUS PER LIN. FT. OF HEIGHT CLASS A CONC. | PLUS OR MINUS PER LIN. FT. OF HEIGHT REINF. STEEL | EXTENSION 4'-0" CLASS A CONC. | EXTENSION 4'-0" REINF. STEEL | EXTENSION 8'-0" CLASS A CONC. | EXTENSION 8'-0" REINF. STEEL |
|---|---|---|---|---|---|---|---|---|---|
| | | CU. YDS. | POUNDS | CU. YDS. | POUNDS | CU. YDS. | POUNDS | CU. YDS. | POUNDS |
| 18" | 2'-6" | 1.77 | 156 | 0.28 | 22 | 0.58 | 38 | 0.87 | 72 |
| 24" | 2'-6" | 1.79 | 156 | 0.28 | 22 | | | | |
| 30" | 3'-2" | 2.39 | 205 | 0.30 | 26 | | | | |
| 36" | 3'-8" | 2.63 | 236 | 0.32 | 28 | DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED. | | | |
| 42" | 4'-4" | 2.95 | 250 | 0.34 | 30 | | | | |
| 48" | 4'-10" | 3.21 | 265 | 0.36 | 32 | | | | |
| | | | | | | 0.04 | 3 | | |

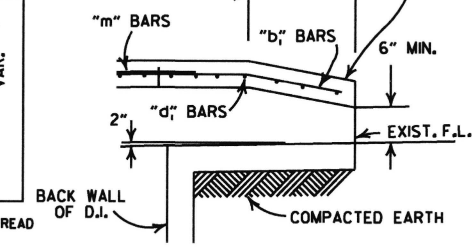
NOTE: QUANTITIES ARE APPROXIMATE AND ARE SHOWN FOR BIDDER INFORMATION ONLY.

**DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET**

| INSIDE DIA. PIPE | CLASS A CONC. | REINF. STEEL |
|---|---|---|
| INCHES | CU. YDS. | POUNDS |
| 18 | 0.05 | 2 |
| 24 | 0.09 | 3 |
| 30 | 0.13 | 4 |
| 42 | 0.24 | 8 |

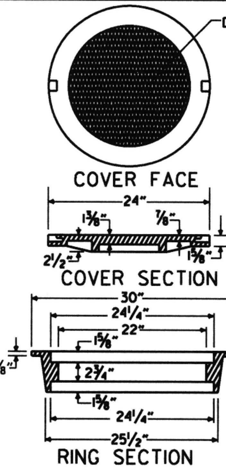
## BAR DIAGRAM

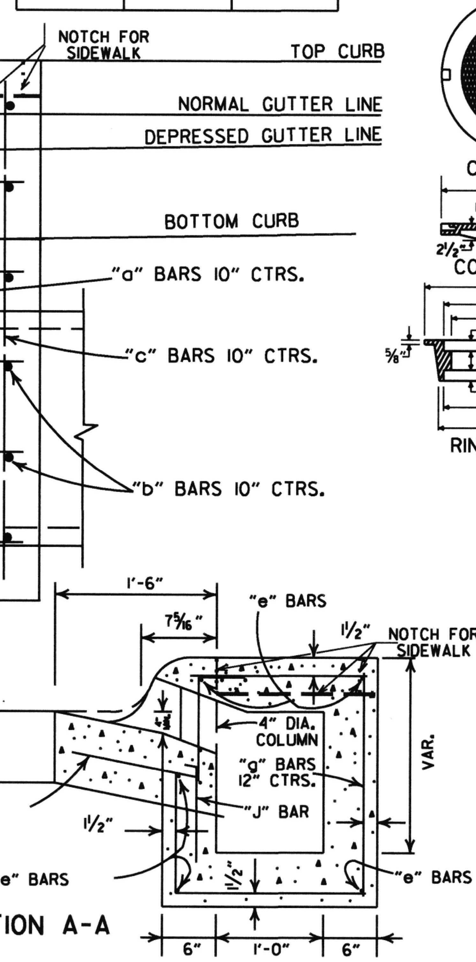



## BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).




## HEAVY DUTY RING & COVER

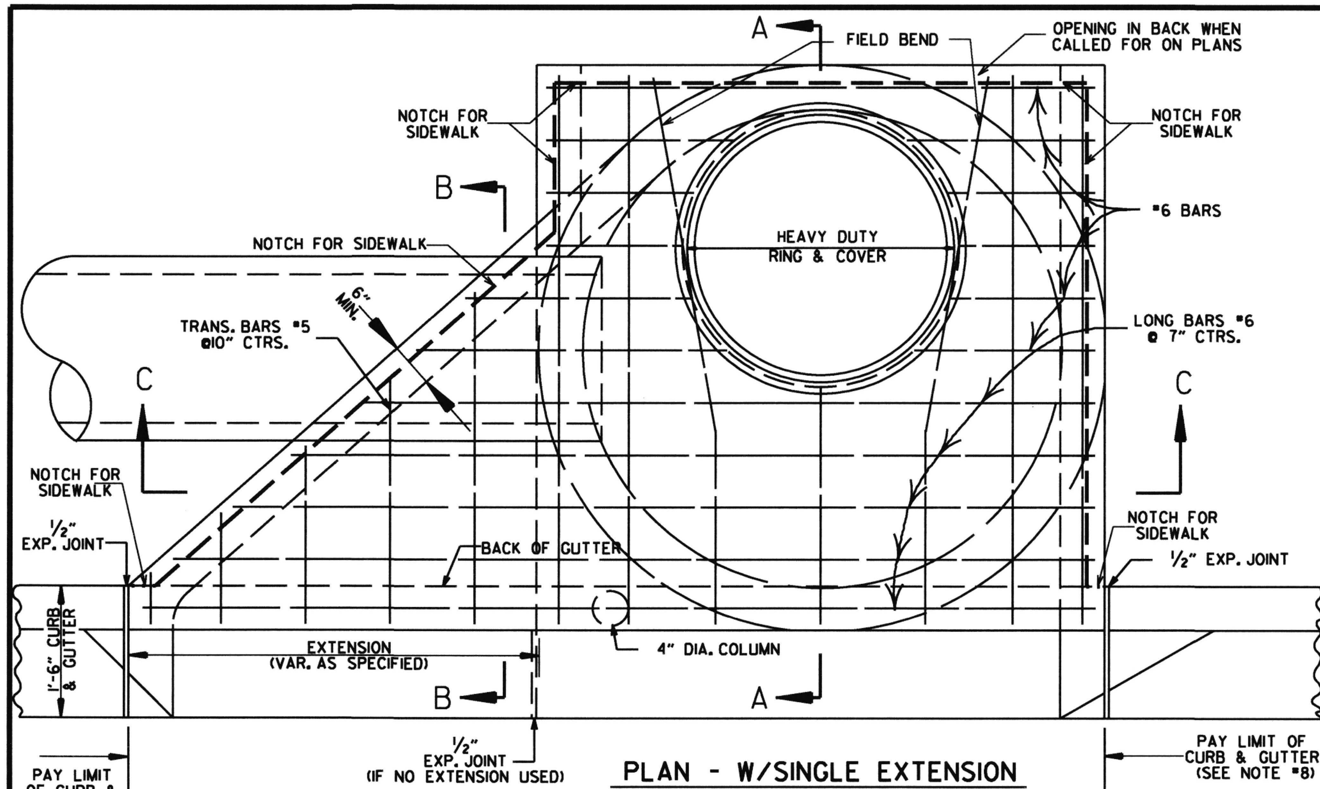
GENERAL NOTES:
1. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1½" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS DROP INLET MAY BE CONSTRUCTED ON NEW OR EXISTING R.C. BOX CULVERT AS SHOWN ON F.P.C.-9.
6. WHEN PLANS CALL FOR DROP INLET OVER 10'-0" HIGH, FLOOR AND WALLS SHALL BE CONSTRUCTED AS SHOWN FOR TYPE "RM" DROP INLET (FPC-9D).
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
9. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
10. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
11. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

| DATE REV. | REVISION | DATE FILMED |
|---|---|---|
| 8-22-02 | ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B | |
| 11-16-01 | ADDED NOTE 13; REVISED SECTION B-B | |
| 1-12-00 | CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER | |
| 5-13-99 | ADDED DETAIL OF NOTCH FOR SIDEWALKS | |
| 7-02-98 | REPLACED RING & COVER W/HEAVY DUTY RING & COVER ADDED NOTES 9,10,&11 | |
| 10-18-96 | CORRECTED SPELLING | |
| 4-26-96 | ADDED NOTE 8 & REVISED (4')(8') EXTENSION TITLES | 10-18-96 |
| 4-1-93 | REVISED BACK OPENING & NOTE | |
| 8-15-91 | DELETE TYPE IV GRATE | |
| 7-15-88 | REVISED STEP DETAIL | |
| 5-20-83 | REVISED DETAILS OF GRATES (TYPE IV & IV-A) | |
| 2-4-83 | ADDED GENERAL NOTE NO. 4 | |
| 3-2-81 | ADDED TYPE IV-A GRATE | |
| 5-22-74 | DELETED INLET (TYPE F) & GRATE (TYPE III) | |
| 10-2-72 | REVISED AND REDRAWN | |

ARKANSAS STATE HIGHWAY COMMISSION

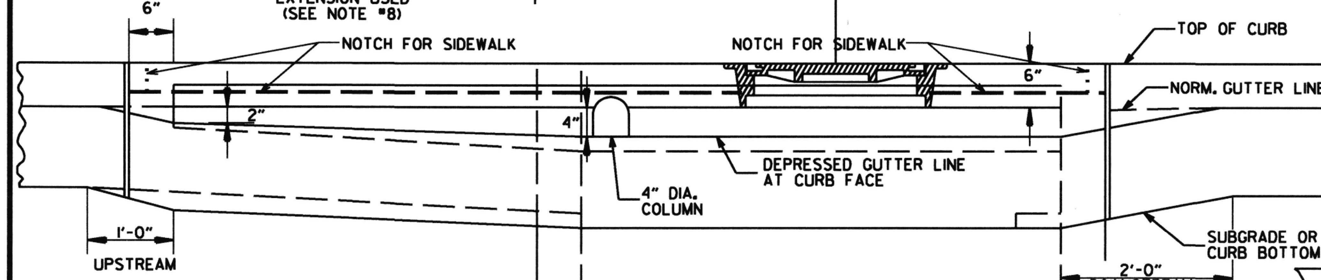
# DETAILS OF DROP INLETS (TYPE C)

STANDARD DRAWING FPC-9E

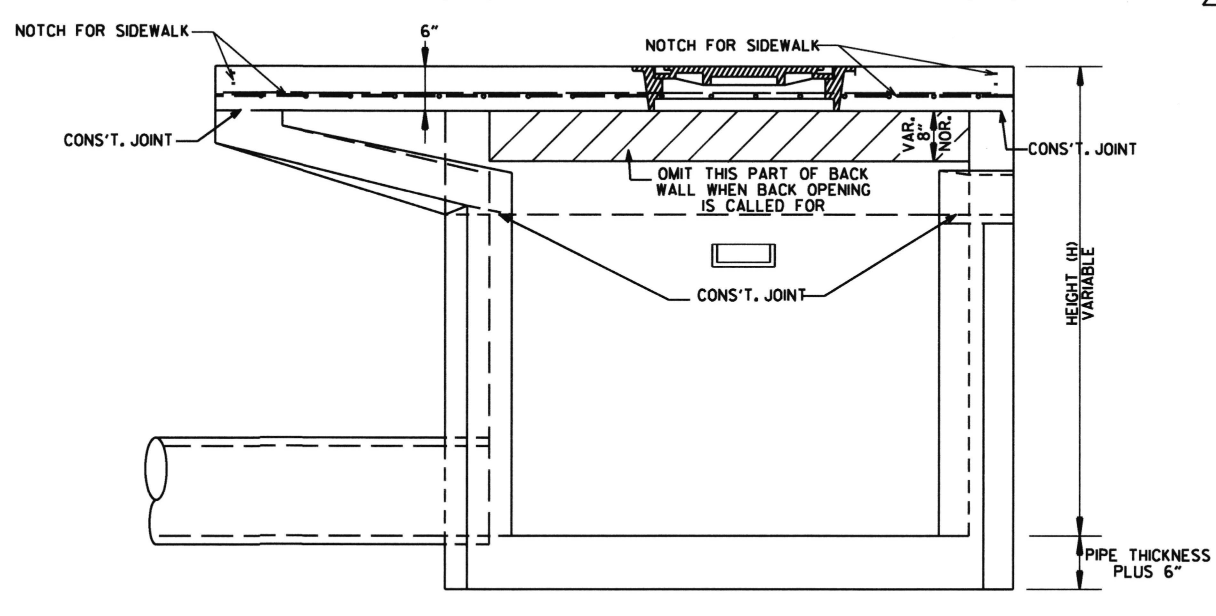



## PLAN - W/SINGLE EXTENSION

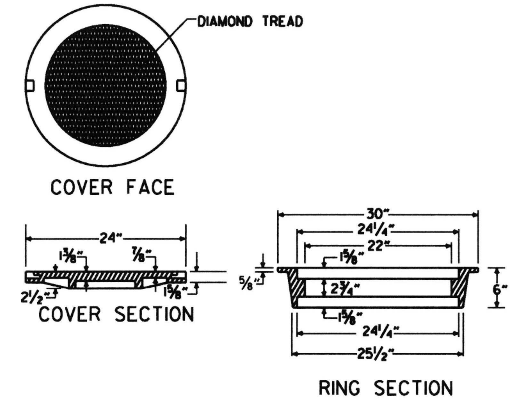
NOTE: FOR DOUBLE EXTENSION USE SINGLE ON BOTH SIDES.




## FRONT ELEVATION



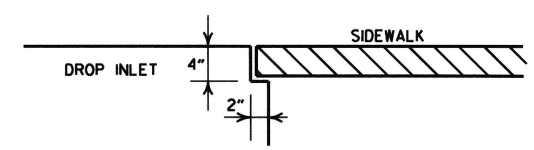

## SECTION C-C



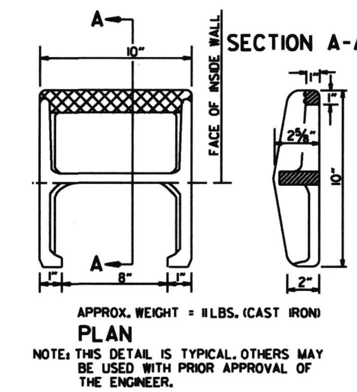

APPROXIMATE TOTAL WEIGHT = 333 LBS.

## HEAVY DUTY RING & COVER

1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.



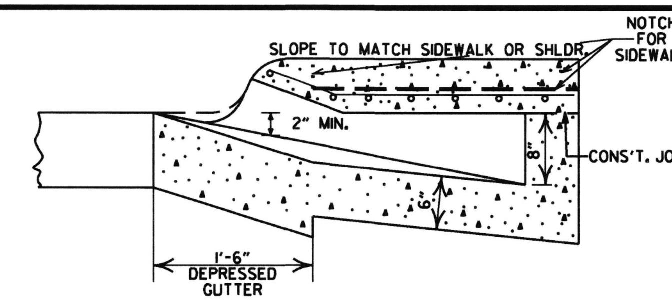

## DETAIL OF NOTCH FOR SIDEWALKS



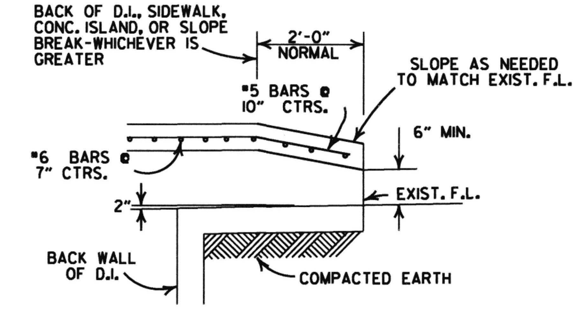

APPROX. WEIGHT = 11 LBS. (CAST IRON)

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

## DETAIL OF STEP FOR DROP INLET



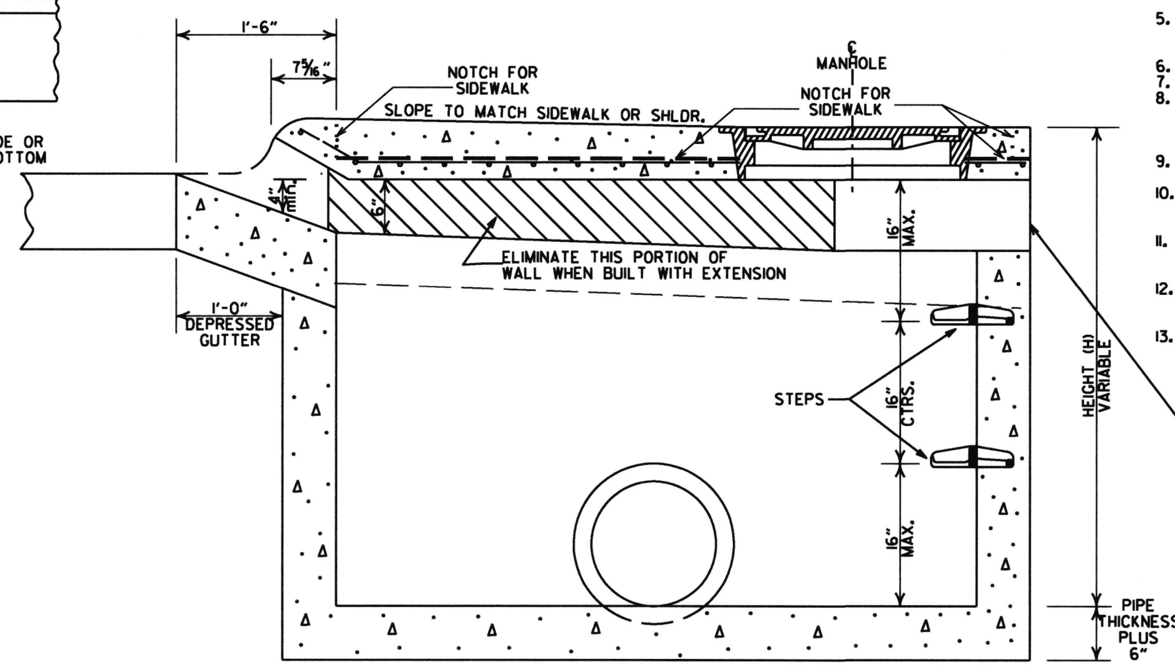

## SECTION B-B




## BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE MO).

GENERAL NOTES:
1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OR AS DIRECTED BY THE ENGINEER.
3. ALL REINFORCING BARS SHALL BE GRADE 60 AND HAVE MIN. 1 1/2" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. 4" DIA. COLUMNS SPACED AT MAX. 4'-0" INTERVALS SHALL BE INSTALLED ALONG INLET AND EXTENSION TO SUPPORT TOP.
6. BASE AND INLET WALLS SHALL BE CAST MONOLITHICALLY.
7. THE THROAT SHALL BE CAST INTEGRALLY WITH THE GUTTER.
8. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
9. PIPES MAY ENTER DROP INLET FROM ANY ANGLE OR ELEVATION AS MAY BE APPROVED BY THE ENGINEER.
10. APPROPRIATE SIZE TYPE C DROP INLETS MAY BE SUBSTITUTED FOR TYPE MO DROP INLETS AS APPROVED BY THE ENGINEER. PAYMENT TO BE AS DROP INLET (TYPE MO).
11. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.




