

| DATE<br>REVISED                          | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|------------------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                          |                 | 6                     | ARK.  | 020802  | 1            | 42              |
| HWYS. 15/31 Y-INTERS. SAFETY IMPVTS. (S) |                 |                       |       |         |              |                 |

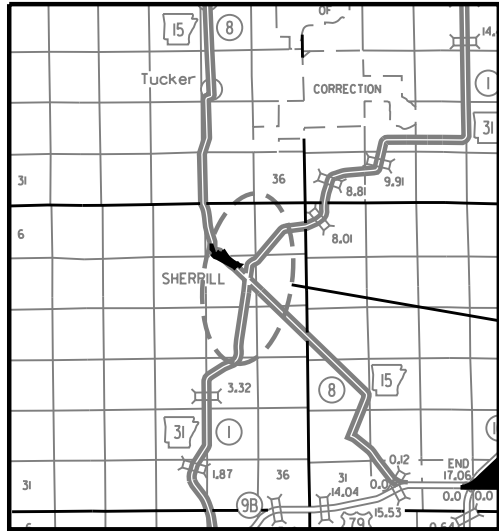
ARKANSAS DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION PLANS FOR STATE HIGHWAY

HWYS. 15/31 Y-INTERS. SAFETY  
IMPVTS. (S)

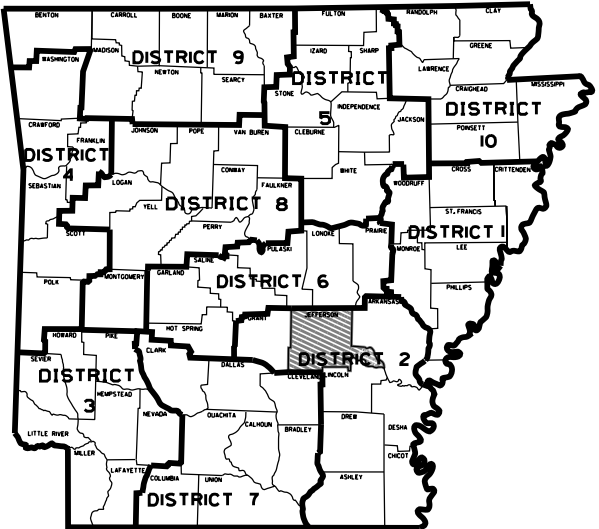
JEFFERSON COUNTY  
ROUTE 15 SECTION 8  
ROUTE 31 SECTION 1

JOB 020802

FED. AID PROJ. HSIP-0035(72)  
NOT TO SCALE



VICINITY MAP



ARK. HWY. DIST. NO. 2

STA. 89+12.46  
END JOB 020802  
L. M. 5.654

HWY. 15-31 CONNECTOR STA. 85+96.59 =  
BEGIN HWY. 31 STA. 585+00.00  
Δ 90°00' 00"

HWY. 15-31 CONNECTOR STA. 82+82.53 =  
END HWY. 15 STA. 584+15.05  
Δ 90°00' 00"

STA. 80+00.00  
BEGIN JOB 020802  
L. M. 5.909

STA. 588+40.37  
END HWY. 31  
L. M. 6.071

STA. 580+50.00  
BEGIN HWY. 15  
L. M. 5.481



| PROJECT LOCATION |             |             |             |
|------------------|-------------|-------------|-------------|
|                  | BEGIN       | MID-POINT   | END         |
| LATITUDE         | N34°55' 39" | N34°22' 44" | N34°22' 47" |
| LONGITUDE        | W91°56' 39" | W91°56' 39" | W91°56' 42" |

|                         |         |               |       |
|-------------------------|---------|---------------|-------|
| GROSS LENGTH OF PROJECT | 1571.88 | FEET OR 0.298 | MILES |
| NET LENGTH OF ROADWAY   | 1571.88 | FEET OR 0.298 | MILES |
| NET LENGTH OF BRIDGES   | 0.00    | FEET OR 0.000 | MILES |
| NET LENGTH OF PROJECT   | 1571.88 | FEET OR 0.298 | MILES |



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|                                       |                 | 6                   | ARK.  | 020802  | 2            | 42              |
| INDEX OF SHEETS AND STANDARD DRAWINGS |                 |                     |       |         |              |                 |

INDEX OF SHEETS

| SHEET NO. | TITLE                                      |
|-----------|--------------------------------------------|
| 1         | TITLE SHEET                                |
| 2         | INDEX OF SHEETS AND STANDARD DRAWINGS      |
| 3         | GOVERNING SPECIFICATIONS AND GENERAL NOTES |
| 4 - 5     | TYPICAL SECTIONS OF IMPROVEMENT            |
| 6 - 8     | SPECIAL DETAILS                            |
| 9 - 12    | TEMPORARY EROSION CONTROL DETAILS          |
| 13 - 19   | MAINTENANCE OF TRAFFIC DETAILS             |
| 20        | PERMANENT PAVEMENT MARKING DETAILS         |
| 21 - 24   | QUANTITIES                                 |
| 25        | SUMMARY OF QUANTITIES AND REVISIONS        |
| 26        | SURVEY CONTROL DETAILS                     |
| 27 - 29   | PLAN AND PROFILE SHEETS                    |
| 30 - 42   | CROSS SECTIONS                             |

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



ROADWAY STANDARD DRAWINGS

| DRWG.NO. | TITLE                                                                        | DATE     |
|----------|------------------------------------------------------------------------------|----------|
| DR-2     | DETAILS OF DRIVEWAYS & STREET TURNOUTS                                       | 05-19-22 |
| FES-1    | FLARED END SECTION                                                           | 10-18-96 |
| FES-2    | FLARED END SECTION                                                           | 10-18-96 |
| G-1      | STEEL GRATE ASSEMBLY (TYPE 1)                                                | 08-15-91 |
| G-2      | STEEL GRATE ASSEMBLY (TYPE 1)                                                | 08-15-91 |
| G-3      | STEEL GRATE ASSEMBLY (TYPE 1)                                                | 08-15-91 |
| MB-1     | MAILBOX DETAILS                                                              | 11-18-04 |
| PBC-1    | PRECAST CONCRETE BOX CULVERTS                                                | 01-28-15 |
| 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)                                         | 02-27-20 |
| PM-1     | PAVEMENT MARKING DETAILS                                                     | 04-09-26 |
| RCB-1    | REINFORCED CONCRETE BOX CULVERT DETAILS                                      | 07-26-12 |
| RCB-2    | EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS            | 11-20-03 |
| RCB-3    | METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS                               | 10-12-95 |
| SE-2     | TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC                      | 11-07-19 |
| TC-1     | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION                           | 08-14-25 |
| TC-1A    | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION                           | 04-09-26 |
| TC-2     | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION                           | 08-14-25 |
| TC-3     | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION                           | 08-14-25 |
| TC-4     | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER | 11-07-19 |
| TC-5     | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER | 11-07-19 |
| TC-6     | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION                           | 04-09-26 |
| TEC-1    | TEMPORARY EROSION CONTROL DEVICES                                            | 11-16-17 |
| W-X003-1 | DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS               | 05-10-66 |
| R-100X-0 | DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS     | 02-08-63 |

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|                                    |                 | 6                   | ARK.  | 020802  | 3            | 42              |
| GOVERNING SPECS. AND GENERAL NOTES |                 |                     |       |         |              |                 |