## SECTION A-A

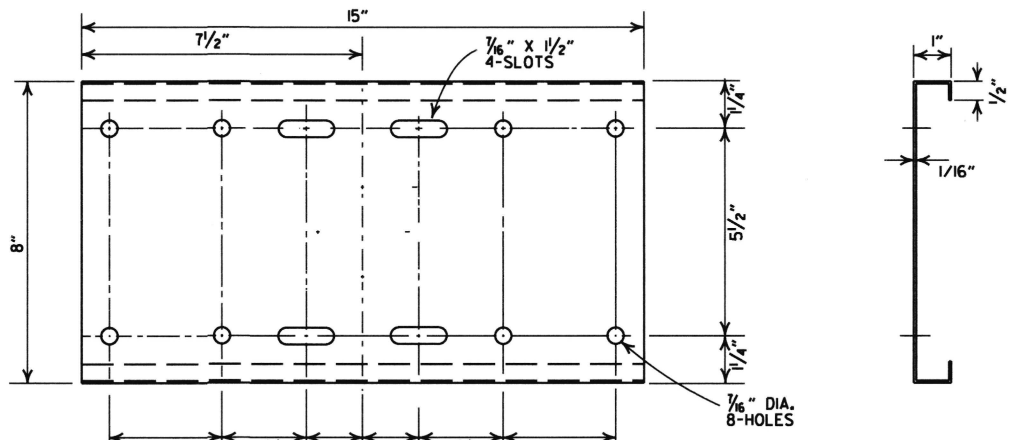
| DIA. OF D.I. | DIA. OF OUTLET PIPE | MINIMUM WALL THICKNESS CAST IN PLACE | PRECAST |
|---|---|---|---|
| 4' I.D. | 12" THRU 27" | 6" | 5" |
| 5' I.D. | 30" THRU 42" | 8" | 6" |
| 6' I.D. | 48" THRU 54" | 8" | 7" |

| DATE | REVISIONS | DATE FILMED |
|---|---|---|
| 8-22-02 | ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B | |
| 11-16-01 | ADDED NOTE 13 | |
| 1-12-00 | REVISED HEAVY DUTY RING & COVER | |
| 5-13-99 | ADDED NOTCH DETAIL FOR SIDEWALKS | |
| 7-02-98 | REP. NOTE 8, REM. PLAN DET., REV. PICTURE FOR NEW RING & COVER, ADDED HEAVY DUTY RING & COVER AND DETAIL OF STEP FOR DROP INLET | |
| 4-26-96 | ADDED NOTE 11; ADJ. OPENING DIMENSION | |
| 10-12-95 | CORRECTED #6 BAR SPACING | |
| 7-20-95 | CORRECTED DIAMETER OF D.I. IN BOX | |
| 2-2-95 | TYPE C TO MO (OPEN. BACK DETAIL) | |
| 11-3-94 | REVISED GENERAL NOTES | 11-3-94 |
| 4-1-93 | REV. BACK OPEN. DETAIL & NOTE | 4-1-93 |
| 8-15-91 | REVISED NOTES 11,12 & ADDED BK.OPEN DETAIL | 8-15-91 |
| 11-30-89 | ADDED NOTE NO. 12 | 11-30-89 |
| 3-23-89 | ADDED NOTE & MINUMUM WALL THICKNESS | 513-3-23-89 |
| 7-15-88 | ADDED EXTEND NOTE TO SECTION A-A | 639-7-15-88 |
| 1-14-87 | MODIFIED WALL THICKNESS | 783-1-14-87 |
| 6-12-87 | ISSUED | 4-6-12-87 |

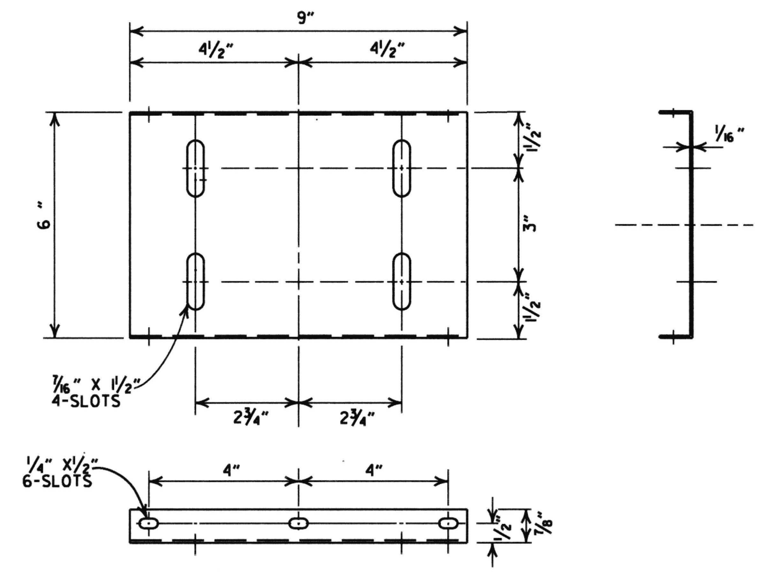
ARKANSAS STATE HIGHWAY COMMISSION

# DETAILS OF DROP INLET (TYPE MO)

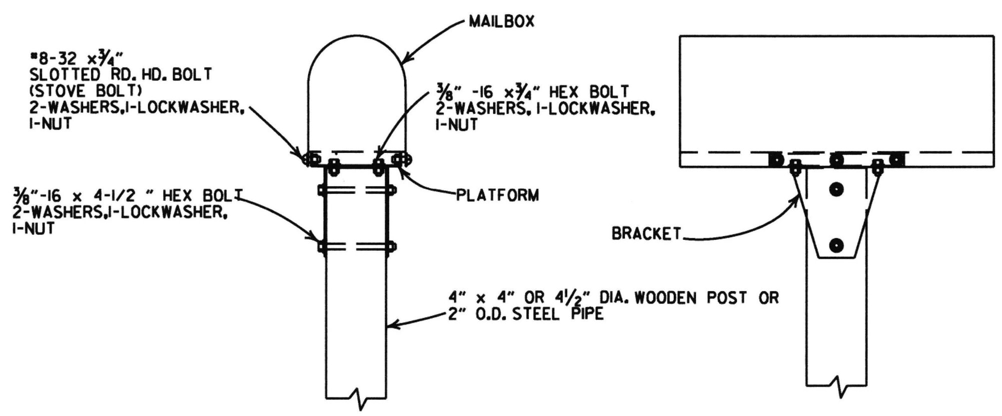
STANDARD DRAWING FPC-9M



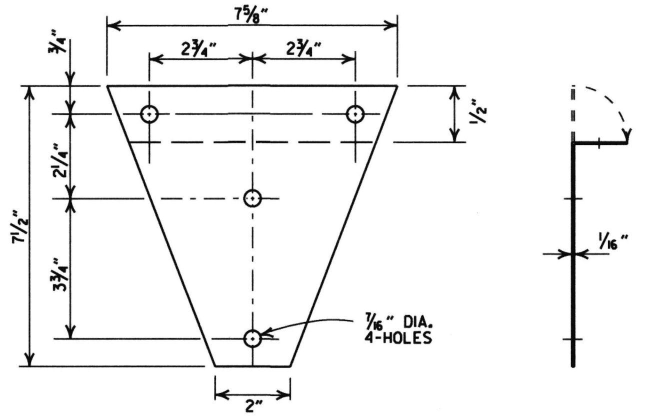

SHELF




PLATFORM



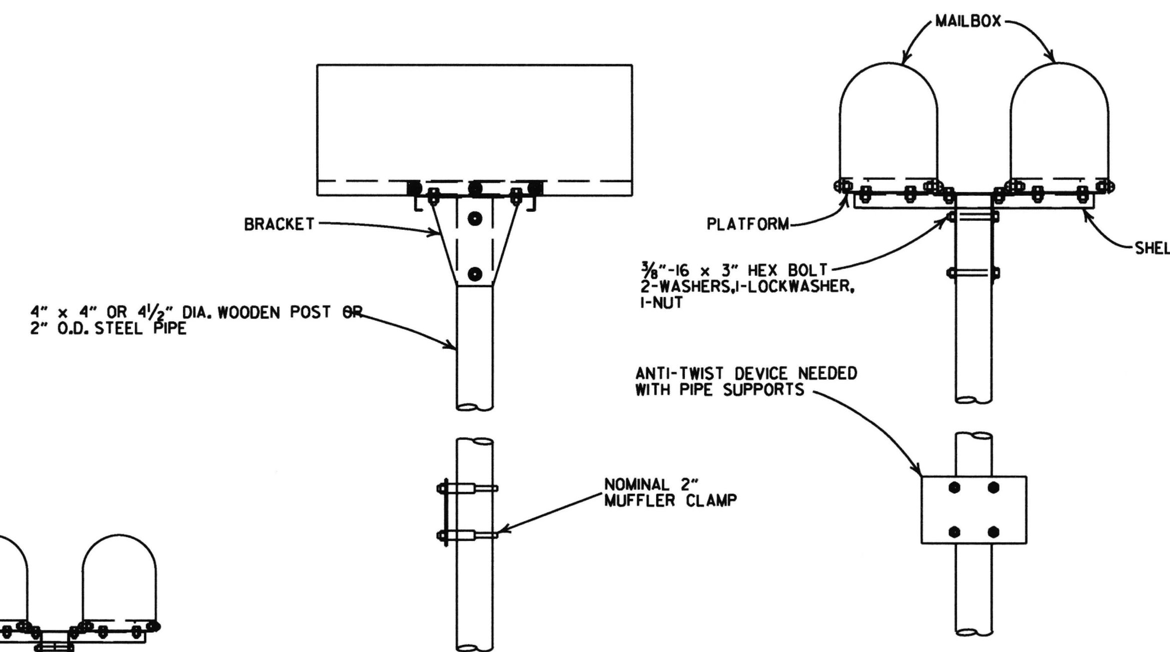

SINGLE INSTALLATION



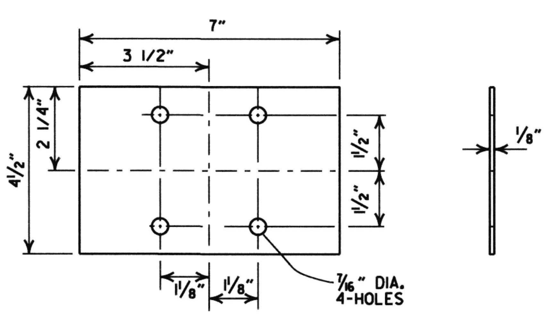

BRACKET

## GENERAL NOTES

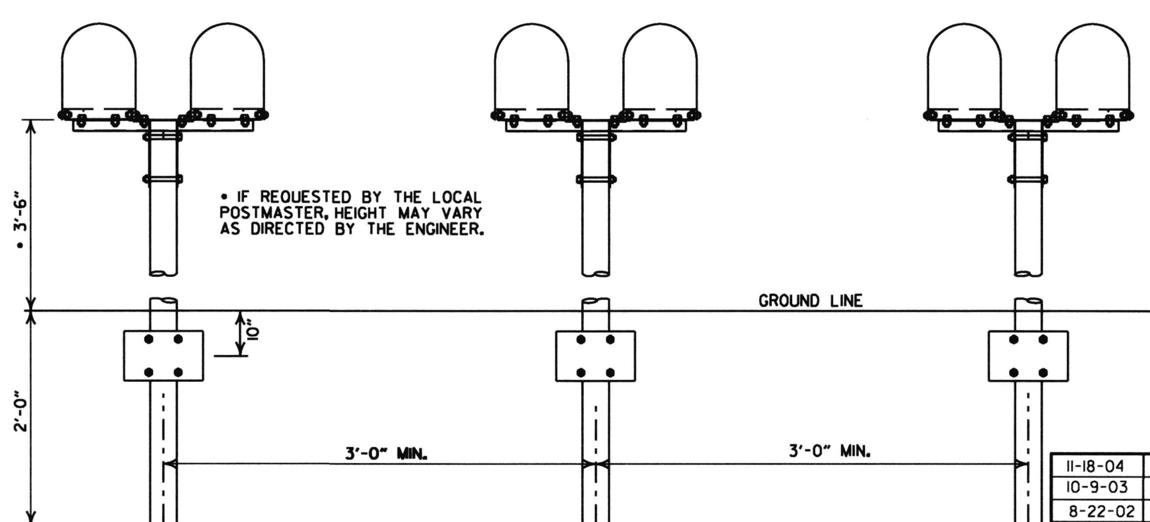
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF 3/4" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X 3/4" 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 ARDOT QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



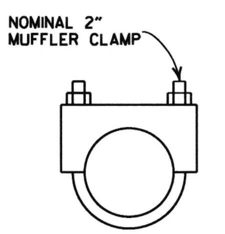

DOUBLE INSTALLATION



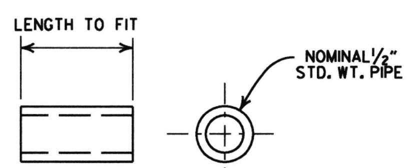

ANTI-TWIST PLATE




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 | 120-7-15-88 | ISSUED |

ARKANSAS STATE HIGHWAY COMMISSION

# MAILBOX DETAILS

STANDARD DRAWING MB-1

## REINFORCED CONCRETE ARCH PIPE DIMENSIONS

| EQUIV. DIA. | SPAN | | RISE | |
|---|---|---|---|---|
| | AASHTO M 206 | ARDOT NOMINAL | AASHTO M 206 | ARDOT NOMINAL |
| INCHES | INCHES | | | |
| 15 | 18 | 18 | 11 | 11 |
| 18 | 22 | 22 | 13½ | 14 |
| 21 | 26 | 26 | 15½ | 16 |
| 24 | 28½ | 29 | 18 | 18 |
| 30 | 36¼ | 36 | 22½ | 23 |
| 36 | 43⅜ | 44 | 26⅝ | 27 |
| 42 | 51⅛ | 51 | 31 5/16 | 31 |
| 48 | 58½ | 59 | 36 | 36 |
| 54 | 65 | 65 | 40 | 40 |
| 60 | 73 | 73 | 45 | 45 |
| 72 | 88 | 88 | 54 | 54 |
| 84 | 102 | 102 | 62 | 62 |
| 90 | 115 | 115 | 72 | 72 |
| 96 | 122 | 122 | 77½ | 77 |
| 108 | 138 | 138 | 87⅛ | 87 |
| 120 | 154 | 154 | 96⅞ | 97 |
| 132 | 168¾ | 169 | 106½ | 107 |

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

## REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

## CONSTRUCTION SEQUENCE

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

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

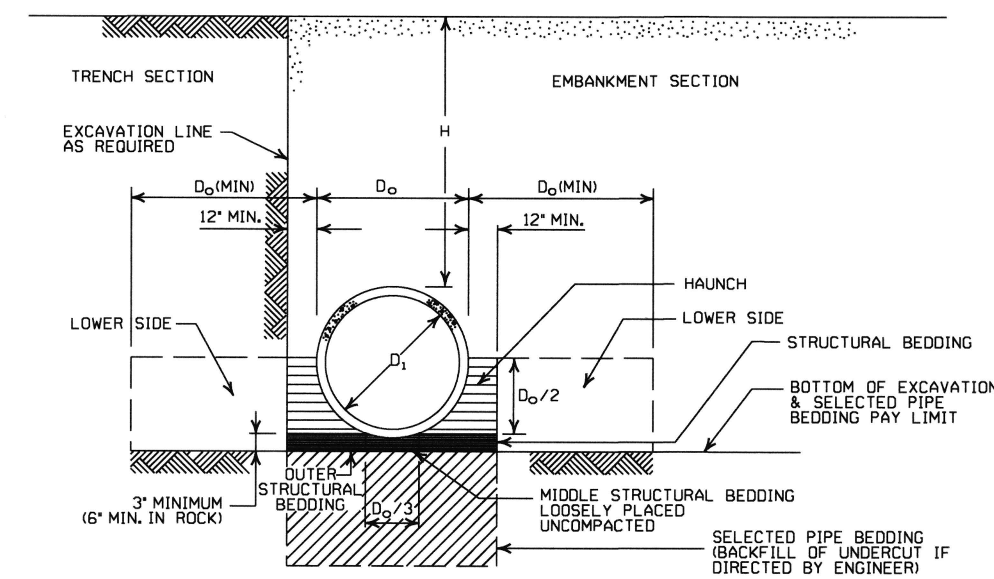
## - LEGEND -

$D_1$ = NORMAL INSIDE DIAMETER OF PIPE
$D_o$ = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
= UNDISTURBED SOIL

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

* SM-3 WILL NOT BE ALLOWED.

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




## EMBANKMENT AND TRENCH INSTALLATIONS

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

## 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.

## GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS DEPARTMENT OF TRANSPORTATION 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 R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

# CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

## CORRUGATED STEEL PIPE (ROUND)

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

## CORRUGATED ALUMINUM PIPE (ROUND)

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

## CORRUGATED METAL PIPE ARCHES

| EQUIV. DIA. (INCHES) | PIPE DIMENSION SPAN X RISE (INCHES) | MINUMUM CORNER RADIUS (INCHES) | STEEL: MIN. THICKNESS REQUIRED INCHES | STEEL: ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | STEEL: MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | ALUMINUM: MIN. THICKNESS REQUIRED INCHES | ALUMINUM: ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | ALUMINUM: 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 | | | |

| EQUIV. DIA. (INCHES) | PIPE DIMENSION SPAN X RISE (INCHES) | MINUMUM CORNER RADIUS (INCHES) | STEEL: MIN. THICKNESS REQUIRED INCHES | ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 2 | ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 2 | MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 |
|---|---|---|---|---|---|---|---|
| | | | ② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM | | | | |
| 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 |

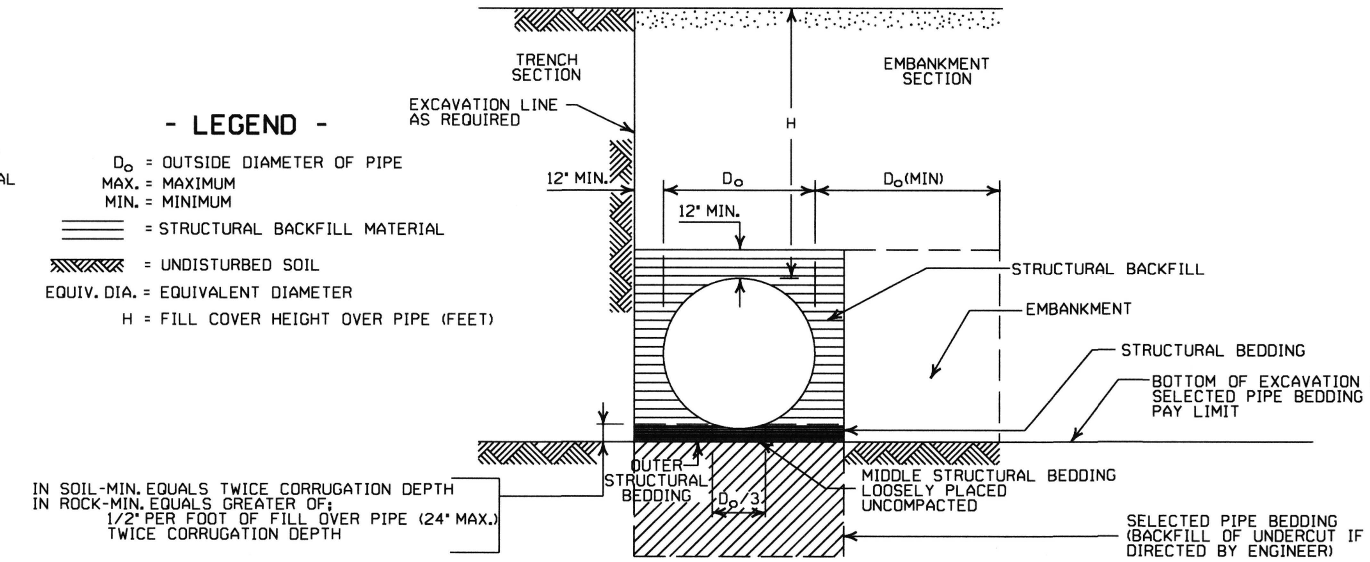
③ SM-3 WILL NOT BE ALLOWED.

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

# METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

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

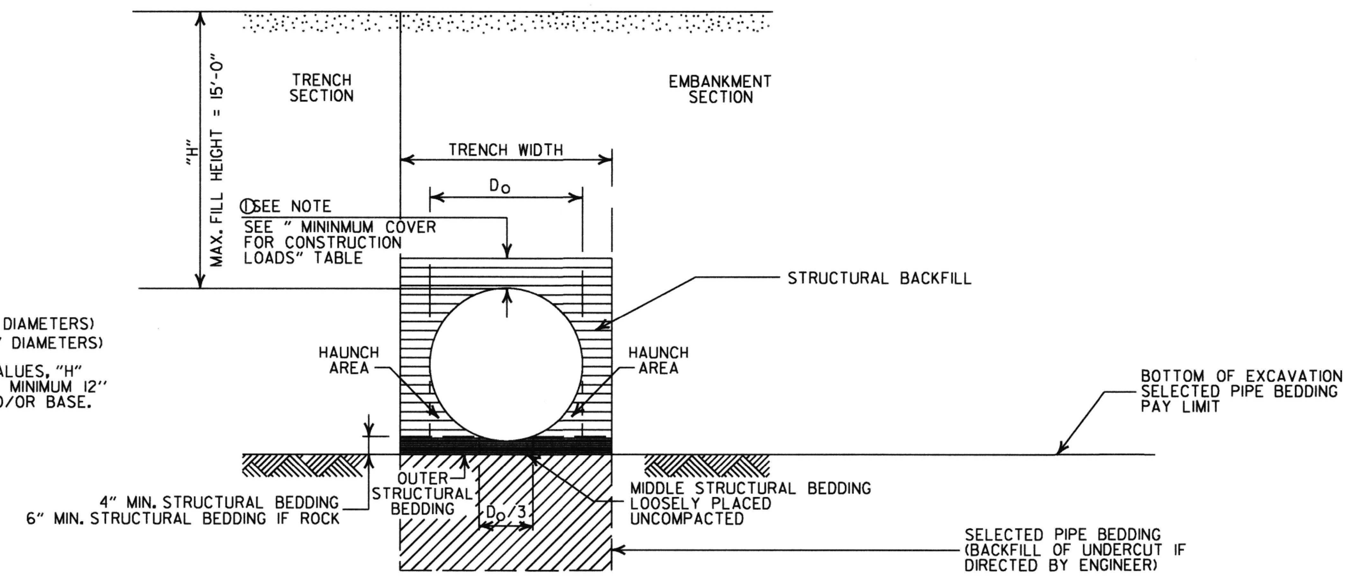
STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

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

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

①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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




## TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

## 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 COVER FOR CONSTRUCTION LOADS

| PIPE DIAMETER | ② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS | | | |
|---|---|---|---|---|
| | 18.0-50.0 (KIPS) | 50.0-75.0 (KIPS) | 75.0-110.0 (KIPS) | 110.0-175.0 (KIPS) |
| 36" OR LESS | 2'-0" | 2'-6" | 3'-0" | 3'-0" |
| 42" OR GREATER | 3'-0" | 3'-0" | 3'-6" | 4'-0" |

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

## CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

## GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM 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.)
Do = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 2-27-14 | REVISED GENERAL NOTE 1. | |
| 12-15-11 | REVISED GENERAL NOTES & MINIMUM COVER NOTE | |
| 11-17-10 | ISSUED | |

ARKANSAS STATE HIGHWAY COMMISSION

# PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

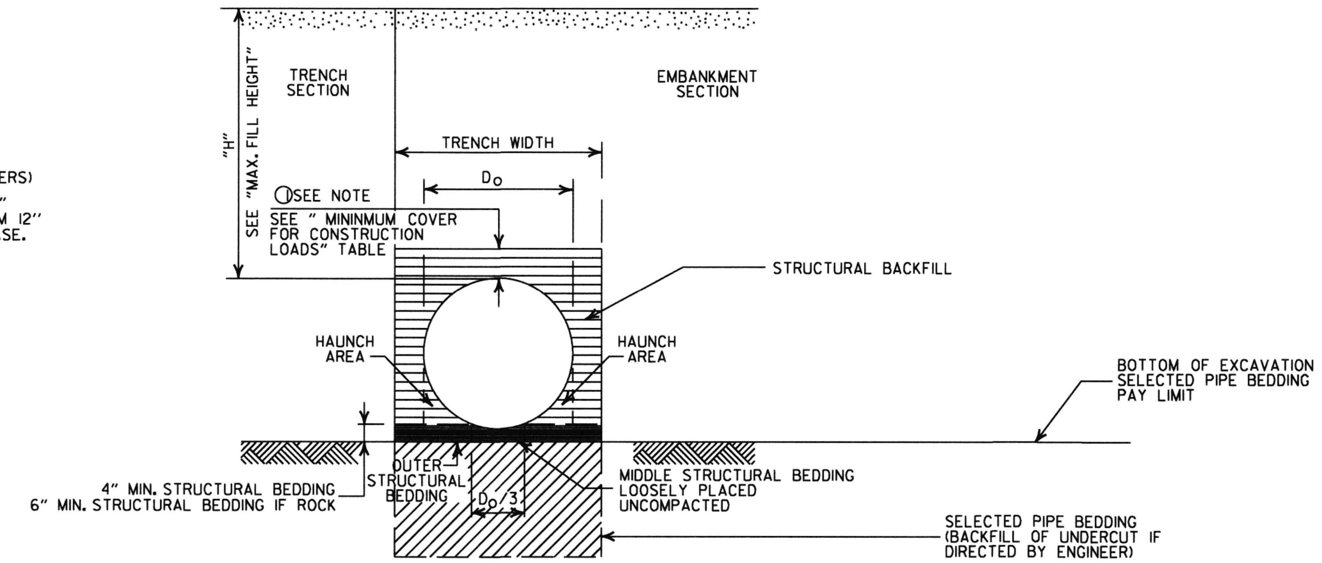
## MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

| 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 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" |




## TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

## MINIMUM COVER FOR CONSTRUCTION LOADS

| PIPE DIAMETER | ② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS 18.0-50.0 (KIPS) | 50.0-75.0 (KIPS) | 75.0-110.0 (KIPS) | 110.0-175.0 (KIPS) |
|---|---|---|---|---|
| 18" THRU 36" | 2'-0" | 2'-6" | 3'-0" | 3'-0" |

② MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

## MULTIPLE INSTALLATION OF PVC PIPES

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

## 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 CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS 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

| 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) |

* SM3 WILL NOT BE ALLOWED.

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

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

## MAXIMUM HEIGHT OF FILL "H"

| PIPE DIAMETER | INSTALLATION TYPE | |
|---|---|---|
| | TYPE 1 | TYPE 2 |
| 18" | 18' | 14' |
| 24" | 16' | 12' |
| 30" | 18' | 14' |
| 36" | 16' | 12' |
| 42" | 18' | 13' |
| 48" | 15' | 11' |
| 60" | 17' | 12' |

## MULTIPLE INSTALLATION OF PVC 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" |
| 60" | 5'-0" |

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

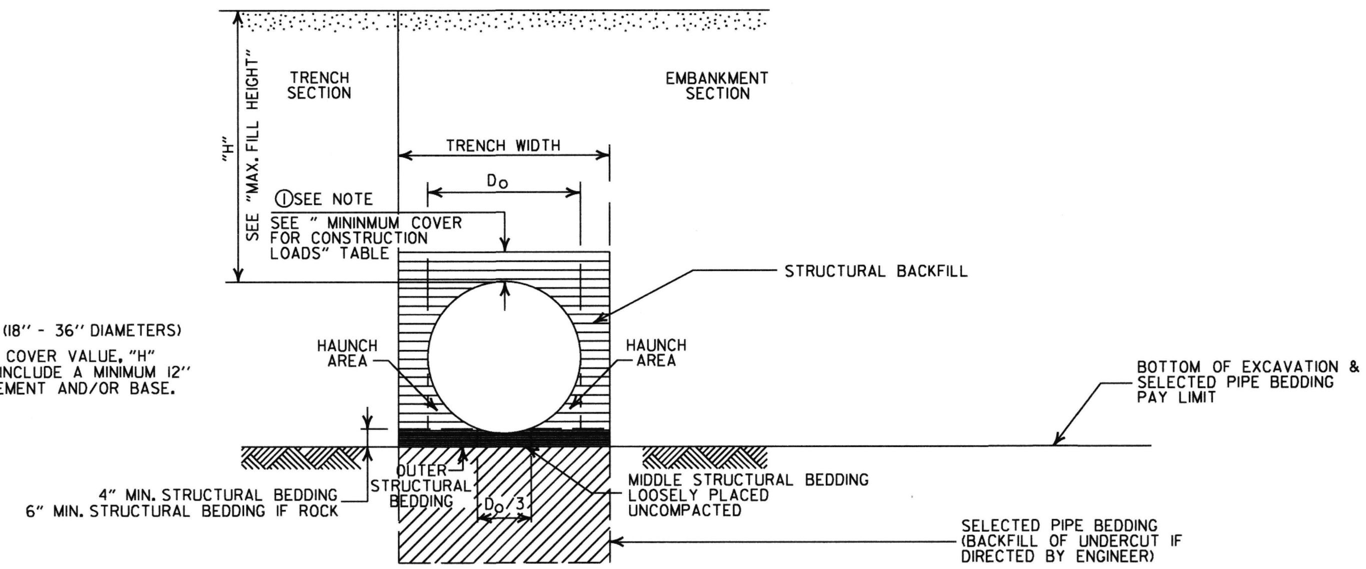
| PIPE DIAMETER | TRENCH WIDTH (FEET) | |
|---|---|---|
| | "H" < 10'-0" | "H" >OR= 10'-0" |
| 18" | 4'-6" | 4'-6" |
| 24" | 5'-0" | 6'-0" |
| 30" | 5'-6" | 7'-6" |
| 36" | 6'-0" | 9'-0" |
| 42" | 7'-0" | 10'-6" |
| 48" | 8'-0" | 12'-0" |
| 60" | 10'-0" | 15'-0" |

## 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" |

② MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.




## TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

## 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 CONFORM 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

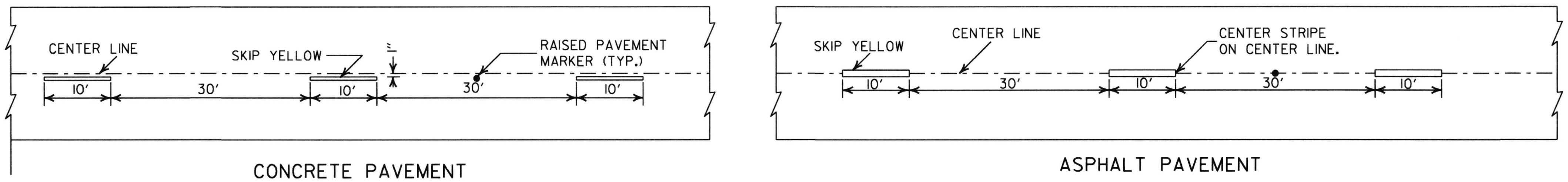
| DATE | REVISION | DATE FILMED |
|---|---|---|
| 11-07-19 | ISSUED | |

ARKANSAS STATE HIGHWAY COMMISSION

# PLASTIC PIPE CULVERT (POLYPROPYLENE)

STANDARD DRAWING PCP-3

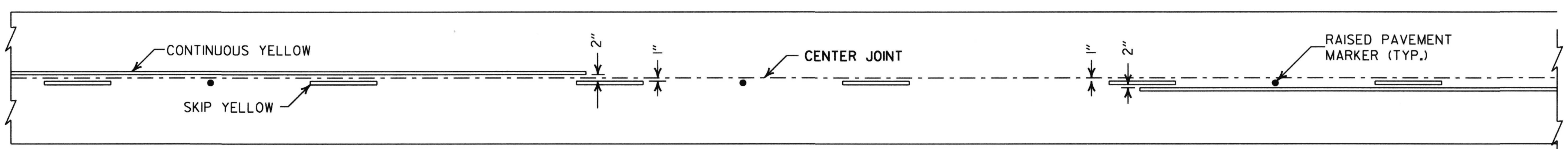
NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.



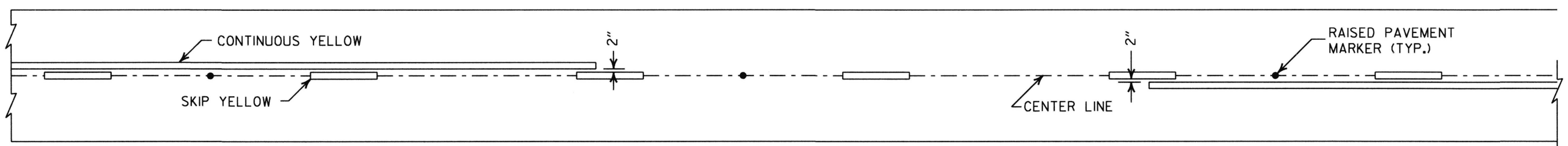

CONCRETE PAVEMENT

ASPHALT PAVEMENT

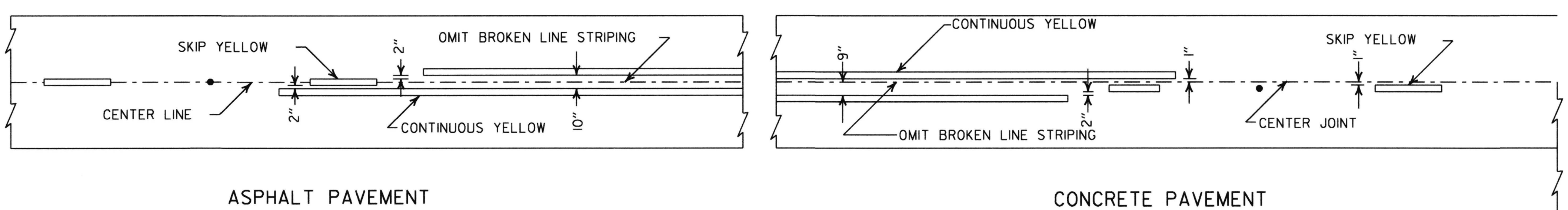
## BROKEN LINE STRIPING




## SOLID LINE STRIPING ON CONCRETE PAVEMENT



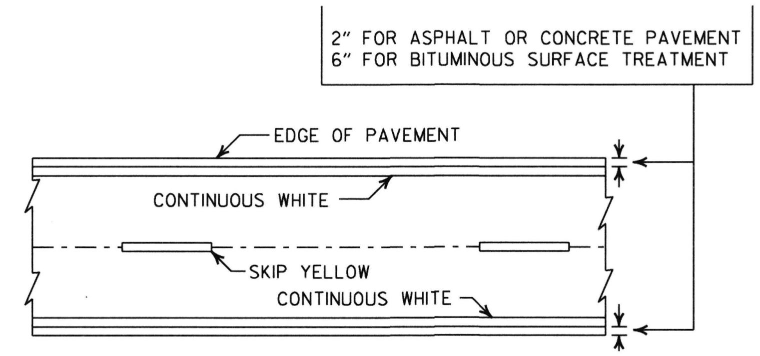

## SOLID LINE STRIPING ON ASPHALT PAVEMENT




ASPHALT PAVEMENT

CONCRETE PAVEMENT

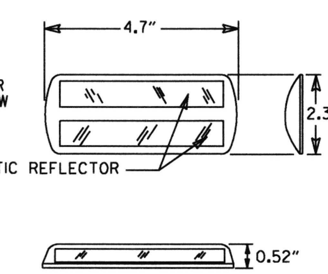
## STRIPING AT ADJACENT NO PASSING LANES



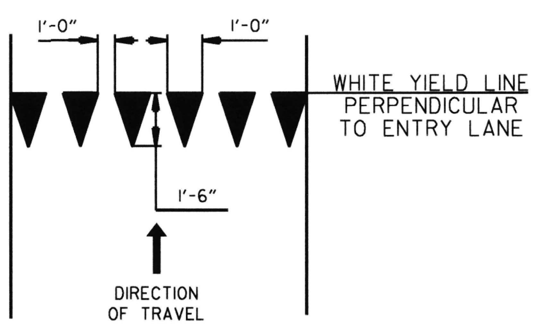

## PAVEMENT EDGE LINE MARKING

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

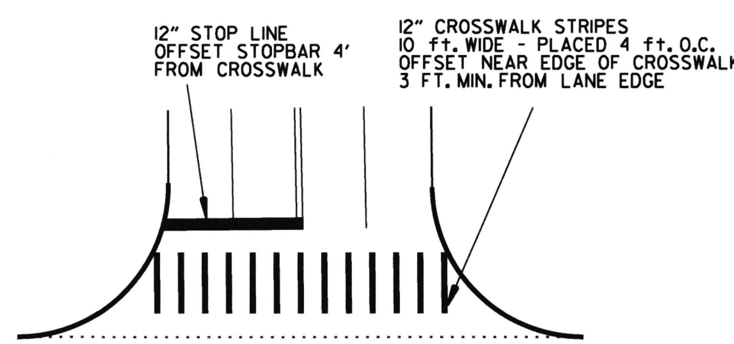
NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.