GOVERNING SPECIFICATIONS

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

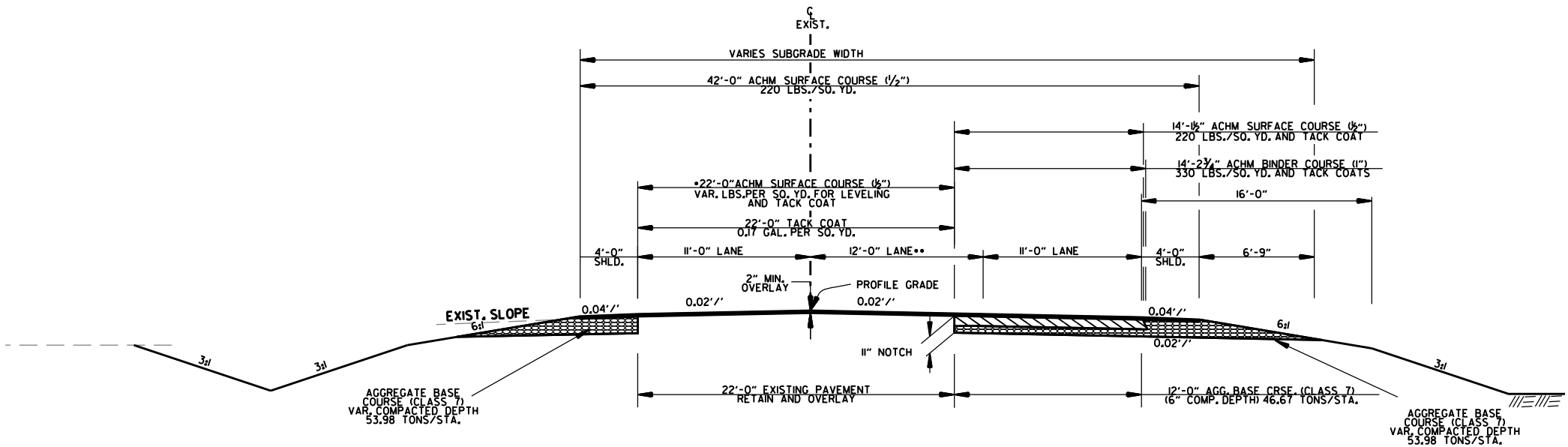
| NUMBER       | TITLE                                                                                  |
|--------------|----------------------------------------------------------------------------------------|
| ERRATA_____  | ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS                                         |
| 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                                                                  |
| 102-3_____   | PREQUALIFICATION OF BIDDERS                                                            |
| 103-2_____   | CONTACT INFORMATION FOR MOTORIST DAMAGE CLAIMS                                         |
| 105-4_____   | MAINTENANCE DURING CONSTRUCTION                                                        |
| 107-2_____   | RESTRAINING CONDITIONS                                                                 |
| 108-1_____   | LIQUIDATED DAMAGES                                                                     |
| 108-2_____   | WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER                                           |
| 110-1_____   | PROTECTION OF WATER QUALITY AND WETLANDS                                               |
| 210-1_____   | UNCLASSIFIED EXCAVATION                                                                |
| 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                                                             |
| 400-7_____   | TRACKLESS TACK                                                                         |
| 404-3_____   | DESIGN OF ASPHALT MIXTURES                                                             |
| 409-2_____   | ASPHALT LABORATORY FACILITY                                                            |
| 410-1_____   | CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES         |
| 410-2_____   | DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS                                     |
| 410-4_____   | EVALUATION OF ACHM SUBLLOT REPLACEMENT MATERIAL                                        |
| 416-1_____   | RECYCLED ASPHALT PAVEMENT                                                              |
| 501-3_____   | PORTLAND CEMENT CONCRETE PAVEMENT                                                      |
| 603-1_____   | LANE CLOSURE NOTIFICATION                                                              |
| 604-1_____   | RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES             |
| 604-3_____   | TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)                                   |
| 606-1_____   | PIPE CULVERTS FOR SIDE DRAINS                                                          |
| 620-1_____   | MULCH COVER                                                                            |
| 800-1_____   | STRUCTURES                                                                             |
| 802-5_____   | CONCRETE FOR STRUCTURES                                                                |
| 804-2_____   | REINFORCING STEEL FOR STRUCTURES                                                       |
| JOB 020802__ | BIDDING REQUIREMENTS AND CONDITIONS                                                    |
| JOB 020802__ | BUY AMERICA - CONSTRUCTION MATERIALS                                                   |
| JOB 020802__ | CARGO PREFERENCE ACT REQUIREMENTS                                                      |
| JOB 020802__ | COLD MILLING – COUNTY PROPERTY                                                         |
| JOB 020802__ | DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES                                         |
| JOB 020802__ | DOCUMENTATION OF PAYMENTS MADE – PROMPT PAYMENT (SIGNET SOFT LAUNCH)                   |
| JOB 020802__ | DOCUMENTATION OF PAYMENTS MADE TO DISADVANTAGED BUSINESS ENTERPRISES                   |
| JOB 020802__ | DOCUMENTATION OF PAYMENTS MADE TO SUBCONTRACTORS                                       |
| JOB 020802__ | FLEXIBLE BEGINNING OF WORK – CALENDAR DAY CONTRACT                                     |
| JOB 020802__ | LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS                                          |
| JOB 020802__ | LONGITUDINAL JOINT DENSITIES FOR ACHM SURFACE COURSES                                  |
| JOB 020802__ | MANDATORY ELECTRONIC CONTRACT                                                          |
| JOB 020802__ | MANDATORY ELECTRONIC DOCUMENT SUBMITTAL                                                |
| JOB 020802__ | PLASTIC PIPE                                                                           |
| JOB 020802__ | PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS                                       |
| JOB 020802__ | PRICE ADJUSTMENT FOR ASPHALT BINDER                                                    |
| JOB 020802__ | PRICE ADJUSTMENT FOR FUEL                                                              |
| JOB 020802__ | PRIME CONTRACTOR PERFORMANCE EVALUATION                                                |
| JOB 020802__ | PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT |
| JOB 020802__ | SHORING FOR CULVERTS                                                                   |
| JOB 020802__ | SOIL STABILIZATION                                                                     |
| JOB 020802__ | STORM WATER POLLUTION PREVENTION PLAN                                                  |
| JOB 020802__ | SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS                         |
| JOB 020802__ | UTILITY ADJUSTMENTS                                                                    |
| JOB 020802__ | 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 ENSURE 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.
11. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 14 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.



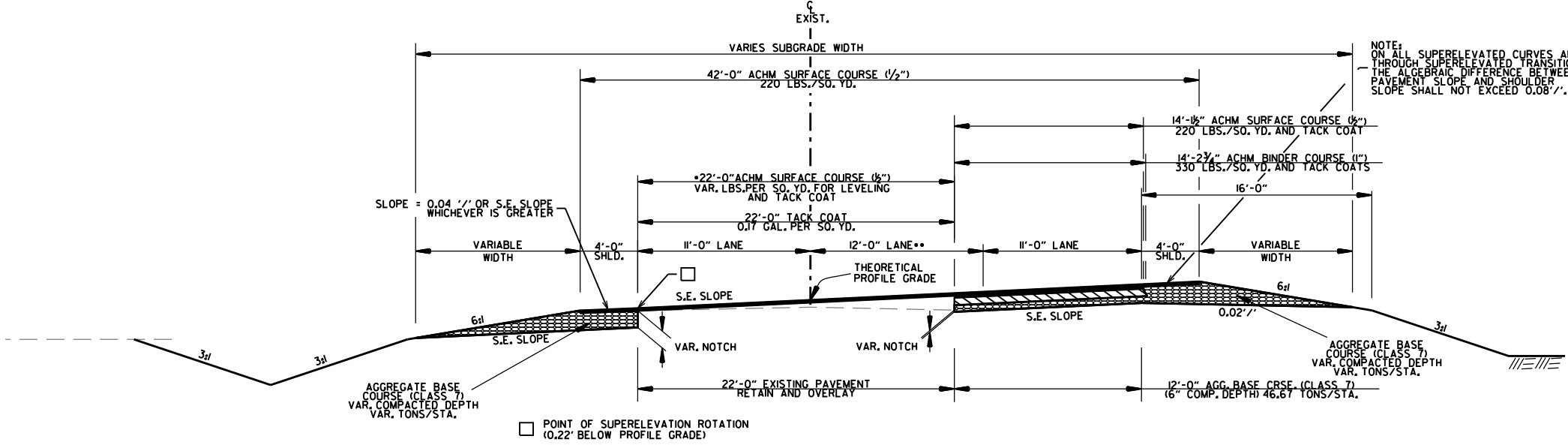
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|---------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                 |                 | 6                     | ARK.  | 020802  | 4            | 42              |
| TYPICAL SECTIONS OF IMPROVEMENT |                 |                       |       |         |              |                 |



HWY. 15-31 CONNECTOR - NOTCH AND WIDEN  
STA. 80+00.00 - STA. 89+12.50

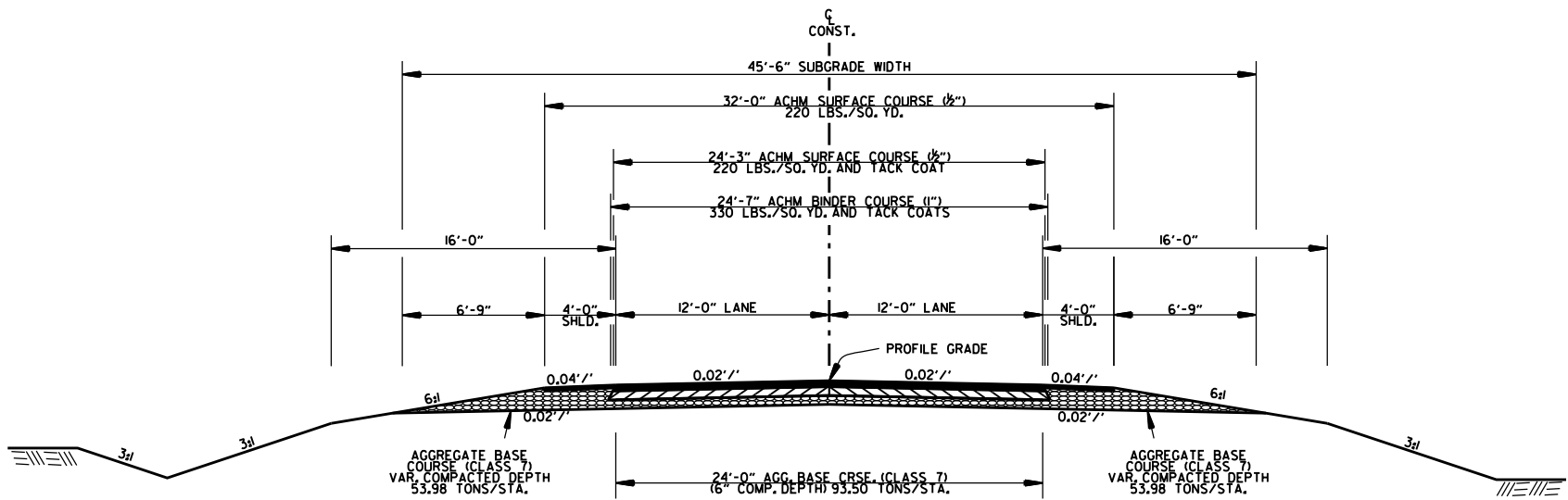
- TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
- TRANSITION FROM  
0' AT STA. 80+12.50 TO  
12.00' AT STA. 82+42.50  
0' AT STA. 89+12.50

NOTES:  
THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.  
ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.  
THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.  
BLEEDER DITCHES - PRIOR TO AND DURING PLACEMENT OF PAVEMENT AT THE NOTCH, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) AND SPACING USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.