## DETAIL OF STANDARD RAISED PAVEMENT MARKERS




## YIELD LINE DETAIL




## CROSSWALK AND STOPBAR DETAILS

| DATE | REVISION | FILMED |
|---|---|---|
| 6-1-17 | ADDED YIELD LINE DETAIL | |
| 5-12-16 | REVISED LINE WIDTHS, SPACING, & NOTES | |
| 9-12-13 | REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS | |
| 11-17-10 | REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS | |
| 11-18-04 | REVISED NOTE 2 & GENERAL NOTES | |
| 8-22-02 | ADDED CROSSWALK & STOPBAR DTLS. | |
| 7-02-98 | ADDED DETAILS OF STD. RAISED PAV'T. MARKERS | |
| 4-26-96 | REV. NOTES 3&4; ADDED R.P.M. | |
| 9-30-80 | DRAWN | 1-9-30-80 |

ARKANSAS STATE HIGHWAY COMMISSION

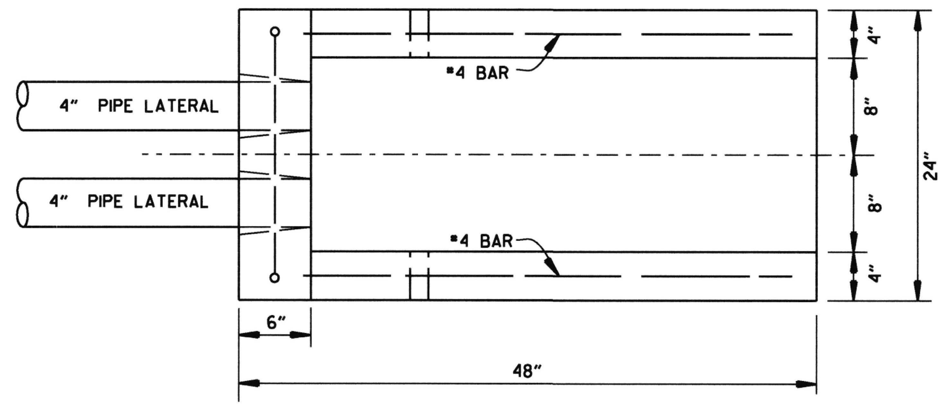
# PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

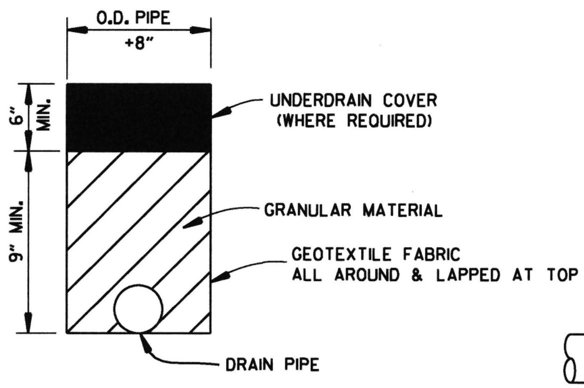
NOTE:

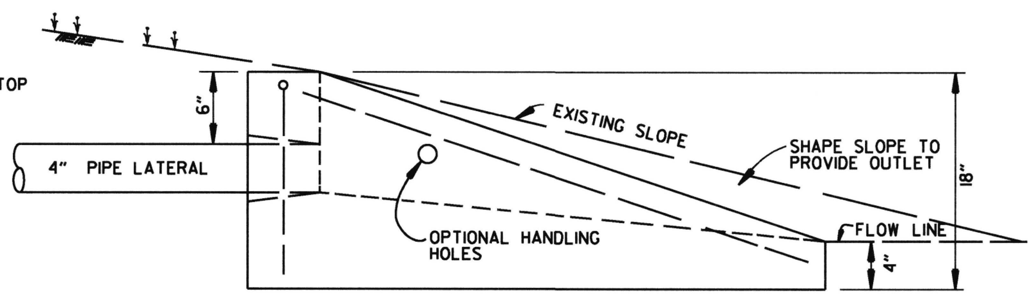
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

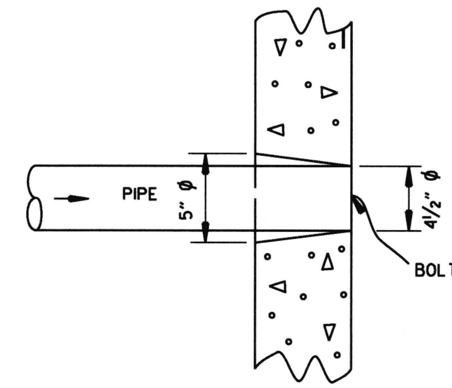



PLAN VIEW

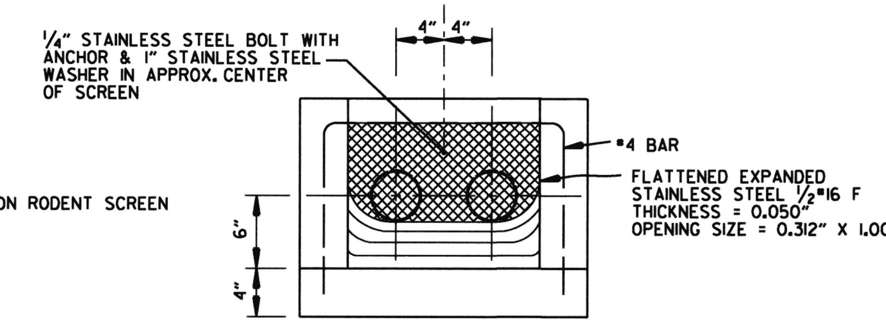



SIDE VIEW

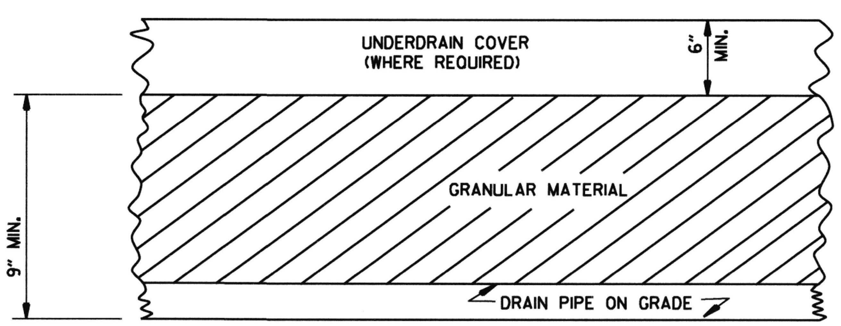



DETAIL OF HOLE
FOR 4" PIPE

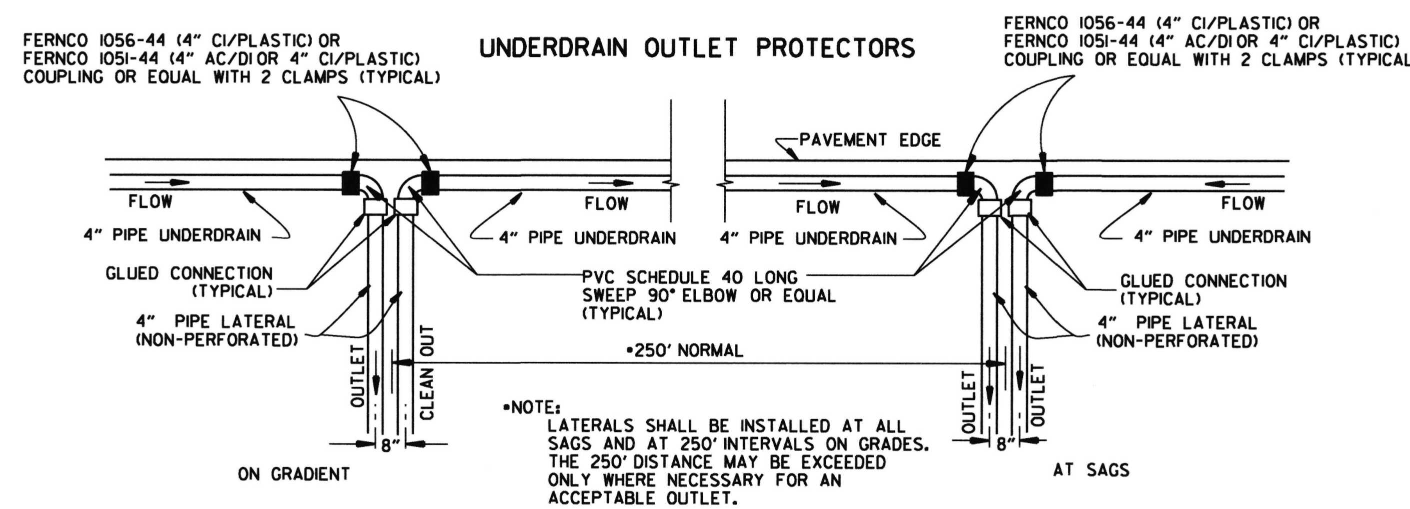



FRONT VIEW
(DETAIL OF RODENT SCREEN)

UNDERDRAIN OUTLET PROTECTORS




DETAILS OF PIPE UNDERDRAIN




**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.

## NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE 1. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID PER LIN. FT. FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

2. 4" NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN HEREON. LATERALS WILL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

3. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS."

4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS."

6. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS. EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE REMOVED UNDER THE ITEM "REMOVAL AND DISPOSAL OF UNDERDRAIN OUTLET PROTECTORS."

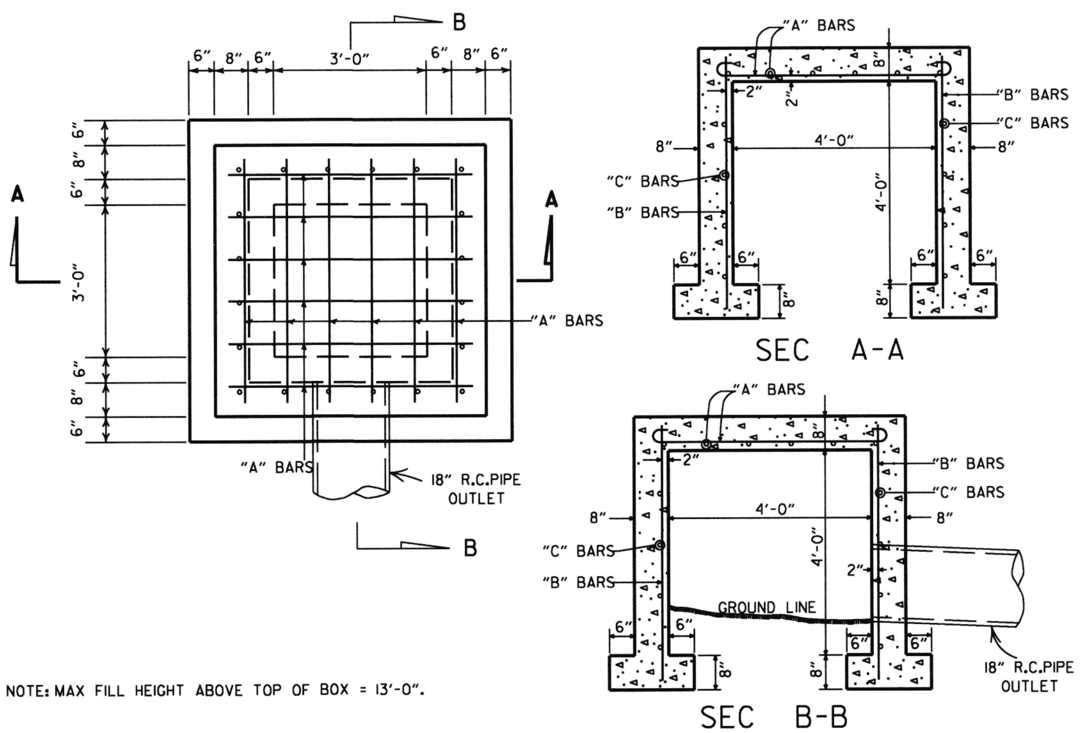
7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON STANDARD DRAWING PU-1 AND GROUT THE UNUSED HOLE OR 2. INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE.

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 12-8-16 | ADDED NOTES FOR PIPE UNDERDRAINS. REVISED RODENT SCREEN DETAIL AND NOTES. REMOVED NOTE 1 FOR GRANULAR MATERIAL. ADDED NOTE FOR GEOTEXTILE FABRIC | |
| 4-10-03 | REVISED NOTE 3 | |
| 1-12-00 | REVISED DETAIL OF UNDERDRAIN LATERALS | |
| 11-18-98 | REVISED NOTE | |
| 10-18-96 | REVISED MIN. DEPTH & GEOTEXTILE FABRIC | |
| 4-26-96 | ADDED LATERAL NOTE; 5½" TO 5" | |
| 11-22-95 | REVISED LATERALS | |
| 7-20-95 | REVISED LATERALS & ADDED NOTE | |
| 11-3-94 | REVISED FOR DUAL LATERALS | 11-3-94 |
| 10-1-92 | SUBSTITUTED GEOTEXTILE | 10-1-92 |
| 8-15-91 | ADDED POLYEDTHYLENE PIPE | 8-15-91 |
| 11-8-90 | DELETED ALTERNATE NOTE | 11-8-90 |
| 1-25-90 | ADDED 4" SNAP ADAPTER | 1-25-90 |
| 11-30-89 | DEL. (SUBGRADE); ADDED (WHERE REQUIRED) | 11-30-89 |
| 7-15-88 | ISSUED P.L.M. | 647-7-15-88 |

ARKANSAS STATE HIGHWAY COMMISSION

# DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

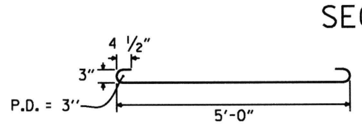



NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

| BARS | NUMBER | LENGTH | SPACING |
|---|---|---|---|
| "A" | 12 | 6'-0" | 10" |
| "B" | 20 | 5'-0" | 10 1/2" |
| "C" | 16 | 5'-0" | 12" |

ALL STEEL TO BE #4 BARS

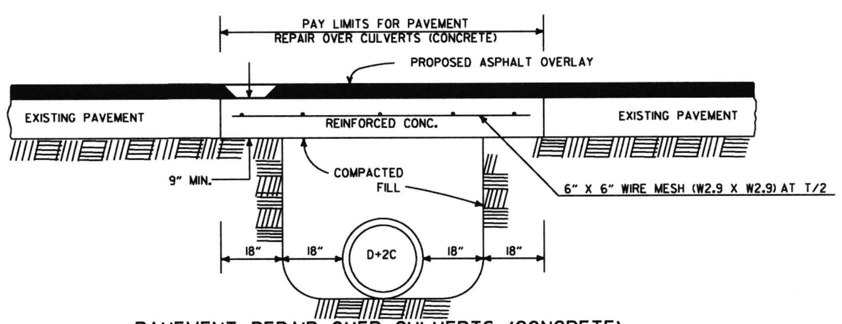



QUANTITIES

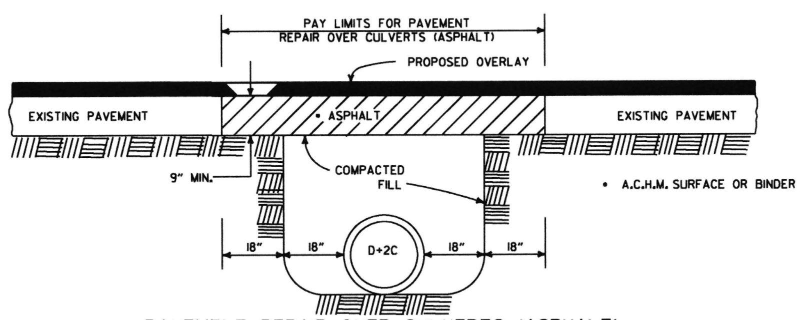
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

GENERAL NOTE:
THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITTIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

## REINFORCED CONCRETE SPRING BOX




PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

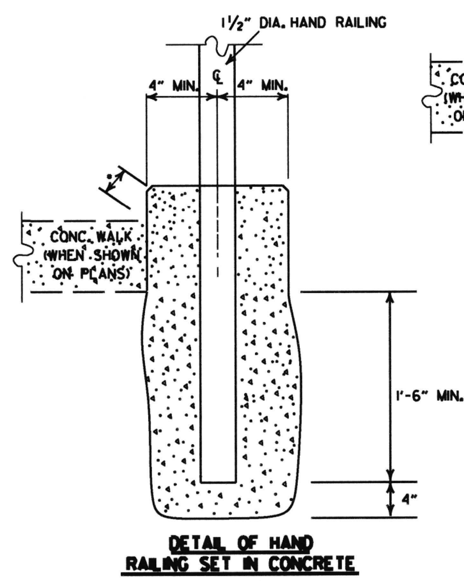



* A.C.H.M. SURFACE OR BINDER

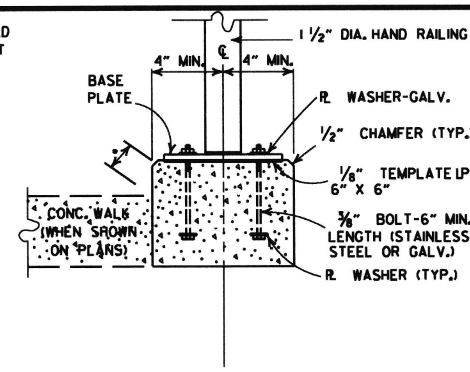
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

## DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

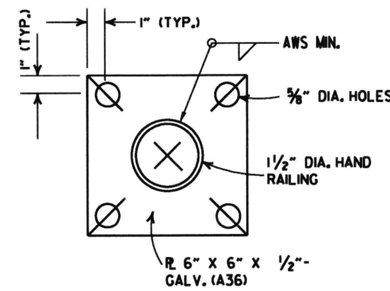
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.




DETAIL OF HAND RAILING SET IN CONCRETE

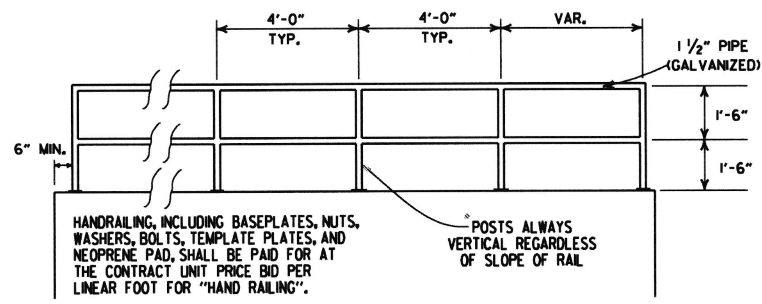



POST CONNECTION TO WALL



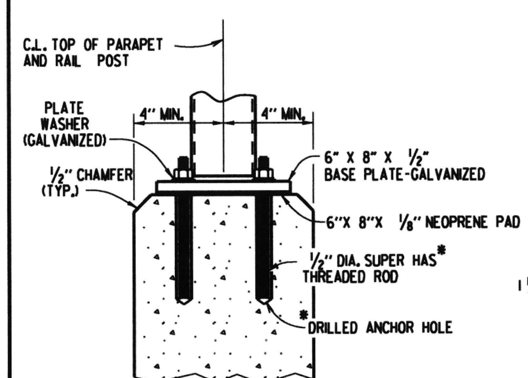

BASE PLATE

## POST CONNECTION DETAILS



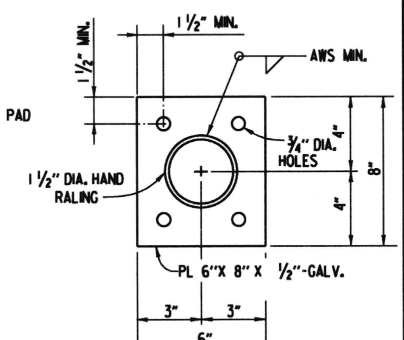

HANDRAILING, INCLUDING BASEPLATES, NUTS, WASHERS, BOLTS, TEMPLATE PLATES, AND NEOPRENE PAD, SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR "HAND RAILING".

HAND RAILING SHALL CONFORM TO SECTION 633.




*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 1/2" EMBEDMENT OR APPROVED EQUAL.
THE ADHESIVE ANCHOR SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

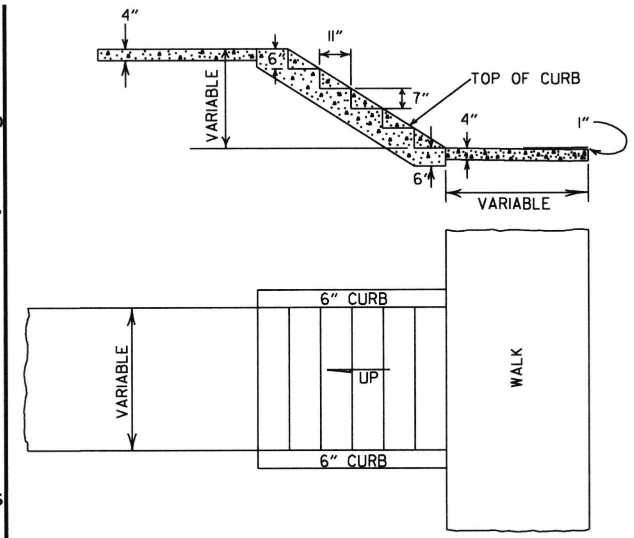
POST CONNECTION TO WALL




BASE PLATE

## DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)

## HAND RAILING DETAILS




GENERAL NOTES
1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

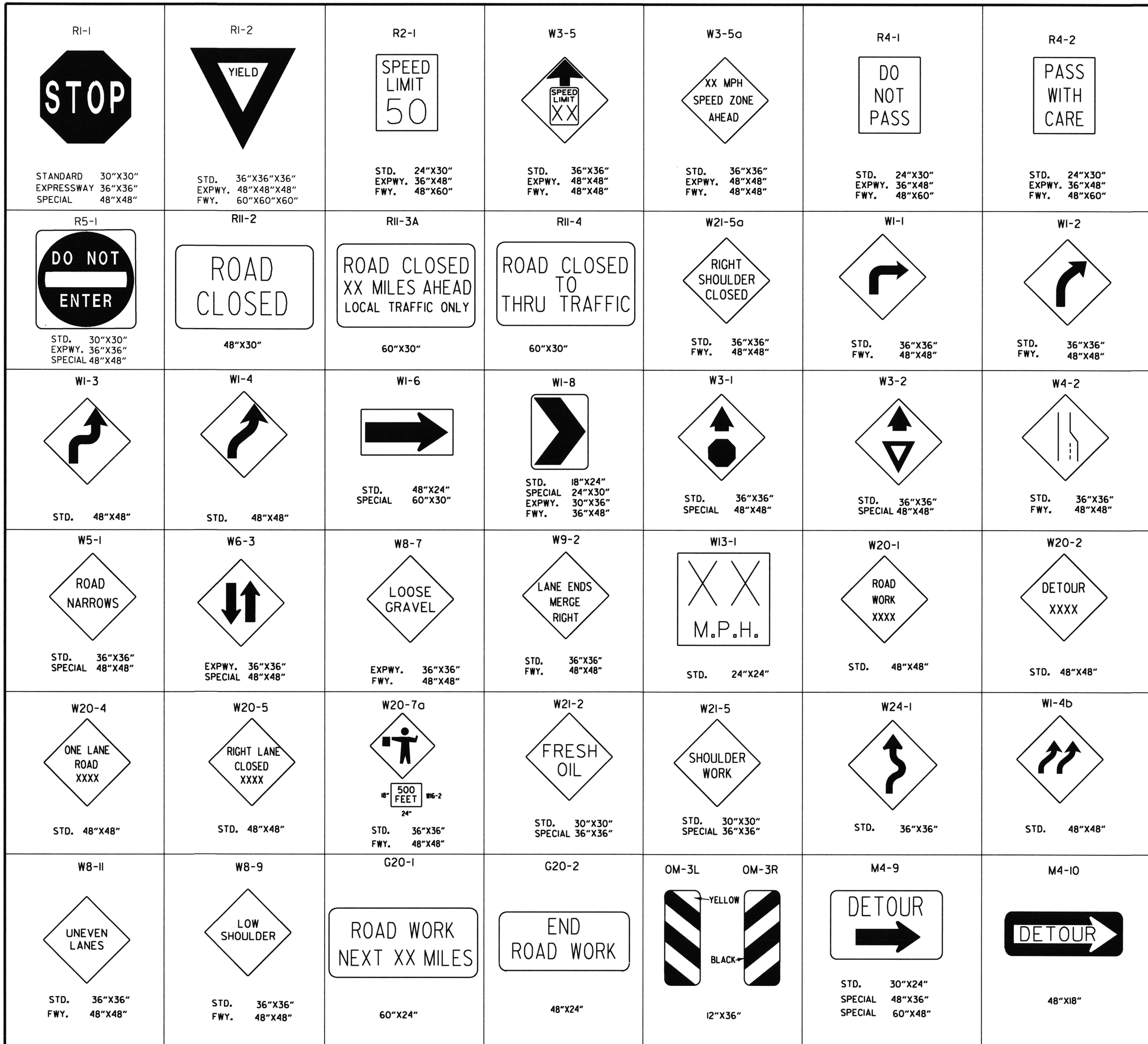
## DETAILS OF CONCRETE STEPS & WALKS

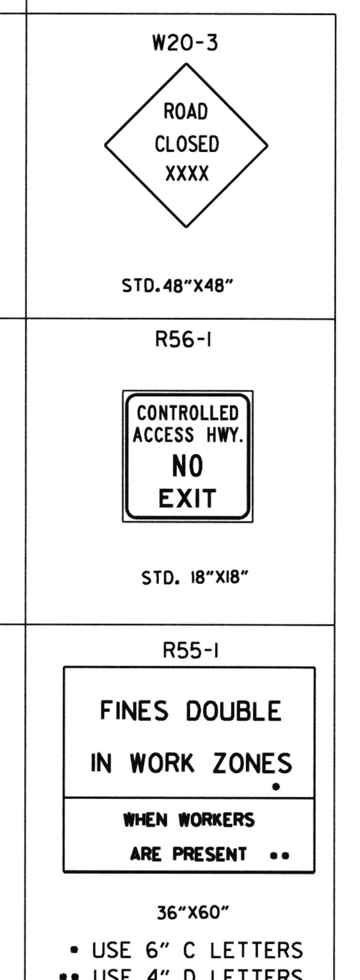
| DATE | REVISION | DATE FILMED |
|---|---|---|
| 10-25-18 | REVISED DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS | |
| 9-12-13 | REVISED REINFORCED CONCRETE SPRING BOX | |
| 7-26-12 | REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS | |
| 4-17-08 | REV. JOINT & FOOTING STEP DETAILS | |
| 11-29-07 | REVISED RETAINING WALL DRAINAGE | |
| 5-25-06 | REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX | |
| 10-9-03 | REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS | |
| 4-10-03 | REVISED RETAINING WALL DRAWING | |
| 8-22-02 | ADDED HAND RAILING DETAIL | |
| 11-16-01 | REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES | |
| 11-18-98 | ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS | |
| 7-02-98 | ENLARGED PIPE | |
| 4-03-97 | ADDED NOTE TO STEEL BAR SCHED. | |
| 10-18-96 | CORRECTED SPELLING | |
| 4-26-96 | ADD WEEP HOLE; REV. JOINT SPACING IN RET. WALL | |
| 6-2-94 | CHANGED CONST. TO CONTRACTION JOINT | |
| 10-1-92 | CHANGED MESH FABRIC TO WIRE MESH | 10-1-92 |
| 8-15-91 | DELETED HDWL MODIFICATION DETAIL | 8-15-91 |
| 11-8-90 | DELETED COLD MIX FROM CULV'T. REPAIR | 11-8-90 |
| 11-30-89 | REV. RETAINING WALL STEEL SCHEDULE | 11-30-89 |
| 11-17-88 | V. BARS BEHIND ARROW | 665-11-17-88 |
| 7-15-88 | REV. PAVEMENT REPAIR ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS | 649-7-15-88 |
| 11-1-84 | REV. TRENCH FOR PIPE UNDERDRAIN | 510-11-1-84 |
| 1-4-83 | ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE | 682-1-4-83 |
| 3-2-81 | SPELLING OF "UNDERDRAIN" | 721-3-2-81 |
| 4-20-79 | REV. UNDERDRAIN DET& PAVEMENT REPAIR | 674-4-20-79 |
| 2-2-76 | 12"MIN. GRAN. MAT'L. OVER PIPE | 919-2-2-76 |
| 4-10-75 | REM. SPECS. FOR GRAN. MAT'L. | 568-4-10-75-853 |
| 5-22-74 | GRANULAR MAT'L. TO BE SB-3 | 567-5-22-74-740 |
| 10-2-72 | REVISED AND REDRAWN | 564-10-16-72 |

ARKANSAS STATE HIGHWAY COMMISSION

# DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI- 1




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.

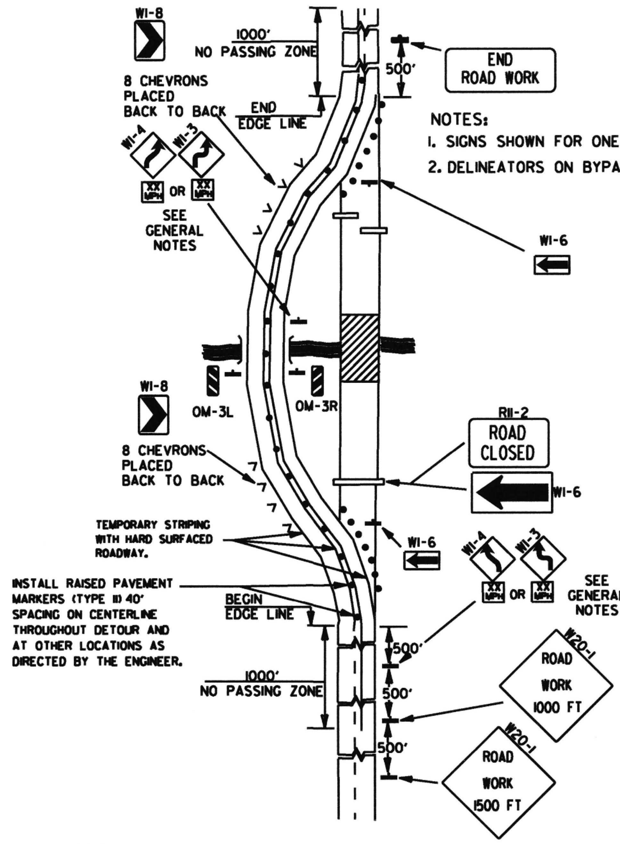
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED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

| DATE | REVISION | FILMED |
|---|---|---|
| 11-07-19 | REVISED FOR MASH | |
| 4-13-17 | DELETED RSP-1 & ADDED W21-5a | |
| 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 | |
| 11-16-01 | REVISED NOTE 7 | |
| 9-28-00 | REVISED NOTE | |
| 11-18-98 | ADDED NOTE | |
| 6-26-97 | REVISED NOTE 5 | |
| 4-03-97 | REVISED NOTE 5 | |
| 10-18-96 | ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7 | |
| 10-12-95 | ADDED R55-1 | |
| 6-8-95 | REVISED TO CORRECT SIGN ILLUSTRATIONS | 6-8-95 |
| 2-2-95 | REVISED PER PART VI, MUTCD SEPT. 3, 1993 | |
| 8-15-91 | DRAWN AND PLACED IN USE | |

ARKANSAS STATE HIGHWAY COMMISSION

# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

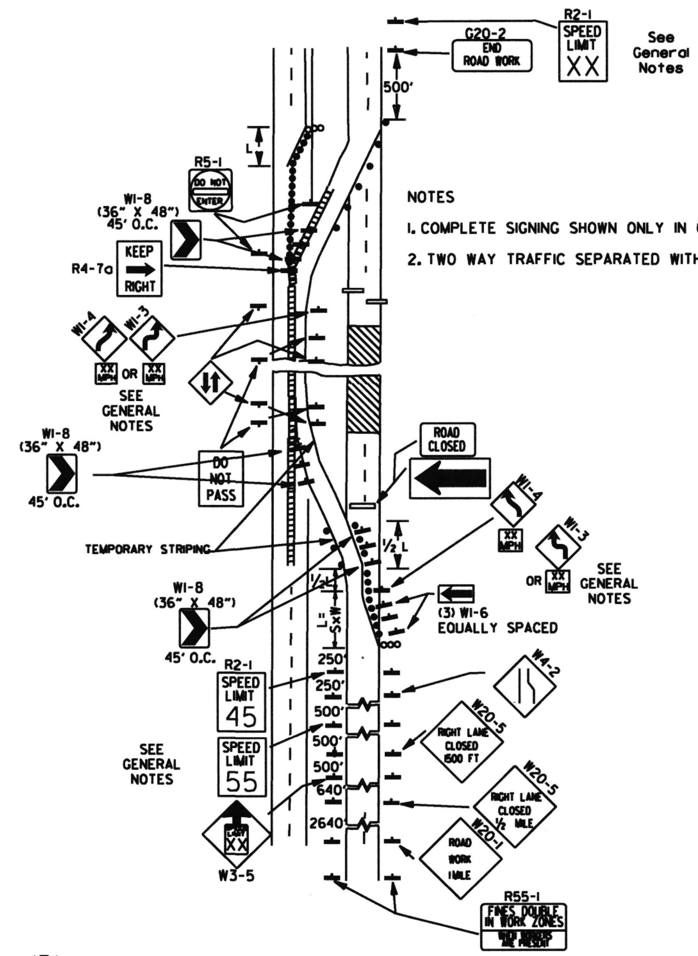
STANDARD DRAWING TC-1




NOTES:

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

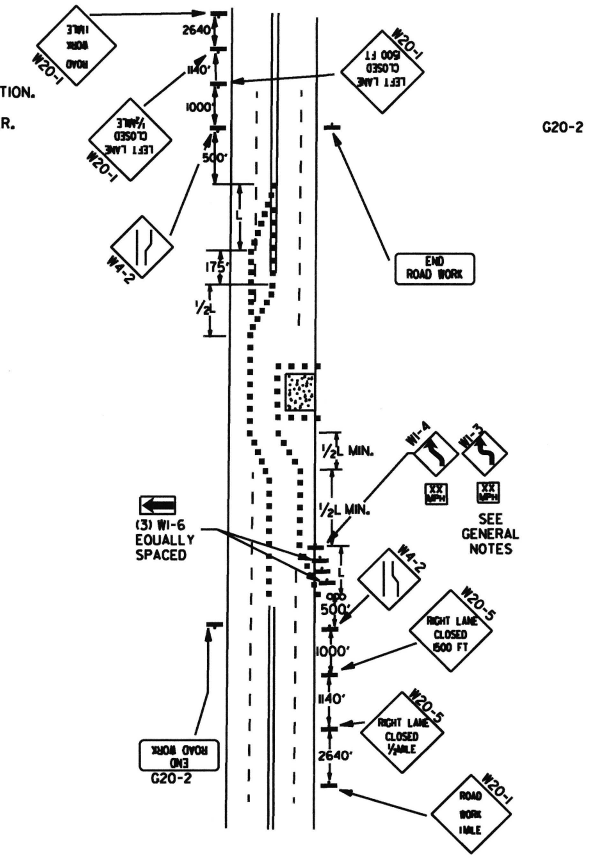
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.