HWY. 15-31 CONNECTOR - NOTCH AND WIDEN  
SUPERELEVATION SECTION

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|                                 |                 | 6                     | ARK.  | 020802  | 5            | 42              |
| TYPICAL SECTIONS OF IMPROVEMENT |                 |                       |       |         |              |                 |



HWY. 31 - FULL DEPTH  
STA. 585+00.00 - STA. 588+90.00  
HWY. 15 - FULL DEPTH  
STA. 580+00.00 - STA. 584+15.00

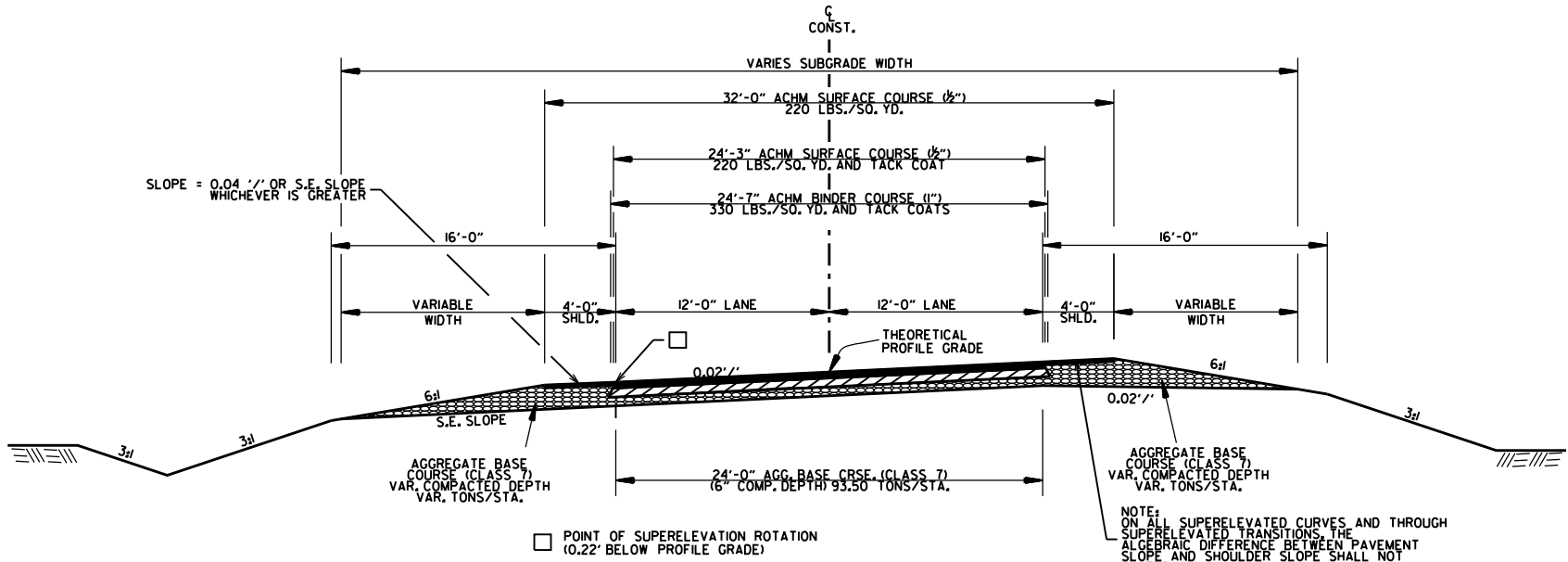
NOTES:

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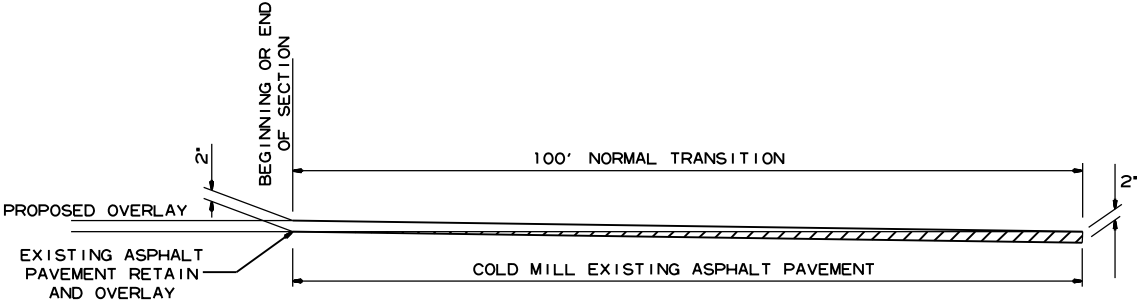
BLEEDER DITCHES - PRIOR TO AND DURING PLACEMENT OF PAVEMENT AT THE NOTCH, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) AND SPACING USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.



HWY. 31 / HWY. 15  
SUPERELEVATION SECTION

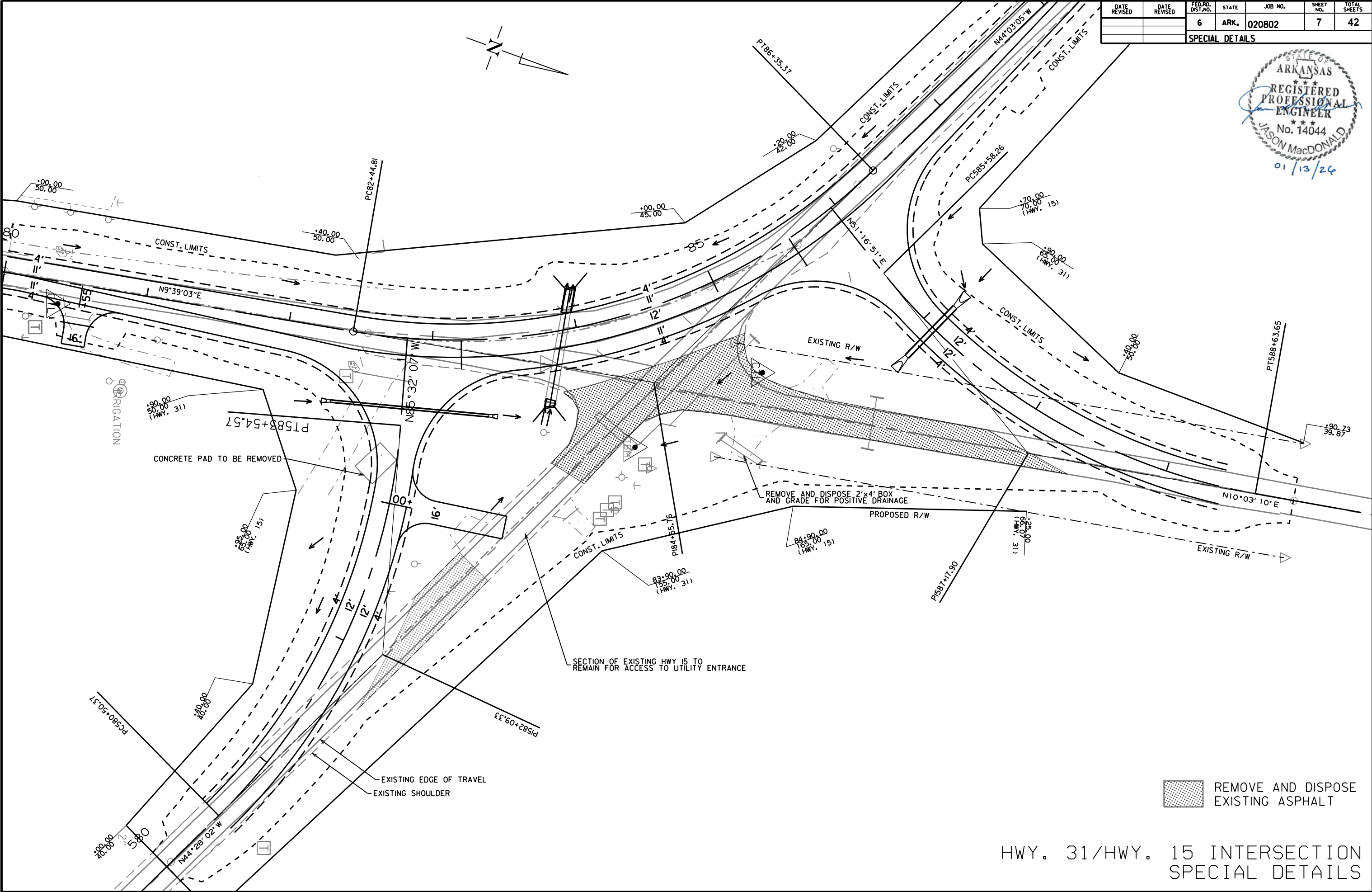
NOTE:  
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.

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| SPECIAL DETAILS |                 |                       |       |         |              |                 |



DETAIL FOR TRANSITIONS

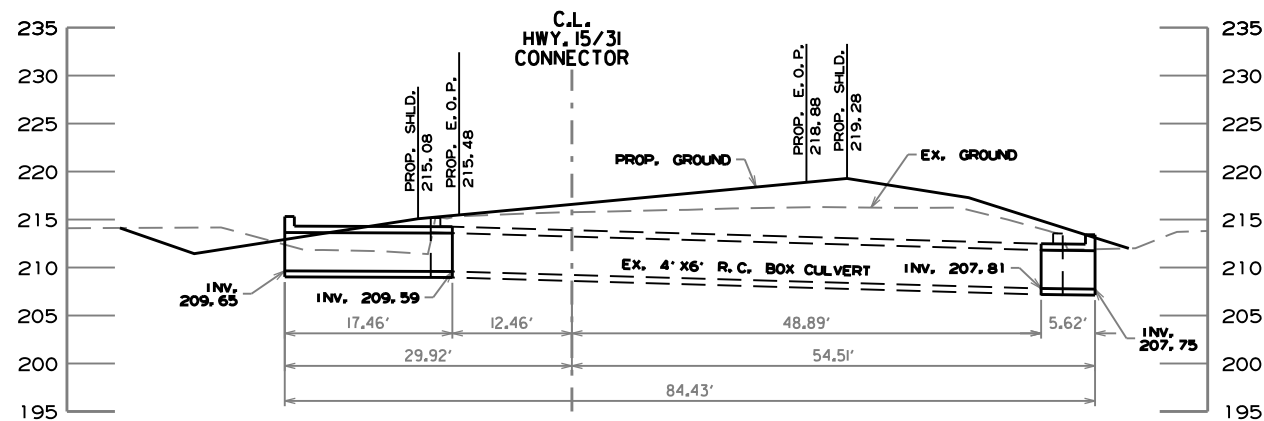
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|                 |                 | 6                     | ARK.  | 020802  | 7            | 42              |
| SPECIAL DETAILS |                 |                       |       |         |              |                 |



REMOVE AND DISPOSE  
EXISTING ASPHALT

HWY. 31/HWY. 15 INTERSECTION  
SPECIAL DETAILS

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| SPECIAL DETAILS |                 |                       |       |         |              |                 |



STA. 83+91  
(HWY 15-31 CONNECTOR)  
IN PLACE 4' X 6' R.C. BOX CULVERT  
EXTEND 17.46' LT. & 5.62' RT.  
WITH 3:1 WINGS LT. & RT.

4' X 6' R.C. BOX CULVERT

| SECTION<br>AND LENGTH  | CLASS 'S' CONCRETE |         | REINF. STEEL | UNCLASSIFIED EXCAVATION FOR STRUCTURES | SOLID SODDING | WATER | STANDARD DRAWINGS            |
|------------------------|--------------------|---------|--------------|----------------------------------------|---------------|-------|------------------------------|
|                        | C. Y. / L. F.      | CU. YD. | LBS.         | CU. YD.                                | SQ. YD.       | M. G. |                              |
| SECTION A - 23.08'     | 0.483              | 11.15   | 1591         | 45                                     | 15            | 0.19  | R-100X-0, W-X003-1, RCB-1,   |
| WINGS, HDWLS. & APRONS |                    | 8.75    | 374          |                                        |               |       | RCB-2, RCB-3, SPECIAL DETAIL |
|                        |                    | 19.90   | 1965         | 45                                     | 15            | 0.19  |                              |

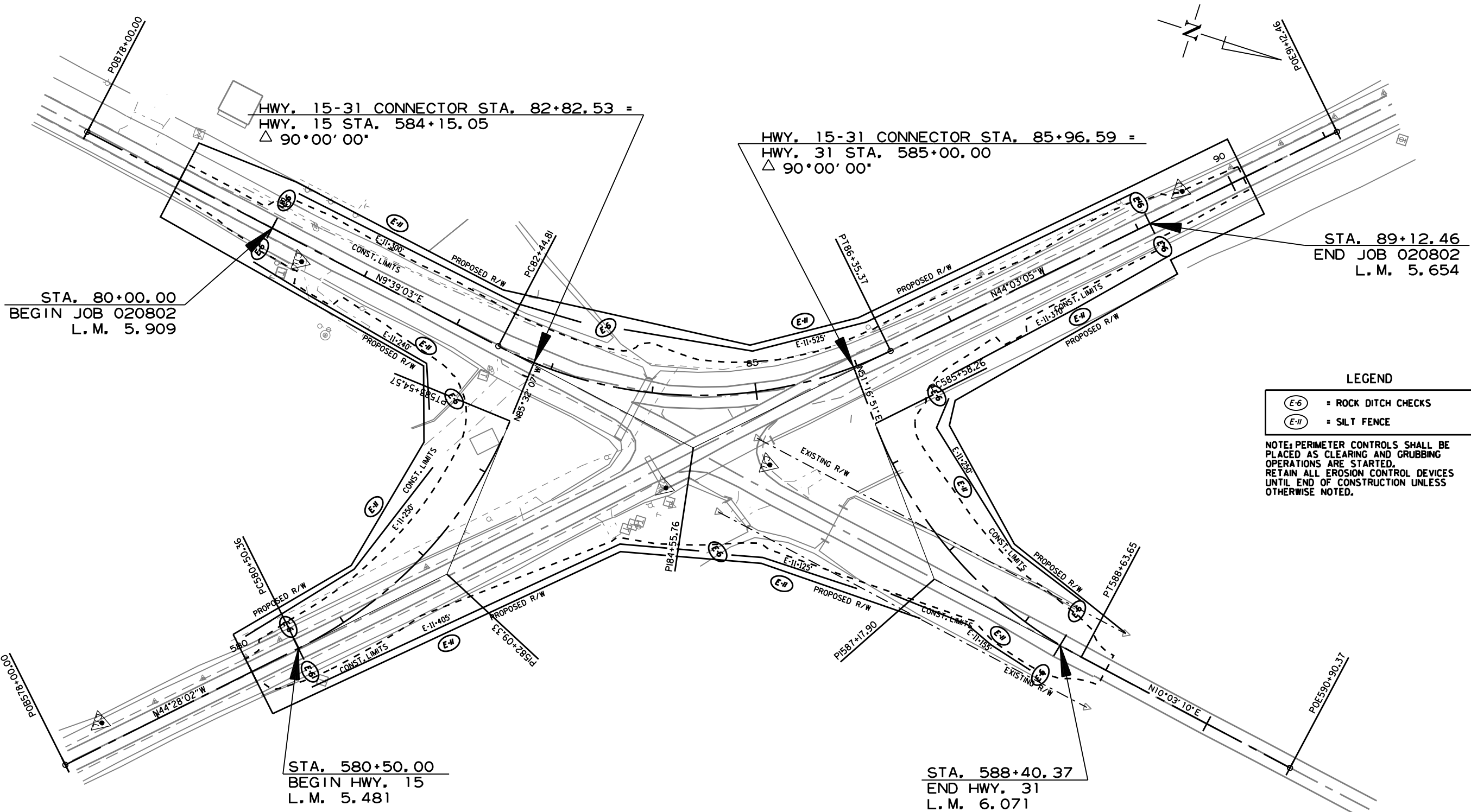
BASIS OF ESTIMATE:  
WATER: 12.6 GAL. / SQ. YD. OF SOLID SODDING

| DATE<br>REVISED                   | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
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|                                   |                 | 6                     | ARK.  | 020802  | 9            | 42              |
| TEMPORARY EROSION CONTROL DETAILS |                 |                       |       |         |              |                 |



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

| ROCK DITCH CHECKS | (E-6)     | EACH | SILT FENCE            | (E-11) | LINE FT |
|-------------------|-----------|------|-----------------------|--------|---------|
| STA. 80+00        | LT. & RT. | 2    | STA. 80+00 TO 82+15   | LT.    | 300     |
| STA. 83+30        | LT.       | 1    | STA. 80+00 TO 82+15   | RT.    | 240     |
| STA. 84+50        | RT.       | 1    | STA. 83+60 TO 89+12   | LT.    | 525     |
| STA. 86+44        | RT.       | 1    | STA. 86+80 TO 89+12   | RT.    | 370     |
| STA. 89+12        | LT. & RT. | 2    | STA. 580+10 TO 582+75 | LT.    | 250     |
| STA. 580+50       | LT. & RT. | 2    | STA. 580+45 TO 583+25 | RT.    | 405     |
| STA. 588+40       | LT. & RT. | 2    | STA. 585+60 TO 588+35 | LT.    | 250     |
|                   |           |      | STA. 586+05 TO 586+75 | RT.    | 125     |
|                   |           |      | STA. 586+95 TO 588+30 | RT.    | 155     |



**LEGEND**

(E-6) = ROCK DITCH CHECKS  
(E-11) = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