NOTES

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

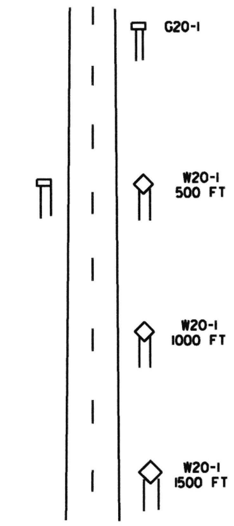
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



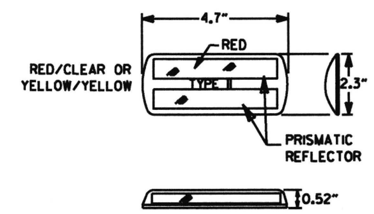

(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

KEY:

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




TYPICAL ADVANCE WARNING SIGN PLACEMENT




DETAIL OF RAISED PAVEMENT MARKERS

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:

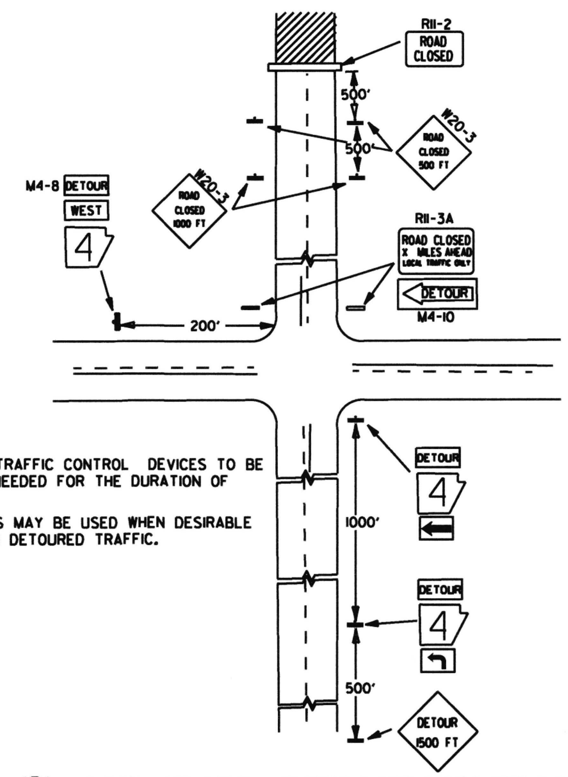
L= MINIMUM LENGTH OF TAPER.

S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.

W= WIDTH OF OFFSET.

GENERAL NOTES:

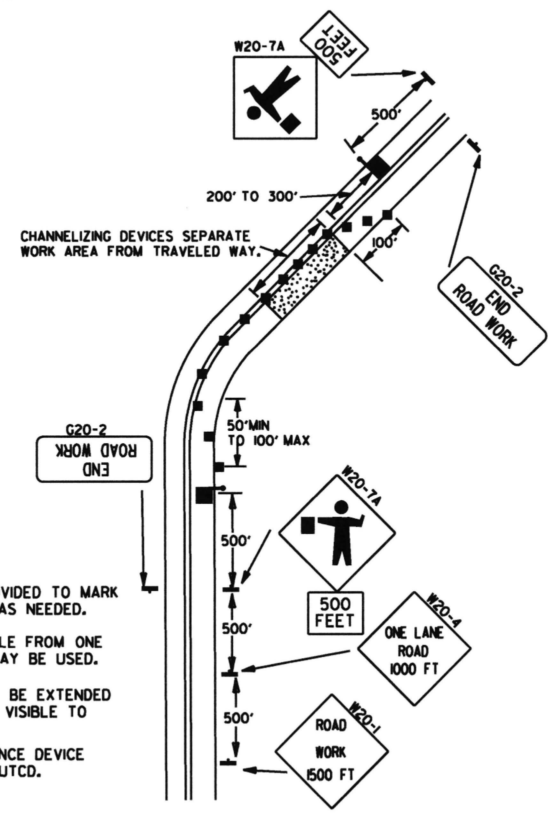
1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS
2. WHEN THE EXISTING SPEED LIMIT 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 ARDOT QUALIFIED PRODUCTS LIST.
9. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).




NOTES:

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

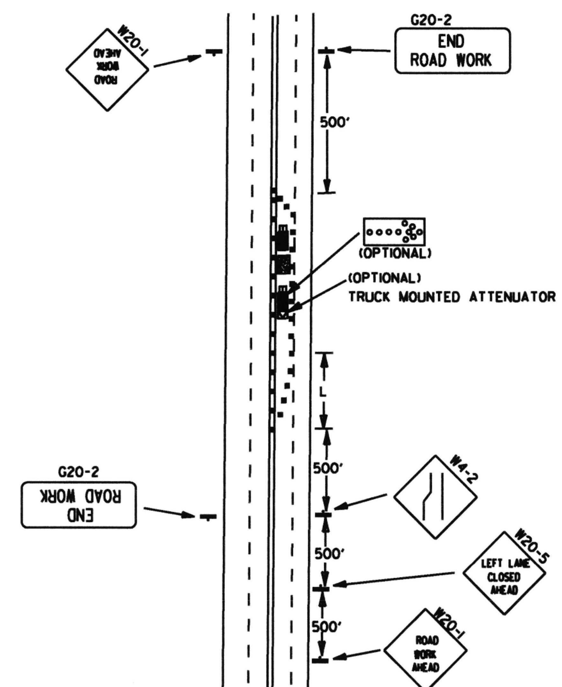
(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.




NOTES:

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

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



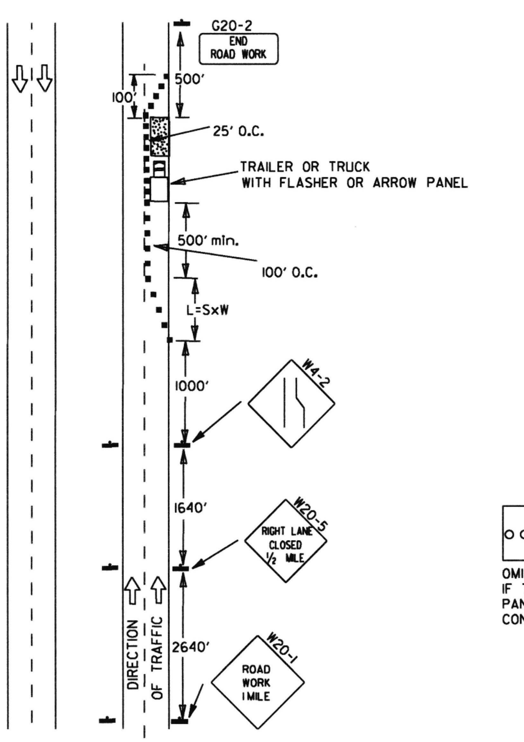

(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

| DATE | REVISION | FILMED |
|---|---|---|
| 11-07-19 | REVISED NOTE 1, ADDED NOTE 9 | |
| 9-2-15 | REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5 | |
| 9-12-13 | REVISED DETAIL OF RAISED PAVEMENT MARKERS | |
| 3-11-10 | ADDED (AFAD) | |
| 11-20-08 | REVISED SIGN DESIGNATIONS | |
| 11-18-04 | ADDED GENERAL NOTE | |
| 10-18-96 | ADDED R55-1 | |
| 4-26-96 | CORRECTED (o) 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 | |

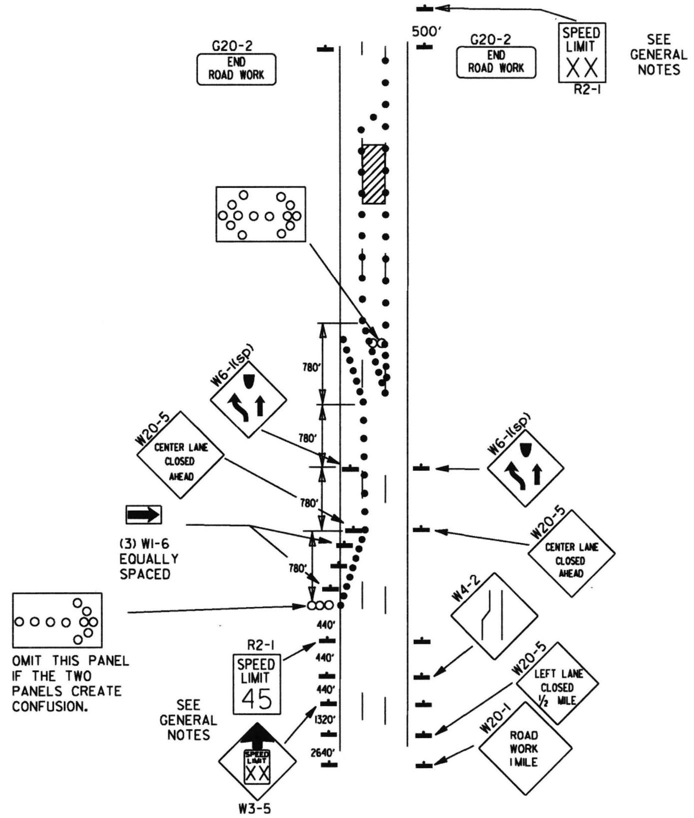
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-2

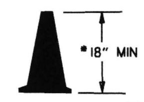



(A) TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



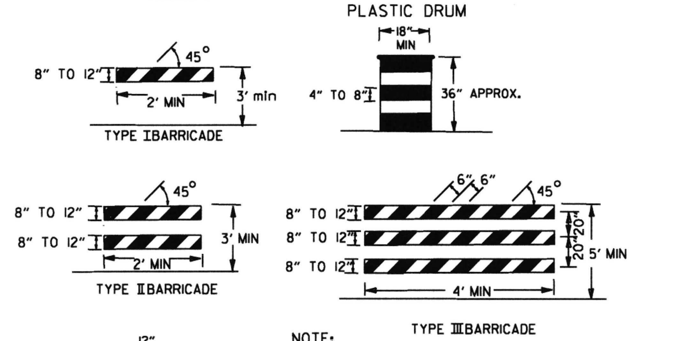

(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

## CHANNELIZING DEVICES

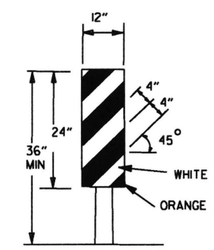



- WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

CONES

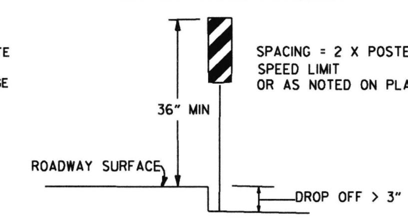



NOTE:
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.

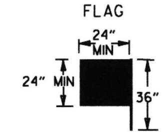



VERTICAL PANEL
VP-1R

VERTICAL PANEL PLACEMENT




FLAG




FLAG SHALL BE OF GOOD GRADE RED MATERIAL

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 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.
11. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

TRAFFIC CONTROL DEVICES

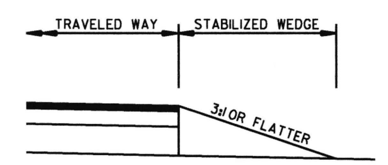
| NON-INTERSTATE | | | |
|---|---|---|---|
| VERTICAL DIFFERENTIAL | LOCATION | TRAFFIC CONTROL | |
| | | ≤ 45 MPH | > 45 MPH |
| ≤ 2" | CENTERLINE | W8-11 AND LANE STRIPING | W8-11 AND LANE STRIPING |
| > 2" | CENTERLINE | STANDARD LANE CLOSURE | STANDARD LANE CLOSURE |
| ≤ 3" | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS | W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS |
| > 3" ≤ 6" | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS | W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS |
| > 6" ≤ 12" | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(1) | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(2) |
| > 12" ≤ 24" | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(1) | PRECAST CONCRETE BARRIER(3) & EDGE LINES |
| > 24" | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | PRECAST CONCRETE BARRIER(3) & EDGE LINES | PRECAST CONCRETE BARRIER(3) & EDGE LINES |

| INTERSTATE | | |
|---|---|---|
| VERTICAL DIFFERENTIAL | LOCATION | TRAFFIC CONTROL |
| ≤ 2" | CENTERLINE | W8-11 AND LANE STRIPING |
| ≤ 2" | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS(2) |
| > 2" ≤ 6" | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS(2) |
| > 6" | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | PRECAST CONCRETE BARRIER & EDGE LINES |

| INTERSTATE AND NON-INTERSTATE | | |
|---|---|---|
| FORESLOPE | HEIGHT | TRAFFIC CONTROL |
| 1:1 | > 2 FT | PRECAST CONCRETE BARRIER |
| 2:1 | ≤ 5 FT | TRAFFIC DRUMS |
| 2:1 | > 5 FT | PRECAST CONCRETE BARRIER |
| Flatter than 2:1 | N/A | TRAFFIC DRUMS |

GENERAL NOTES:

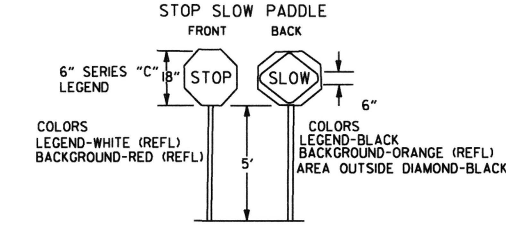
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED.
3. A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
4. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.




STABILIZED WEDGE

NOTE:
MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.

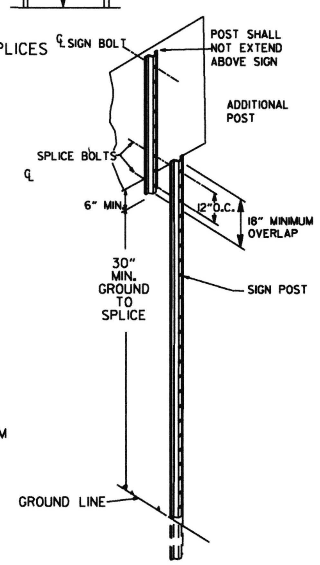
STOP SLOW PADDLE




COLORS
LEGEND-WHITE (REFL)
BACKGROUND-RED (REFL)

COLORS
LEGEND-BLACK
BACKGROUND-ORANGE (REFL)
AREA OUTSIDE DIAMOND-BLACK

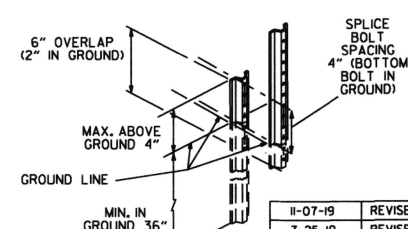
DETAIL OF SPLICES

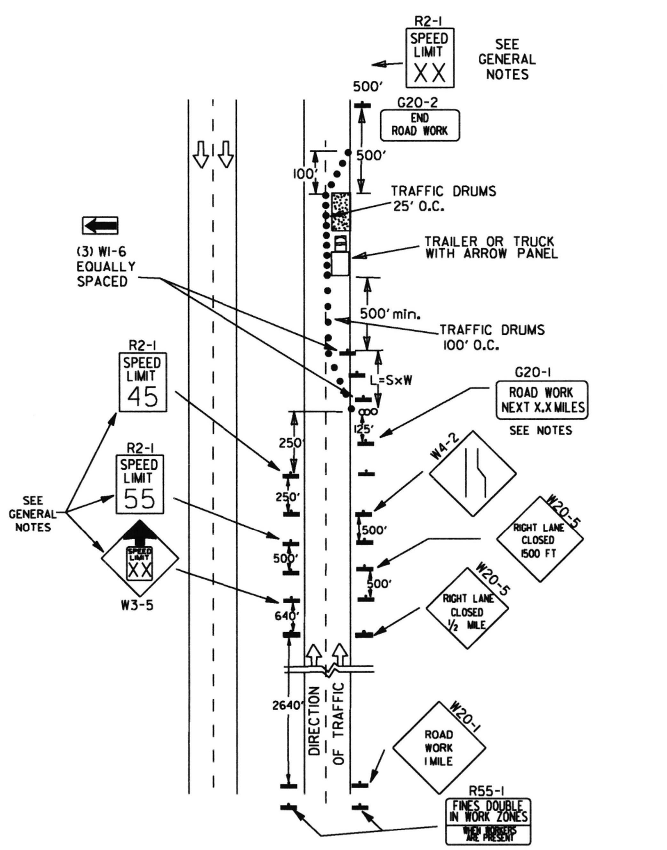



NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

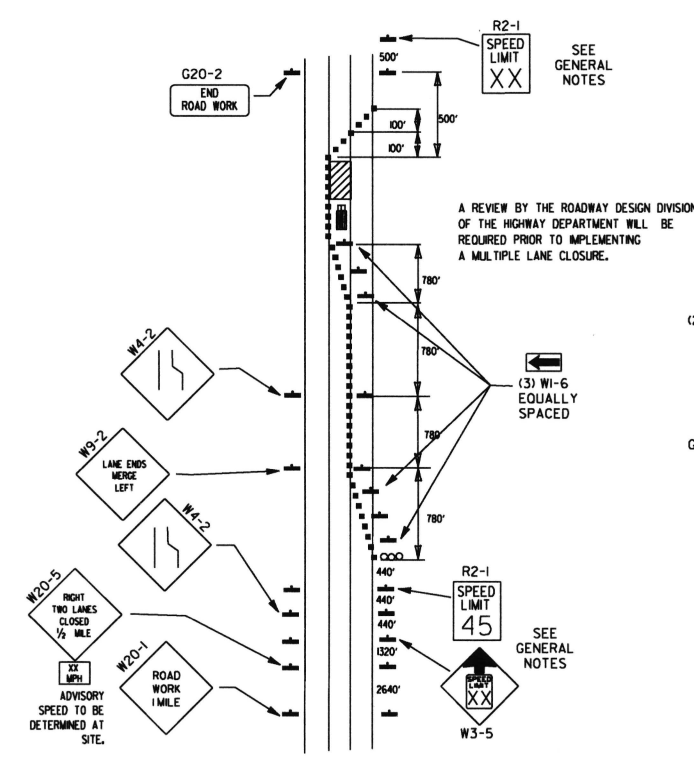
NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.