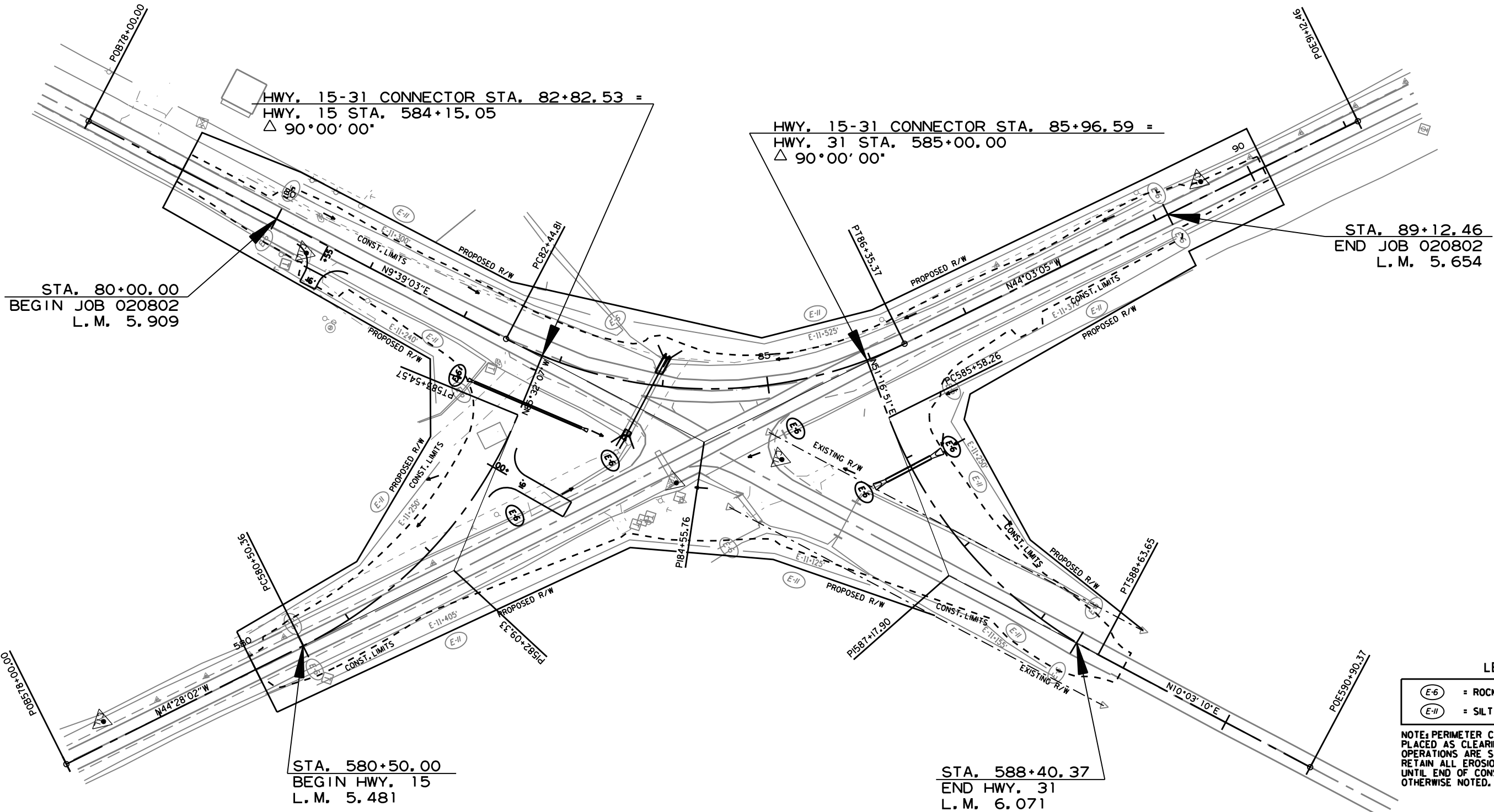
CLEARING AND GRUBBING  
TEMPORARY EROSION CONTROL DETAILS

| DATE<br>REVISED                   | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                   |                 | 6                     | ARK.  | 020802  | 10           | 42              |
| TEMPORARY EROSION CONTROL DETAILS |                 |                       |       |         |              |                 |



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

| ROCK DITCH CHECKS | (E-6)     | EACH |
|-------------------|-----------|------|
| STA. 582+70       | RT.       | 1    |
| STA. 583+50       | RT.       | 1    |
| STA. 583+65       | LT.       | 1    |
| STA. 585+35       | RT.       | 1    |
| STA. 586+10       | LT. & RT. | 2    |



| LEGEND |                     |
|--------|---------------------|
| (E-6)  | = ROCK DITCH CHECKS |
| (E-11) | = SILT FENCE        |

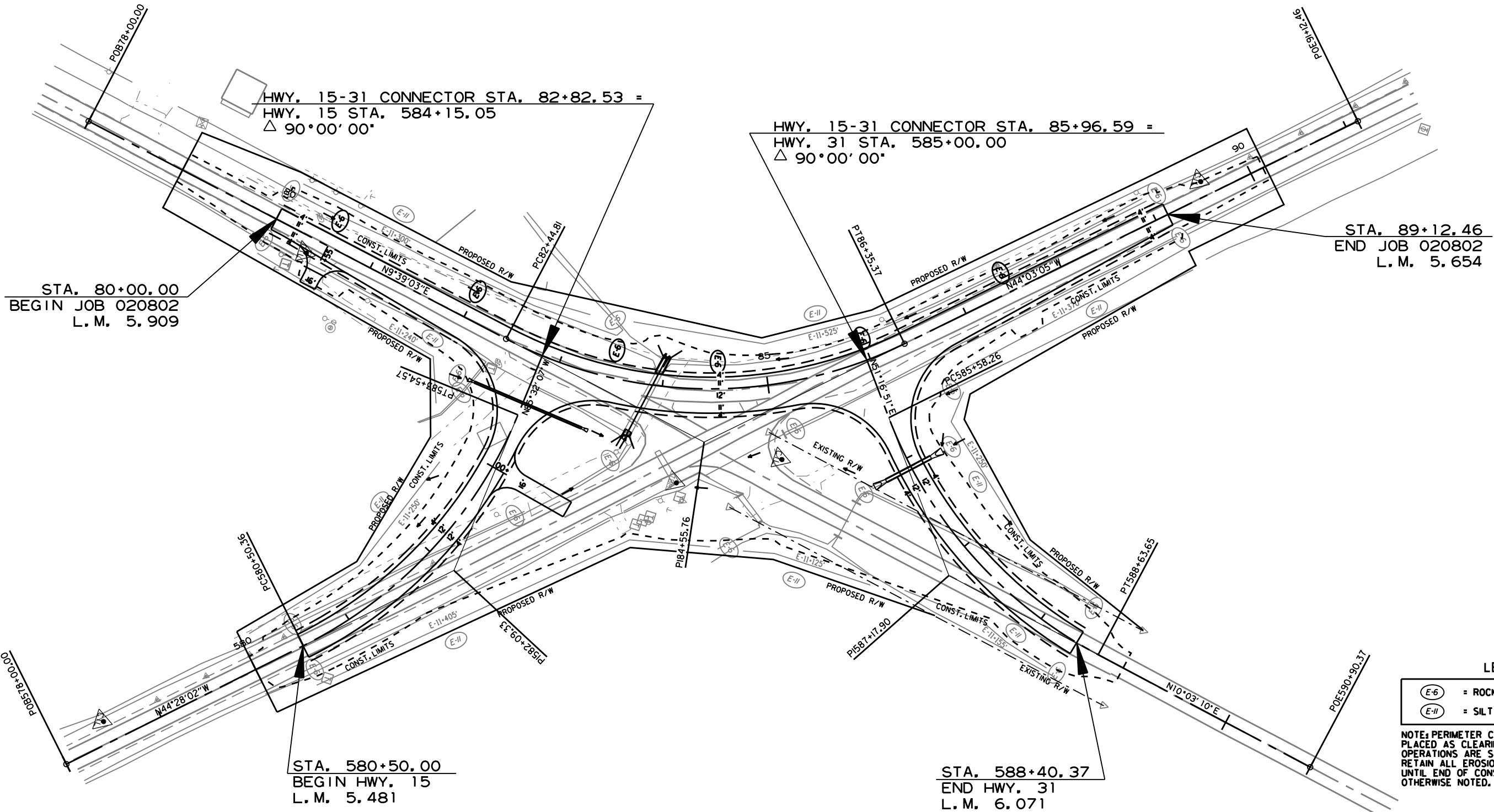
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

| DATE<br>REVISED                   | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                   |                 | 6                     | ARK.  | 020802  | 11           | 42              |
| TEMPORARY EROSION CONTROL DETAILS |                 |                       |       |         |              |                 |



| DATE OF REVISION | REVISION |
|------------------|----------|
|                  |          |
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| ROCK DITCH CHECKS | (E-6) | EACH |
|-------------------|-------|------|
| STA. 80+55        | LT.   | 1    |
| STA. 82+00        | LT.   | 1    |
| STA. 83+50        | LT.   | 1    |
| STA. 84+55        | LT.   | 1    |
| STA. 86+00        | LT.   | 1    |
| STA. 87+50        | LT.   | 1    |

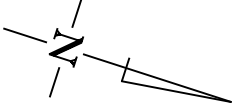


| LEGEND |                     |
|--------|---------------------|
| (E-6)  | = ROCK DITCH CHECKS |
| (E-11) | = SILT FENCE        |

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

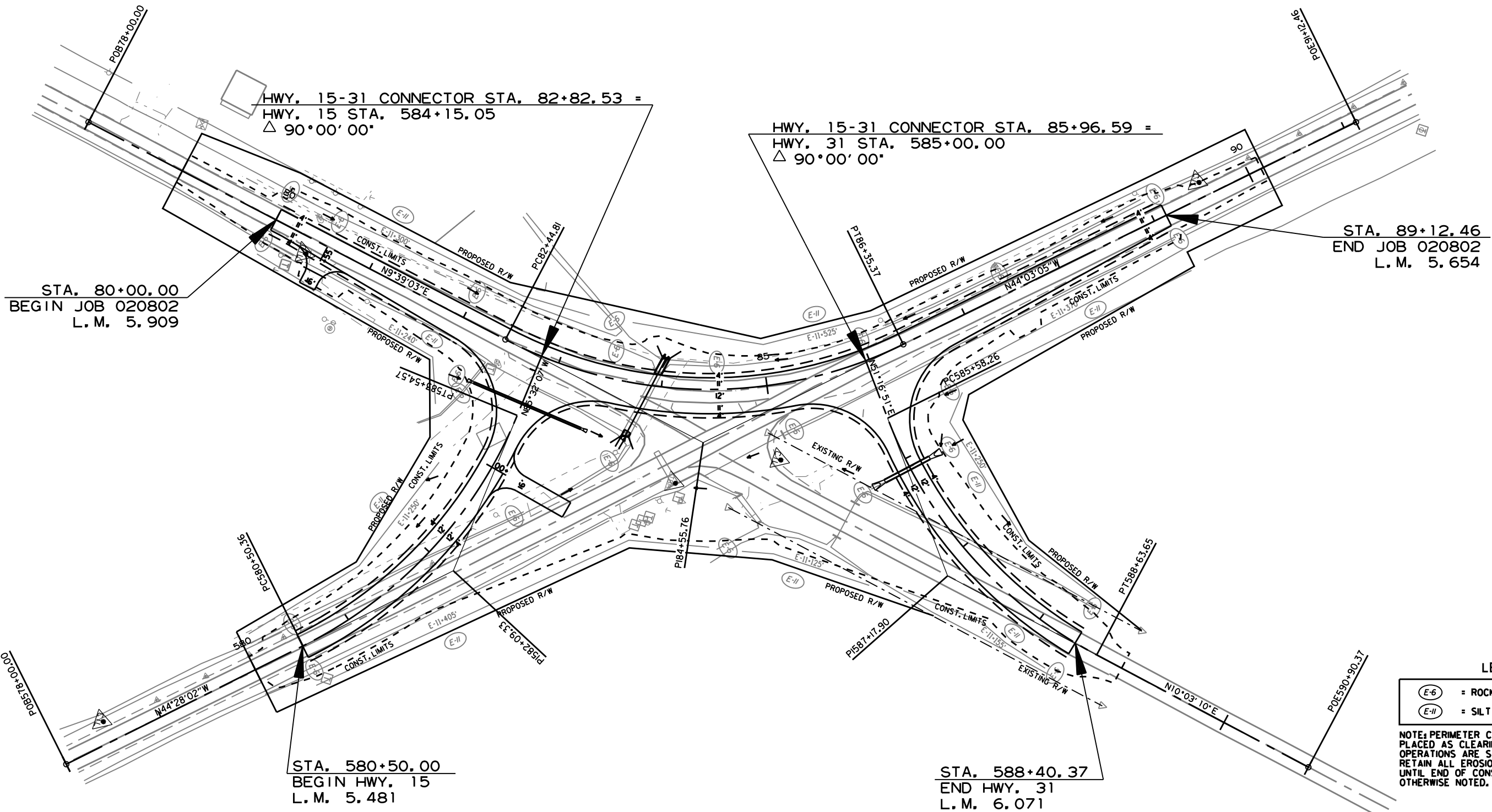
STAGE 2  
TEMPORARY EROSION CONTROL DETAILS

| DATE<br>REVISED                   | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                   |                 | 6                     | ARK.  | 020802  | 12           | 42              |
| TEMPORARY EROSION CONTROL DETAILS |                 |                       |       |         |              |                 |



REVISIONS

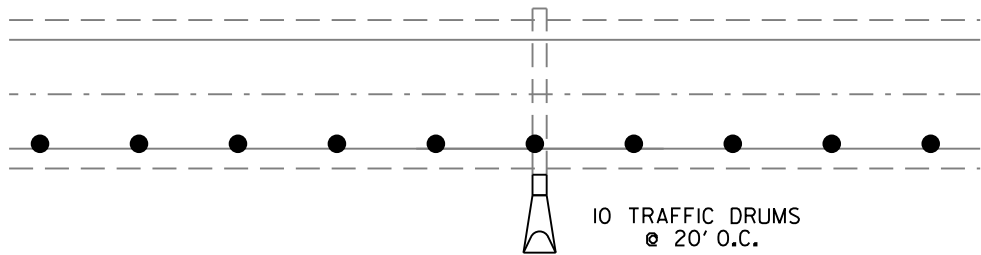
| DATE OF REVISION | REVISION |
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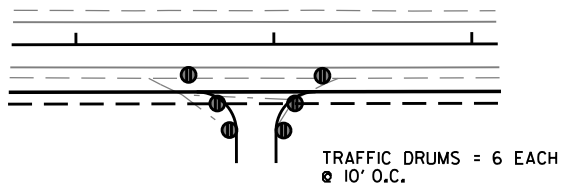
| LEGEND |                     |
|--------|---------------------|
| (E-6)  | = ROCK DITCH CHECKS |
| (E-11) | = SILT FENCE        |

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

| DATE<br>REVISED                | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|--------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                |                 | 6                     | ARK.  | 020802  | 13           | 42              |
| MAINTENANCE OF TRAFFIC DETAILS |                 |                       |       |         |              |                 |



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



DRIVEWAY/TRAFFIC DRUM DETAIL



(3) W21-5a  
(36" x 36")

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



(3) R4-1  
(24" x 30")

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



(1) W8-1  
(30" x 30")

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

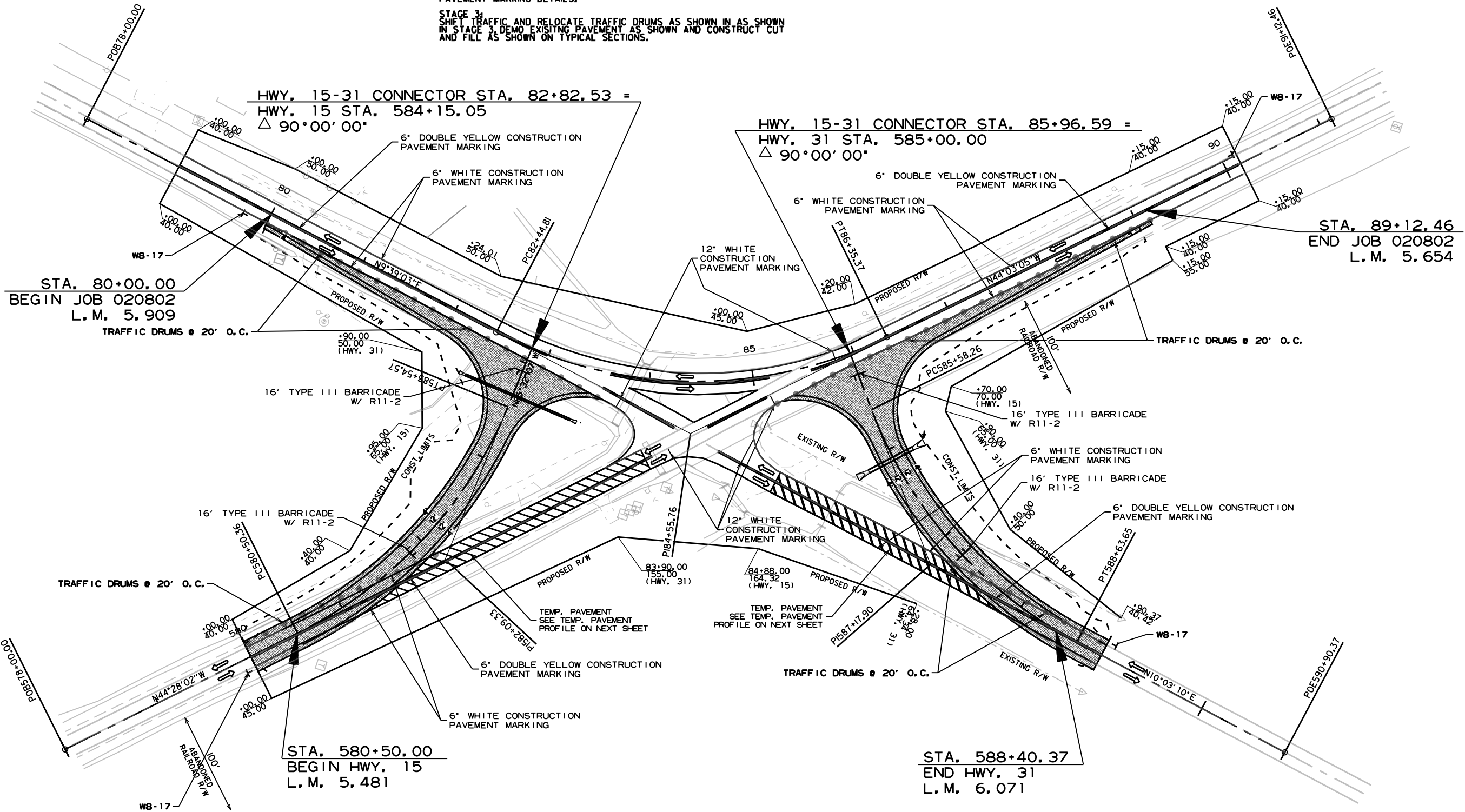
| DATE<br>REVISED                | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|--------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                |                 | 6                     | ARK.  | 020802  | 14           | 42              |
| MAINTENANCE OF TRAFFIC DETAILS |                 |                       |       |         |              |                 |

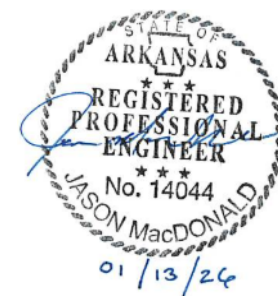


- STAGE I TEMPORARY PAVEMENT
- STAGE I CONSTRUCTION

CONSTRUCTION SEQUENCE:  
STAGE 1:  
INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AT THE END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAILS.  
CONSTRUCT FULL DEPTH ASPHALT SECTION IN EXISTING ISLAND AND THE PROPOSED IMPROVEMENTS FOR HWY. 15-31 INTERSECTIONS AS SHOWN IN PLANS.  
TRAFFIC PATTERNS ARE TO REMAIN AS EXISTING DURING STAGE I CONSTRUCTION.  
STAGE 2:  
CONSTRUCT SUPERELEVATION OF PROPOSED IMPROVEMENTS ALONG HWY. 15/31 TRANSITION. CONSTRUCT TEMPORARY PAVEMENT OVERLAY TO BRIDGE FROM EXISTING TO PROPOSED SUPERELEVATED SECTION. OBLITERATE TEMPORARY PAVEMENT AND EXISTING HIGHWAY WITHIN IDENTIFIED AREA. APPLY FINAL 2" LIFT OF ACHM AND PLACE PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKING DETAILS.  
STAGE 3:  
SHIFT TRAFFIC AND RELOCATE TRAFFIC DRUMS AS SHOWN IN AS SHOWN IN STAGE 3. DEMO EXISTING PAVEMENT AS SHOWN AND CONSTRUCT CUT AND FILL AS SHOWN ON TYPICAL SECTIONS.