(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.




(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

| DATE | REVISION | FILMED |
|---|---|---|
| 11-07-19 | REVISED NOTE 9, ADDED NOTE 11 | |
| 7-25-19 | REVISED TRAFFIC CONTROL DEVICES DETAILS | |
| 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 | |

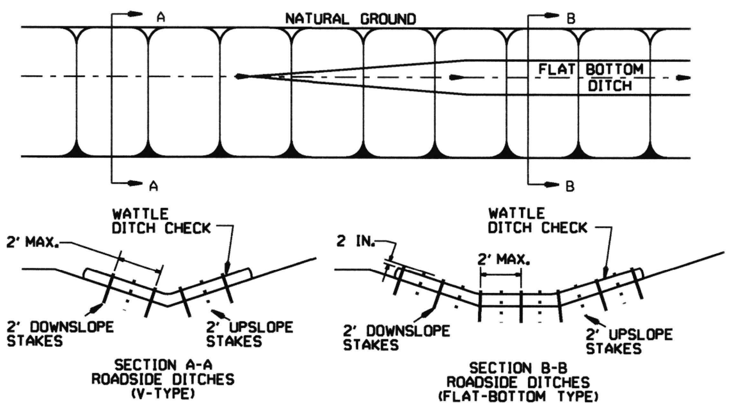
ARKANSAS STATE HIGHWAY COMMISSION

# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

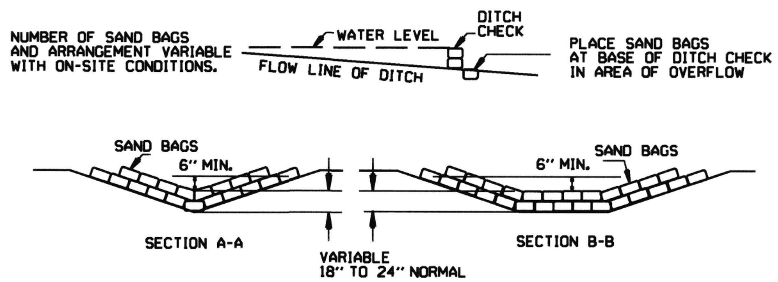
STANDARD DRAWING TC-3

GENERAL NOTES

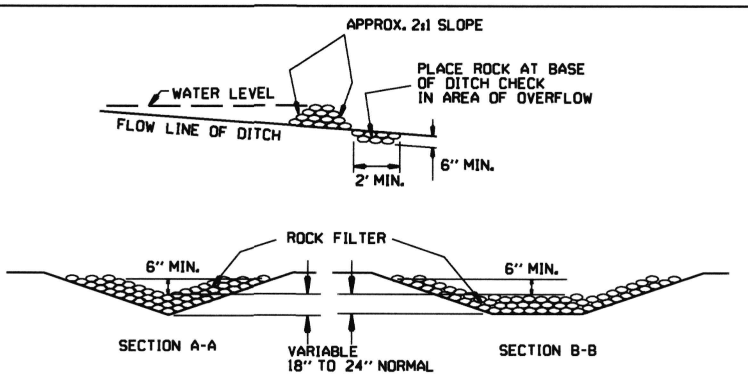
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.




WATTLE DITCH CHECK (E-1)



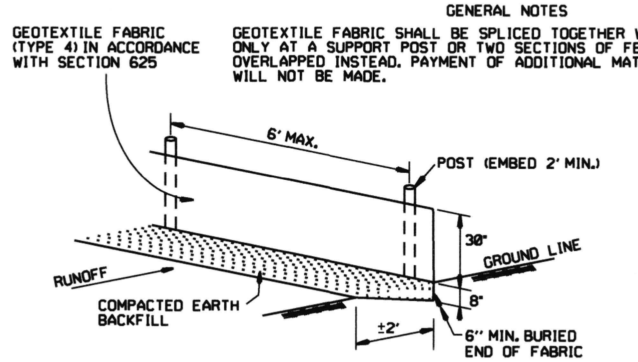

SAND BAG DITCH CHECK (E-5)



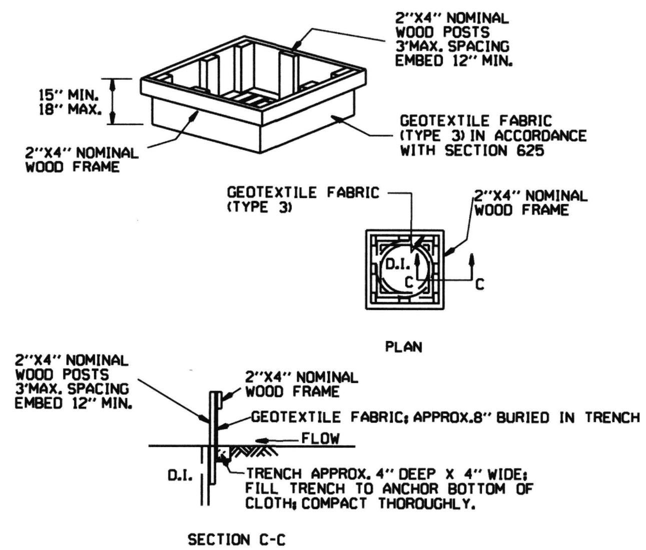

ROCK DITCH CHECK (E-6)

GENERAL NOTES

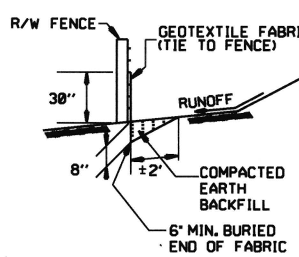
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.




SILT FENCE (E-11)

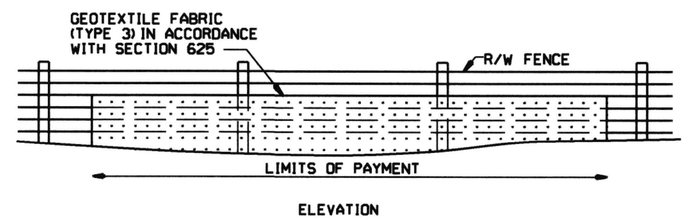



DROP INLET SILT FENCE (E-7)




GENERAL NOTES

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



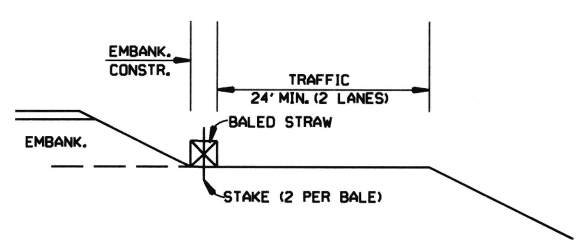

SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

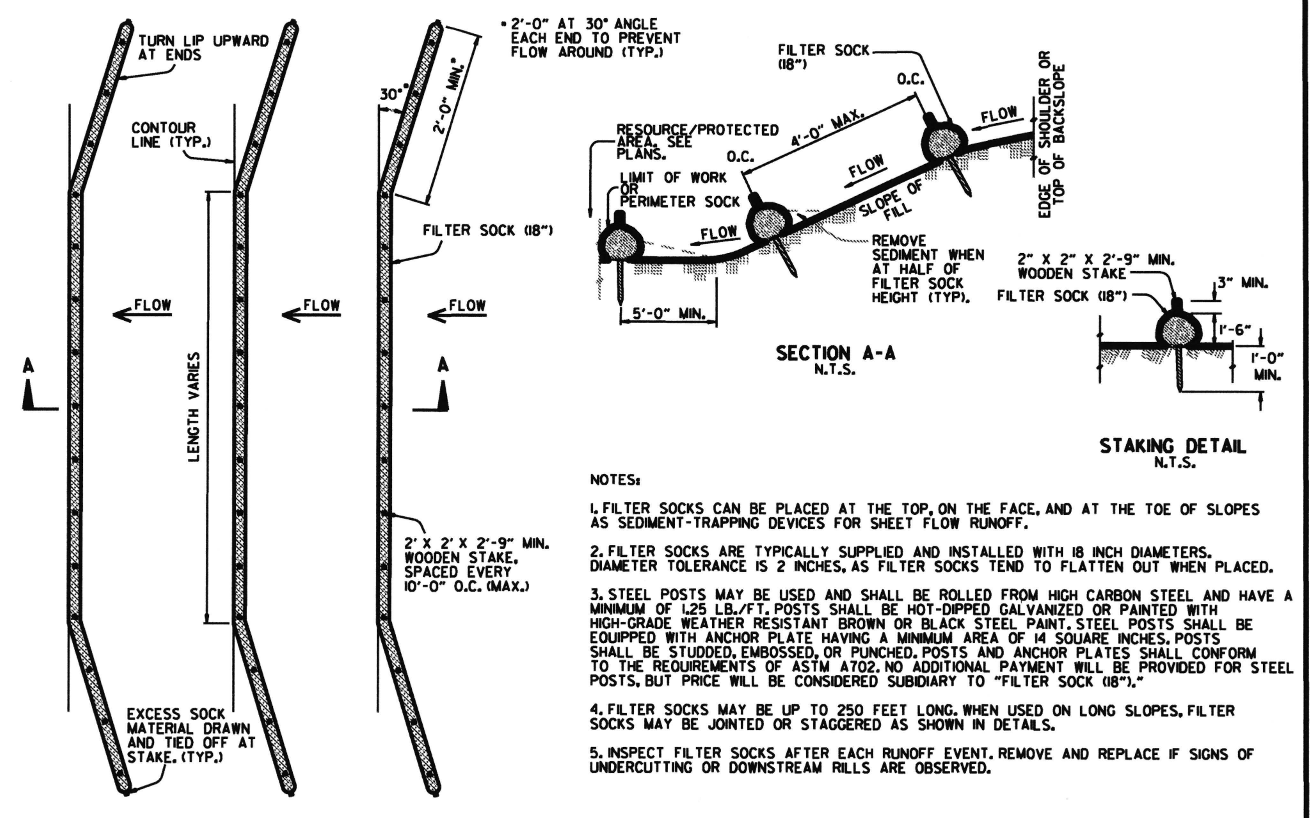
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

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




BALED STRAW FILTER BARRIER (E-2)




NOTES:

1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.

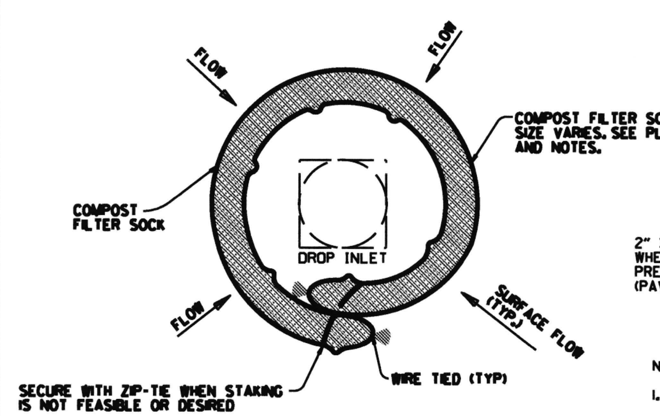
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

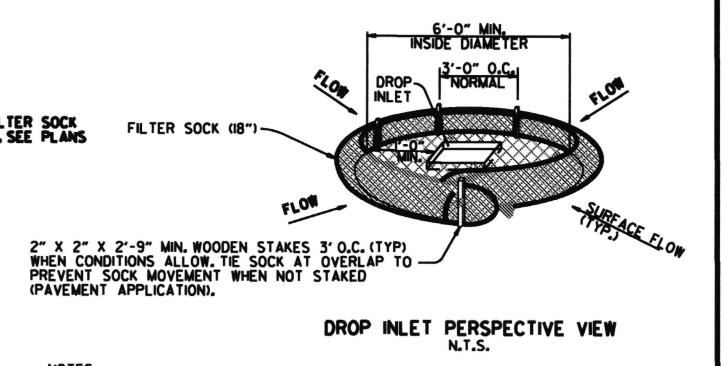
3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EOUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SOUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REOUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBIDIARY TO "FILTER SOCK (18")."

4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.

5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.

FILTER SOCK ALONG SLOPE (E-3)




NOTES:

1. OVERLAP ENDS OF SOCK (1' MIN. 3' MAX.).

2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

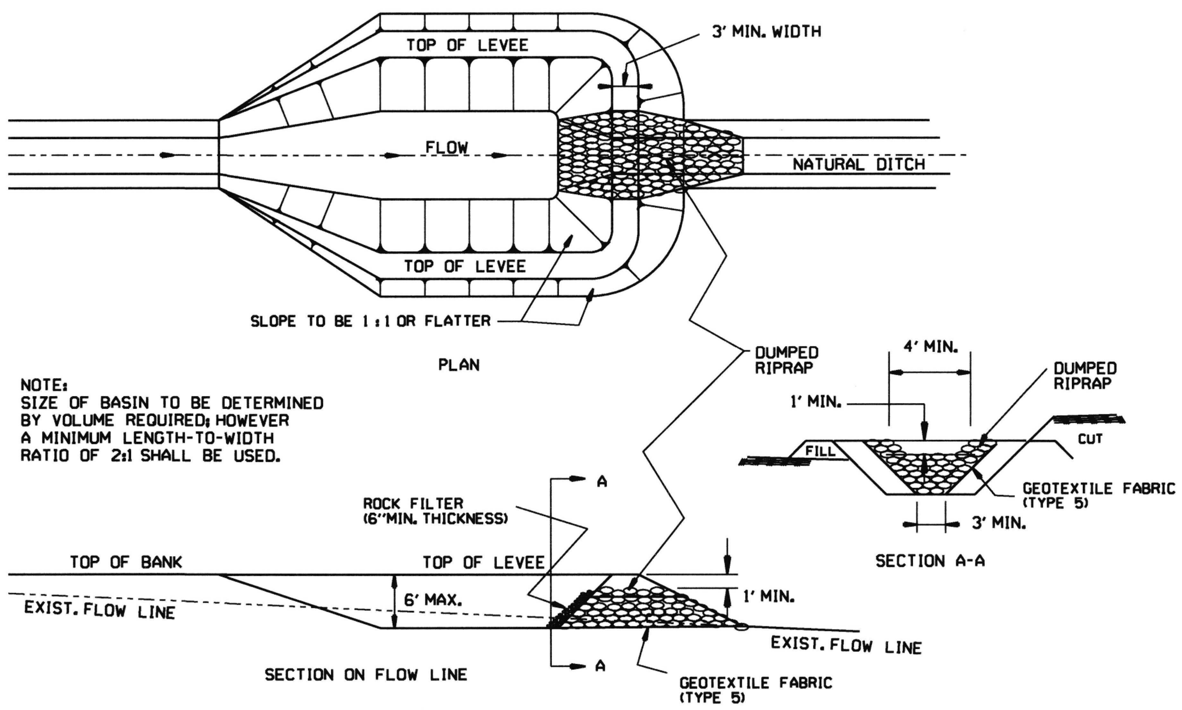
COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

| DATE | REVISION | FILMED |
|---|---|---|
| 11-16-17 | ADDED FILTER SOCK E-3 AND E-13 | |
| 12-15-11 | DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK | |
| 11-18-98 | ADDED NOTES | |
| 07-02-98 | ADDED BALED STRAW FILTER BARRIER (E-2) | |
| 07-20-95 | REVISED SILT FENCE E-4 AND E-11 | 7-20-95 |
| 07-15-94 | REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC | |
| 06-02-94 | REVISED E-1,4,7 & 11; DELETED E-2 & 3 | 6-2-94 |
| 04-01-93 | REDRAWN | |
| 10-01-92 | REDRAWN | |
| 08-02-76 | ISSUED R.D.M. | 298-7-28-76 |

ARKANSAS STATE HIGHWAY COMMISSION

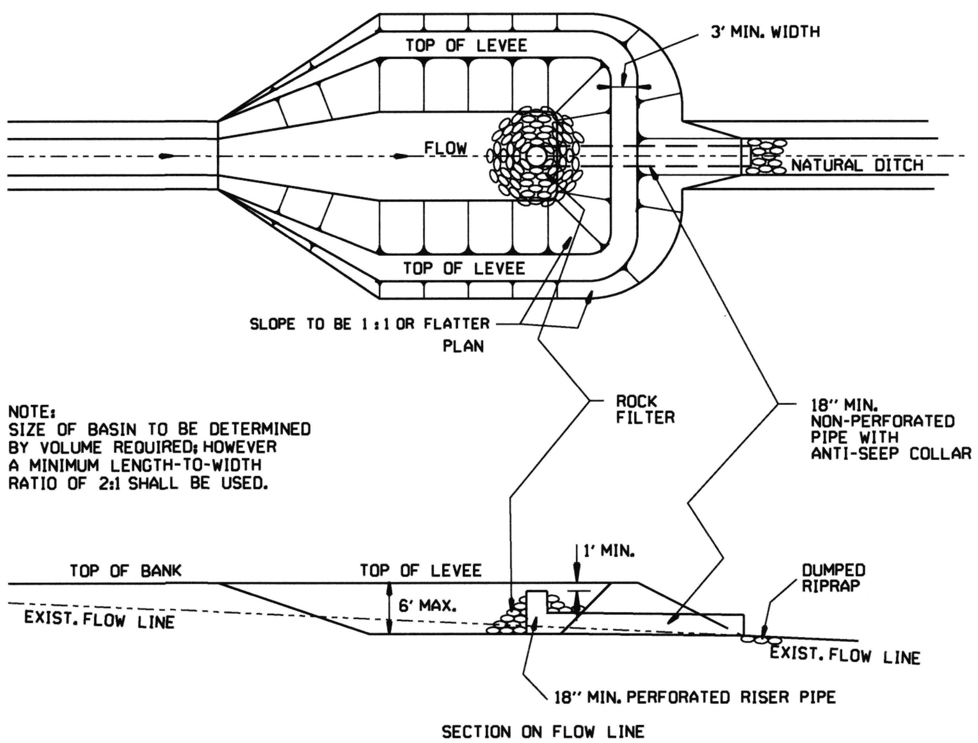
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-1



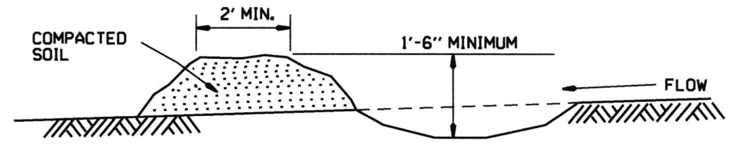

NOTE:
SIZE OF BASIN TO BE DETERMINED BY VOLUME REQUIRED; HOWEVER A MINIMUM LENGTH-TO-WIDTH RATIO OF 2:1 SHALL BE USED.

## SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



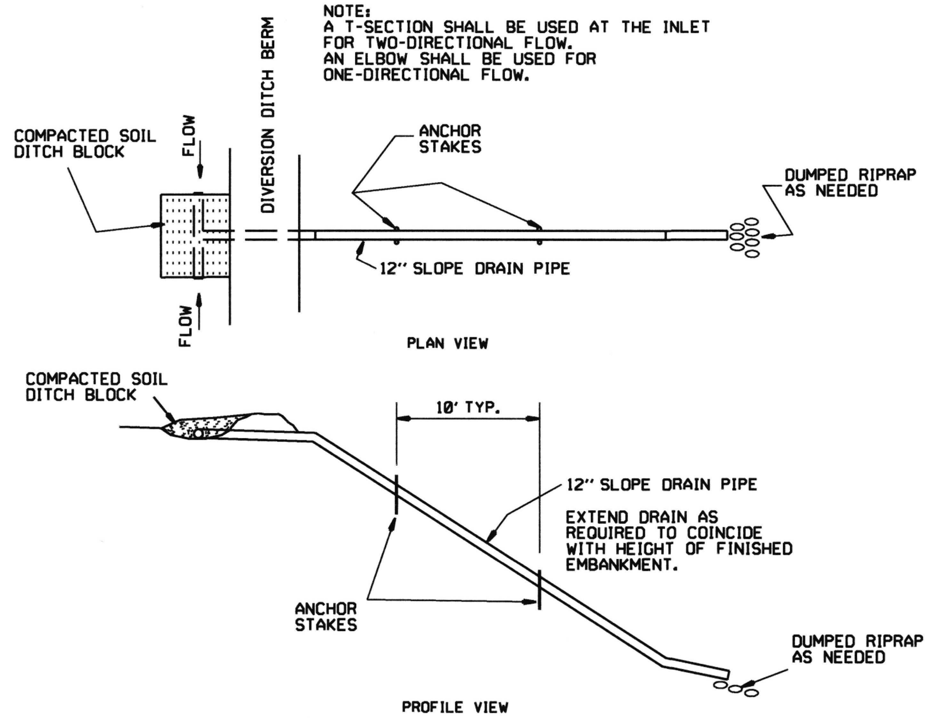

NOTE:
SIZE OF BASIN TO BE DETERMINED BY VOLUME REQUIRED; HOWEVER A MINIMUM LENGTH-TO-WIDTH RATIO OF 2:1 SHALL BE USED.

## SEDIMENT BASIN WITH PIPE OUTLET (E-10)

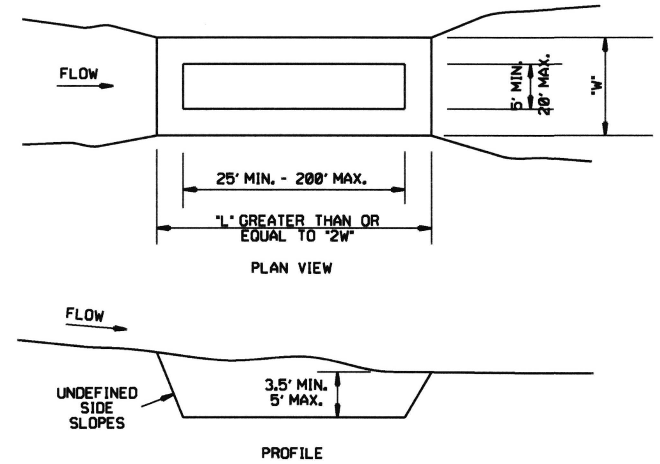



## DIVERSION DITCH (E-8)

NOTE:
A T-SECTION SHALL BE USED AT THE INLET FOR TWO-DIRECTIONAL FLOW.
AN ELBOW SHALL BE USED FOR ONE-DIRECTIONAL FLOW.




## SLOPE DRAIN (E-12)




## SEDIMENT BASIN (E-14)

| | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| 6-2-94 | Revised E-8 & E-12; Added E-14 & Deleted E-13 | |
| 4-1-93 | ISSUED | |
| DATE | REVISION | FILMED |

ARKANSAS STATE HIGHWAY COMMISSION

# TEMPORARY EROSION CONTROL DEVICES

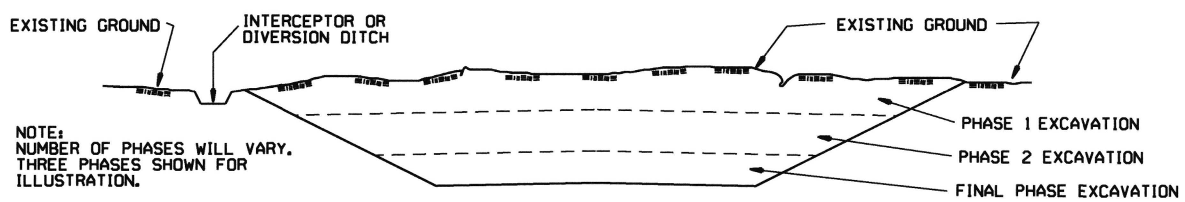
STANDARD DRAWING TEC-2

# 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



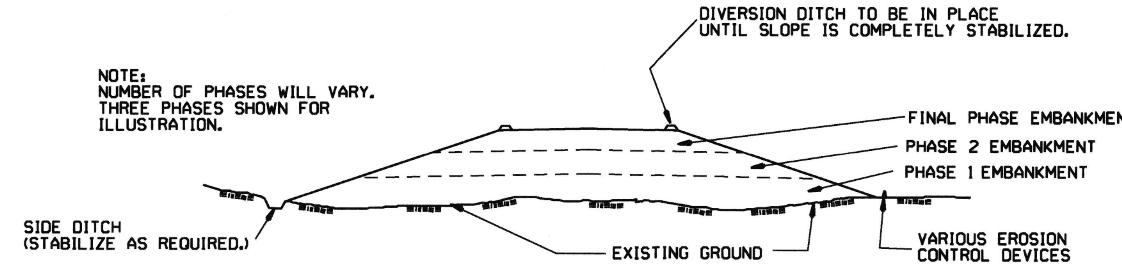

GENERAL NOTE

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

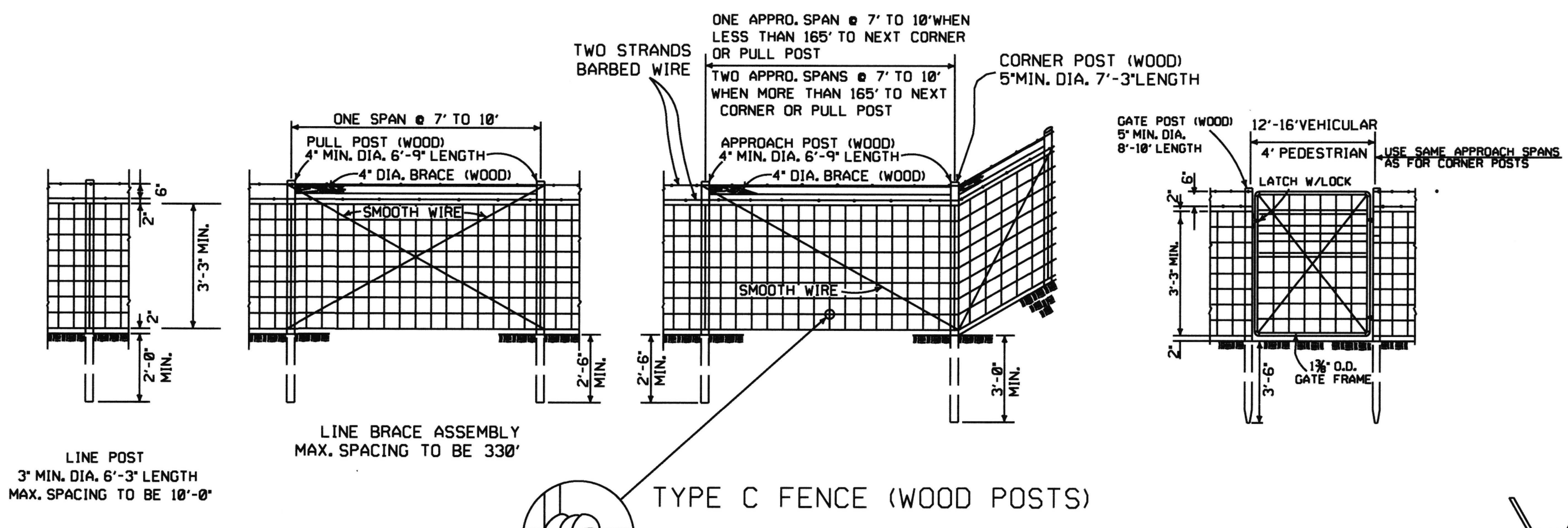
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD 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 |

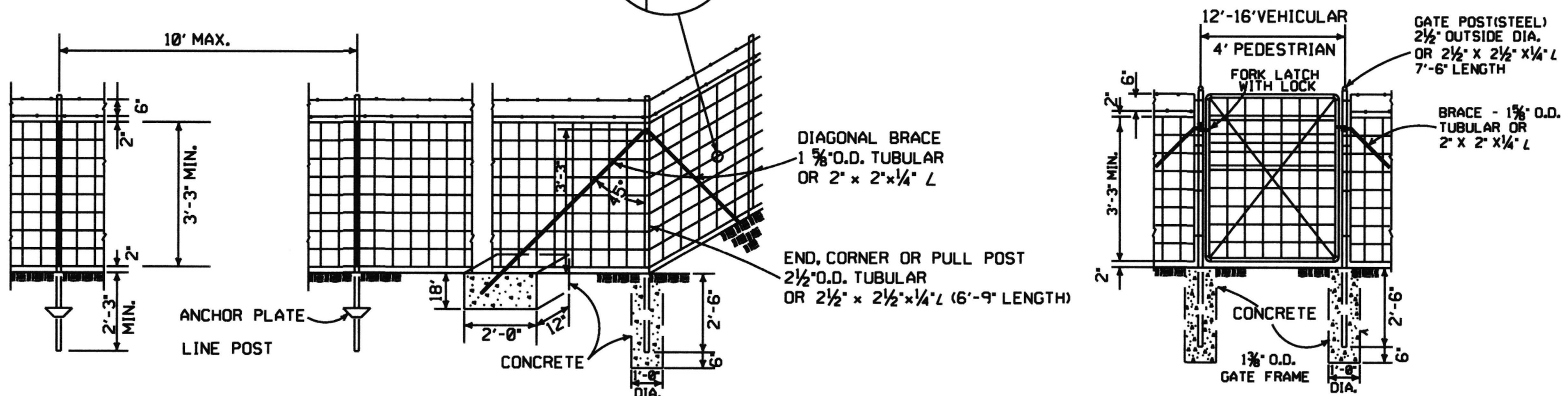
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

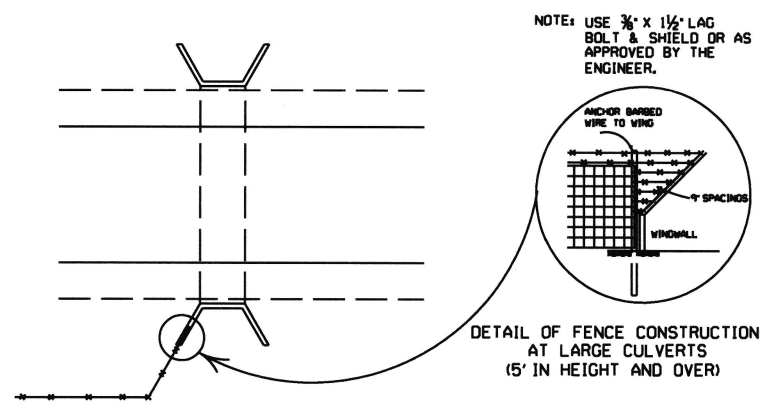



TYPE C FENCE (WOOD POSTS)




NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.

TYPE C FENCE (STEEL POSTS)




DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

## GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

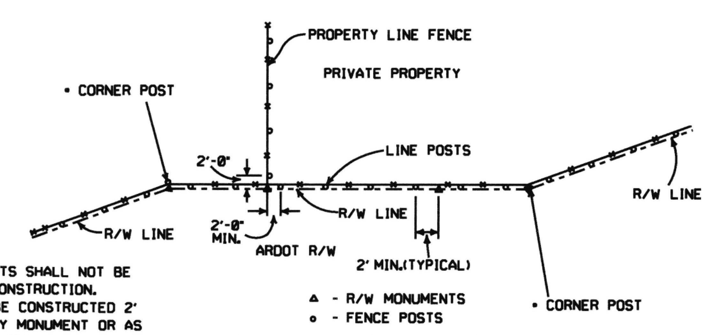
DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

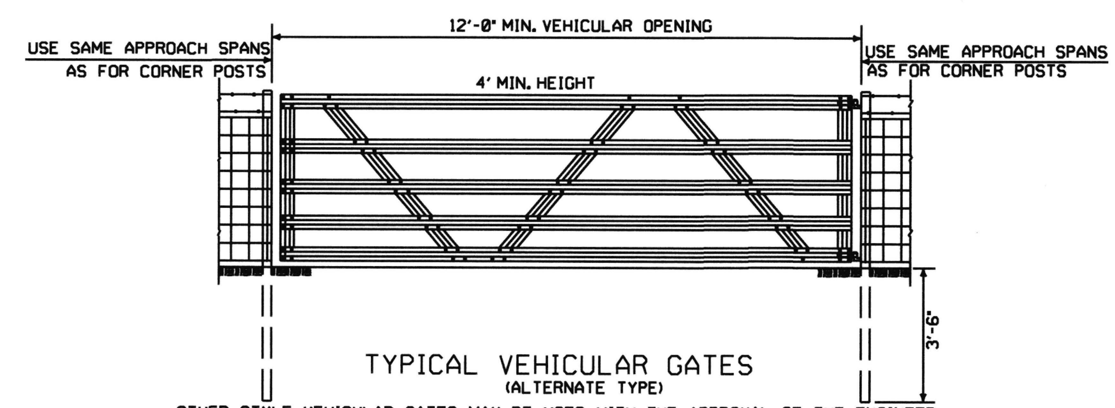
SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.




• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

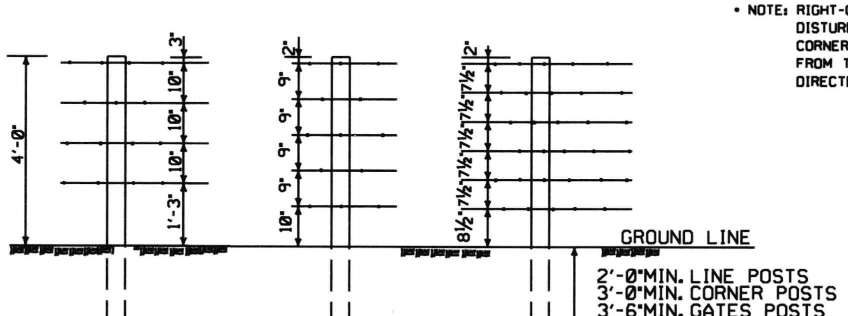
RIGHT-OF-WAY FENCE LOCATION




TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

4 STRANDS BARBED WIRE (D)
5 STRANDS BARBED WIRE (D-1)
6 STRANDS BARBED WIRE (D-2)

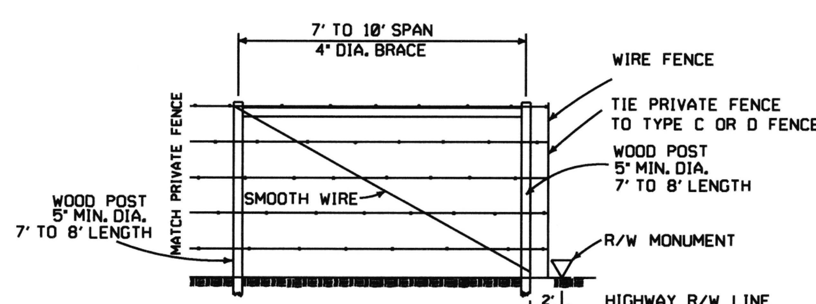



TYPE D FENCE

TYPE D-1 FENCE

TYPE D-2 FENCE

NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.




PRIVATE FENCE TERMINAL INSTALLATION

WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.

| DATE | REVISION | FILMED |
|---|---|---|
| 8-22-02 | REVISED GENERAL NOTES | |
| 10-18-96 | REVISED AASHTO | |
| 11-22-95 | REVISED R-O-W LOCATION DETAIL | |
| 6-2-94 | REVISED BARB WIRE AND ADDED CORNER POST NOTES | 6-2-94 |
| 8-5-93 | REVISED R/W INSTALLATION FENCE | 8-5-93 |
| 10-1-92 | ADDED STAPLE NOTE | 10-1-92 |
| 8-15-91 | ADDED TYPE D-2 FENCE | 8-15-91 |
| 11-30-89 | DELETED CLASS CONCRETE | 11-30-89 |
| 7-15-88 | ADDED SPLICE NOTE | 700-7-15-88 |
| 10-30-87 | GENERAL REVISIONS | 549-10-30-87 |
| 11-1-84 | MAX. POST SPACING MIN. WIRE GAUGE | 507-11-1-84 |
| 1-4-83 | MIN. DIA. LINE POST | 648-1-4-83 |
| 3-2-81 | TOLERANCE FOR POST LENGTH | 722-3-2-81 |
| 12-1-72 | ADDED D-1 & FENCE INSTALLATION | 564-12-1-72 |
| 10-2-72 | REVISED AND REDRAWN | 540-10-2-72 |

ARKANSAS STATE HIGHWAY COMMISSION

# WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4