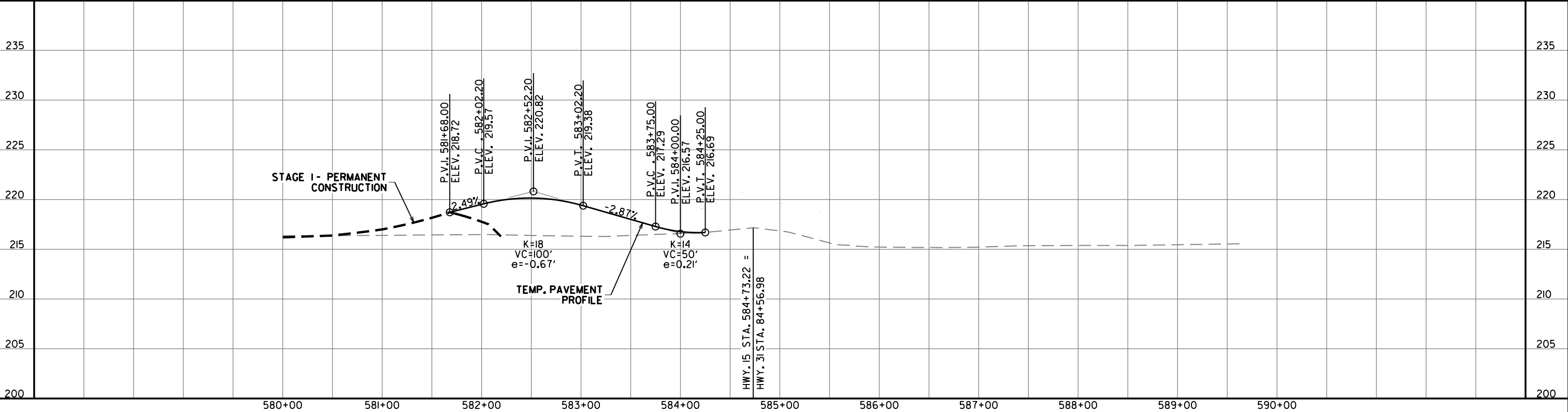
CONSTRUCTION PAVEMENT MARKING WHITE (6")= 4,165 LIN. FT.  
CONSTRUCTION PAVEMENT MARKING YELLOW (6")= 3,475 LIN. FT.  
CONSTRUCTION PAVEMENT MARKING WHITE (12")= 68 LIN. FT.





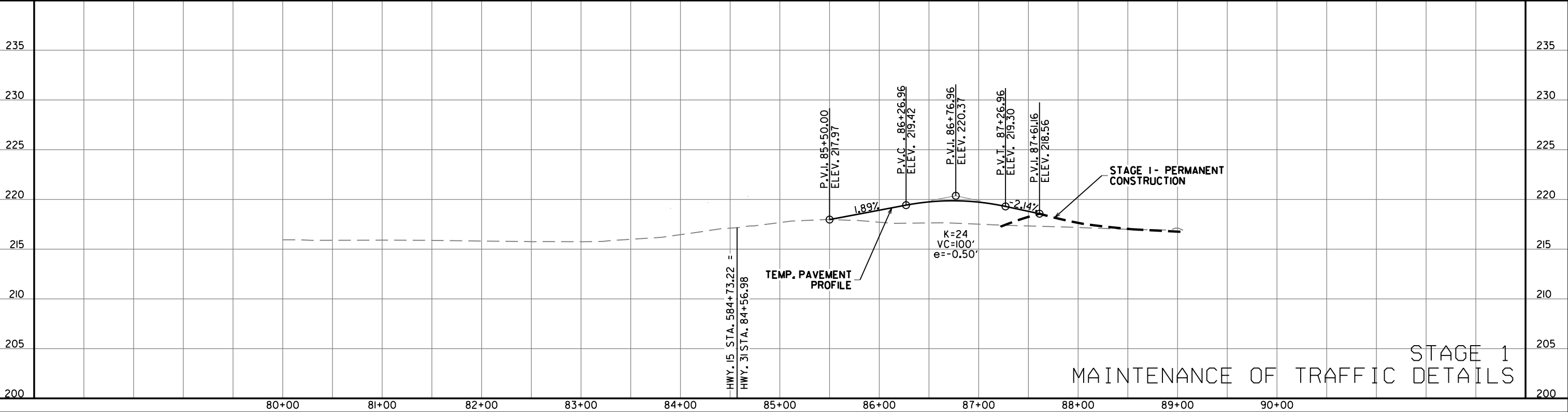
| DATE<br>REVISED                | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|--------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                |                 | 6                     | ARK.  | 020802  | 15           | 42              |
| MAINTENANCE OF TRAFFIC DETAILS |                 |                       |       |         |              |                 |

EX. HWY. 15



EX. HWY. 31

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



STAGE 1  
MAINTENANCE OF TRAFFIC DETAILS

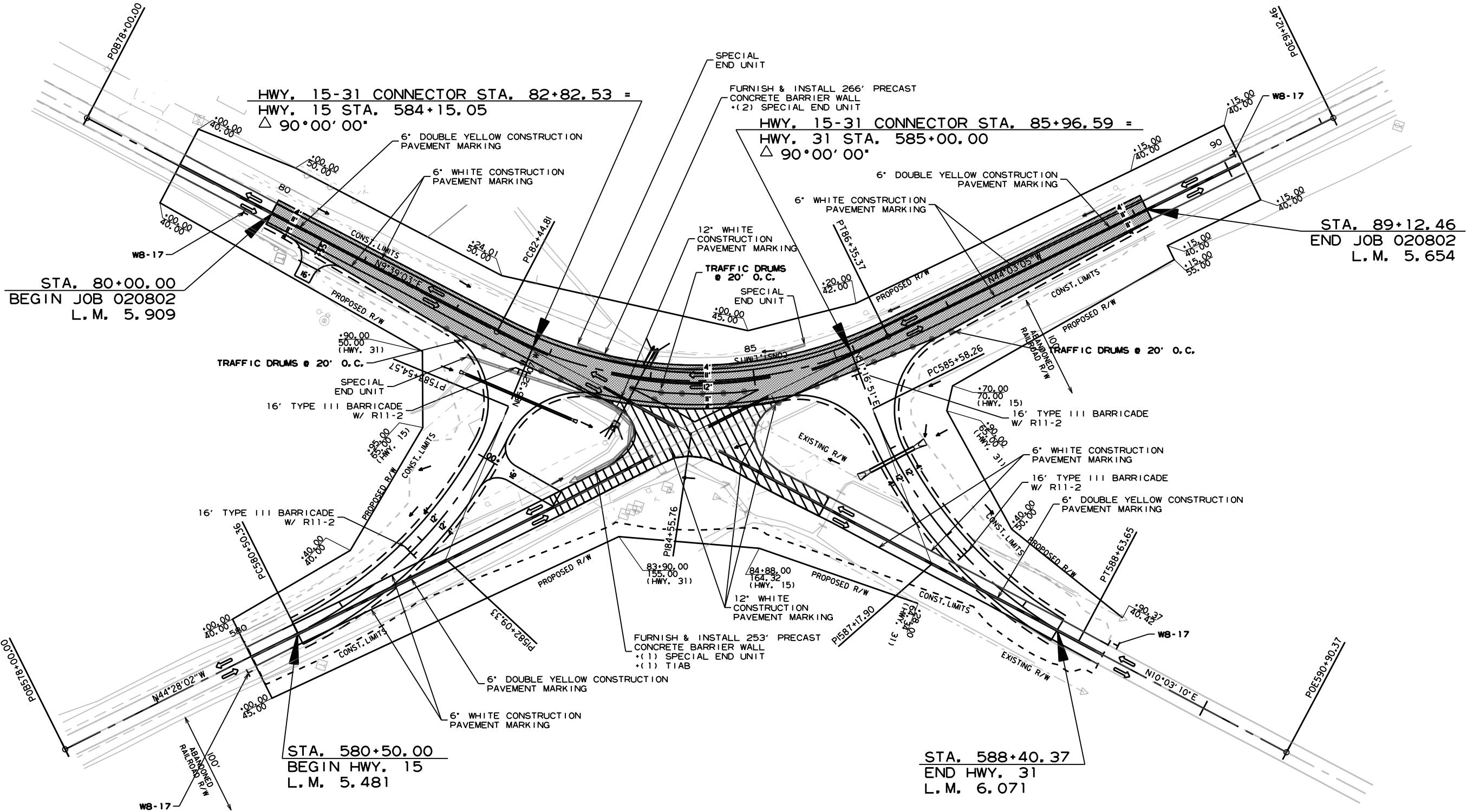
| DATE<br>REVISED                | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|--------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                |                 | 6                     | ARK.  | 020802  | 16           | 42              |
| MAINTENANCE OF TRAFFIC DETAILS |                 |                       |       |         |              |                 |

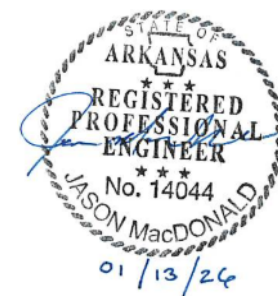


 STAGE 2 TEMPORARY PAVEMENT

 STAGE 2 CONSTRUCTION

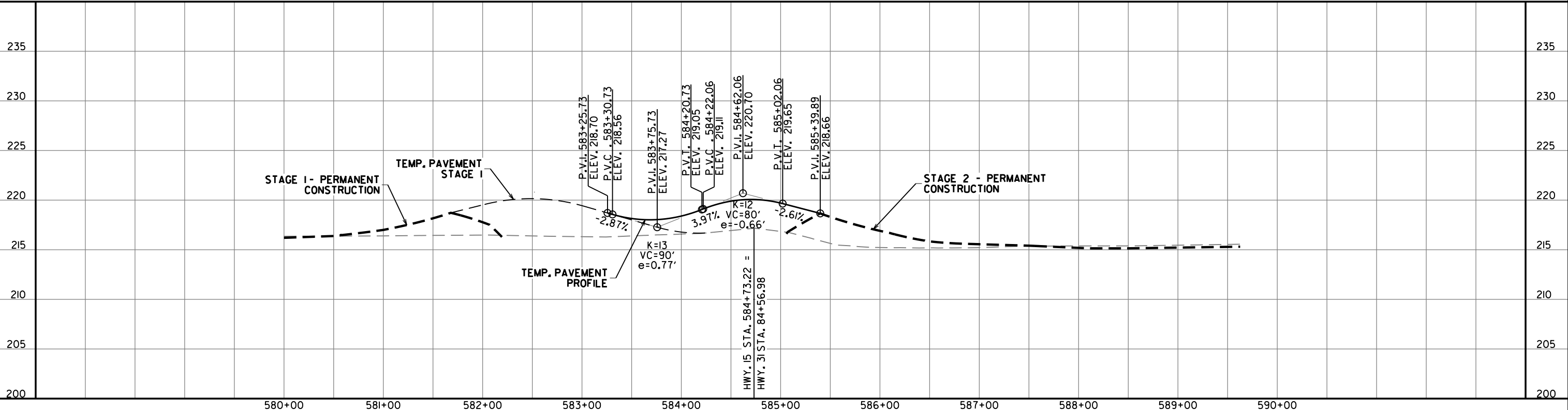
CONSTRUCTION PAVEMENT MARKING WHITE (6")= 4,165 LIN. FT.  
CONSTRUCTION PAVEMENT MARKING YELLOW (6")= 3,475 LIN. FT.  
CONSTRUCTION PAVEMENT MARKING WHITE (12")= 68 LIN. FT.





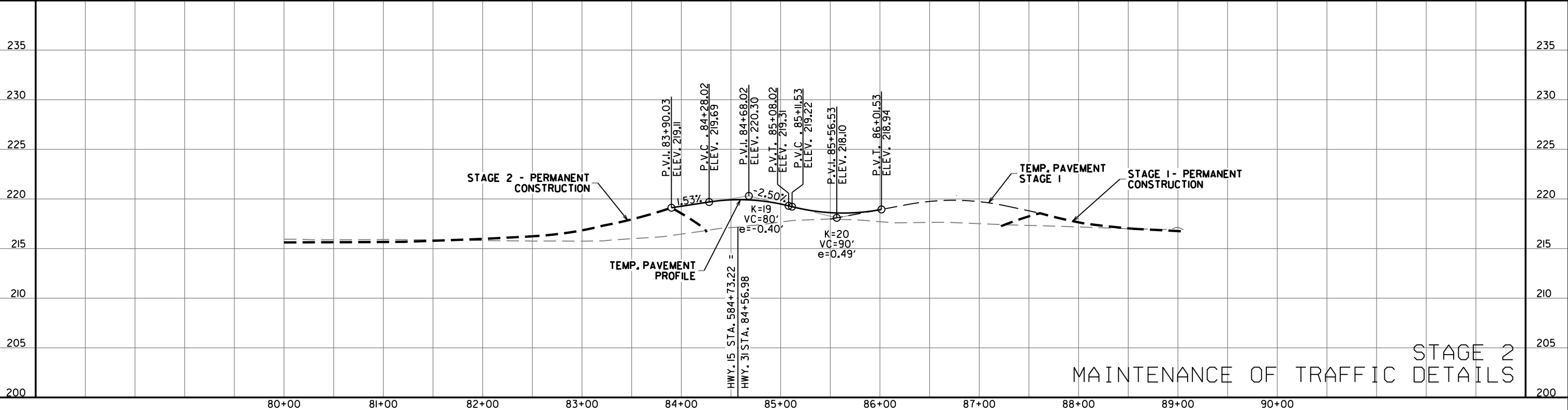
| DATE<br>REVISED                | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|--------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                |                 | 6                     | ARK.  | 020802  | 17           | 42              |
| MAINTENANCE OF TRAFFIC DETAILS |                 |                       |       |         |              |                 |

EX. HWY. 15



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

EX. HWY. 31



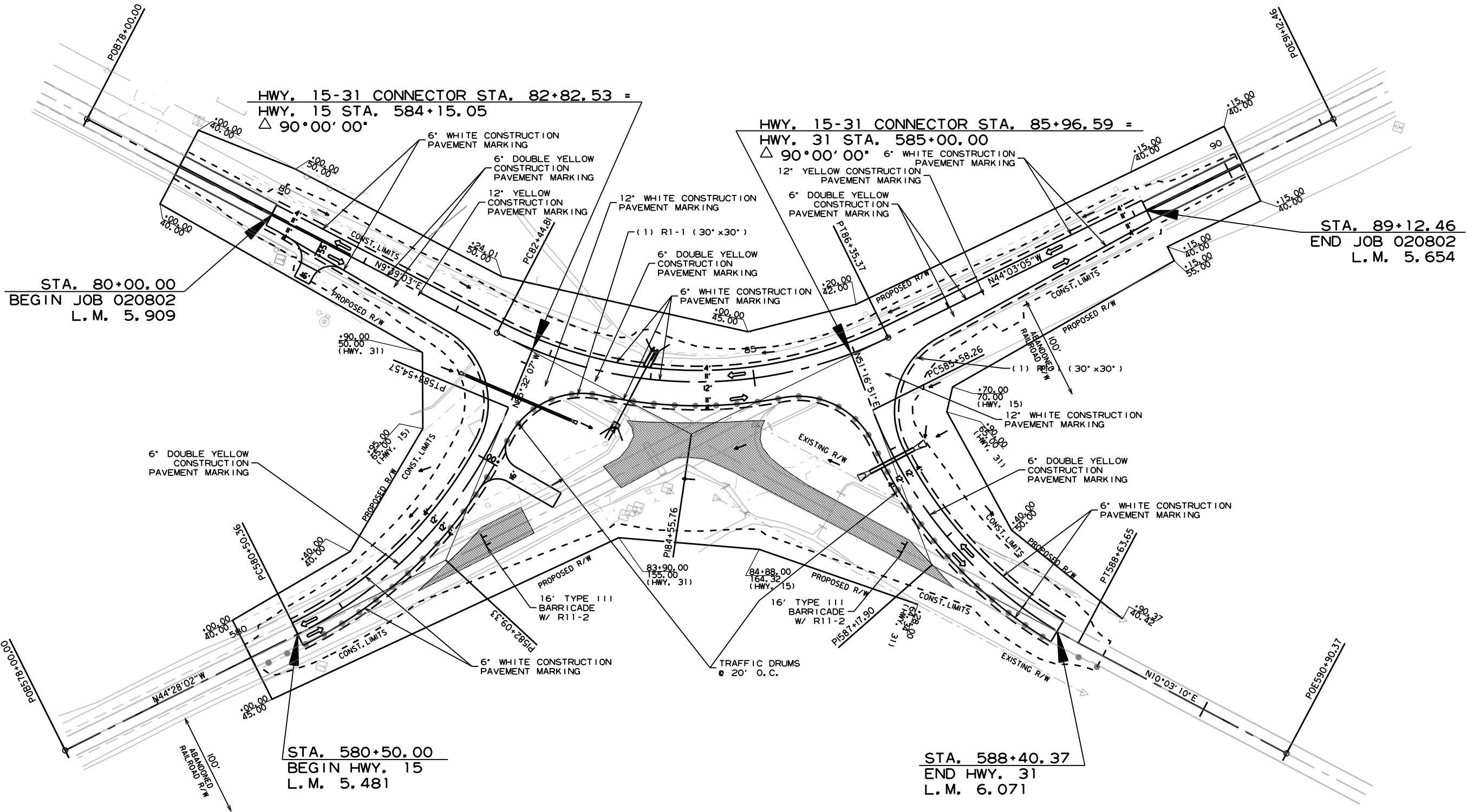
STAGE 2  
MAINTENANCE OF TRAFFIC DETAILS

| DATE<br>REVISED                | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|--------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                |                 | 6                     | ARK.  | 020802  | 18           | 42              |
| MAINTENANCE OF TRAFFIC DETAILS |                 |                       |       |         |              |                 |

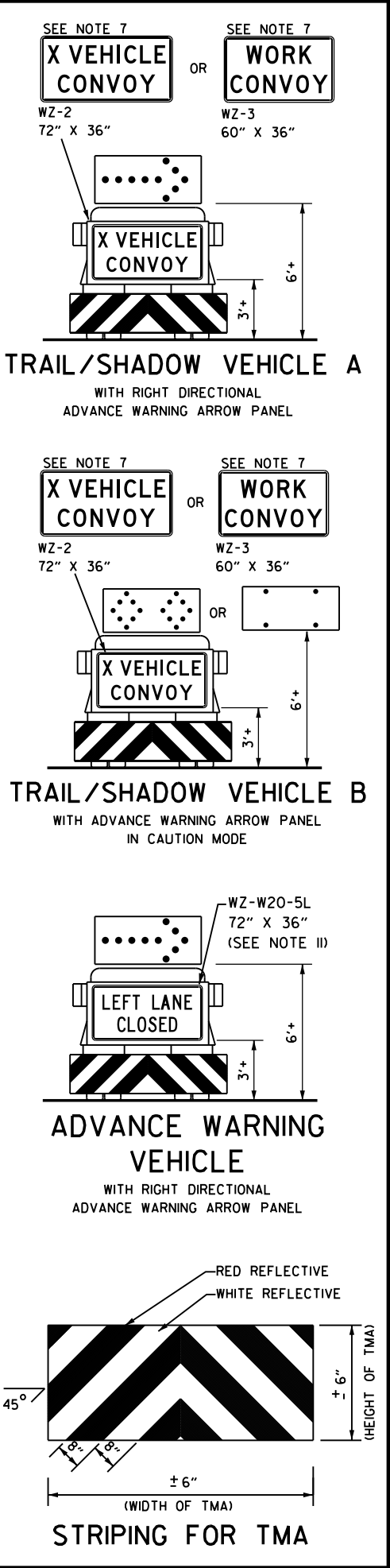
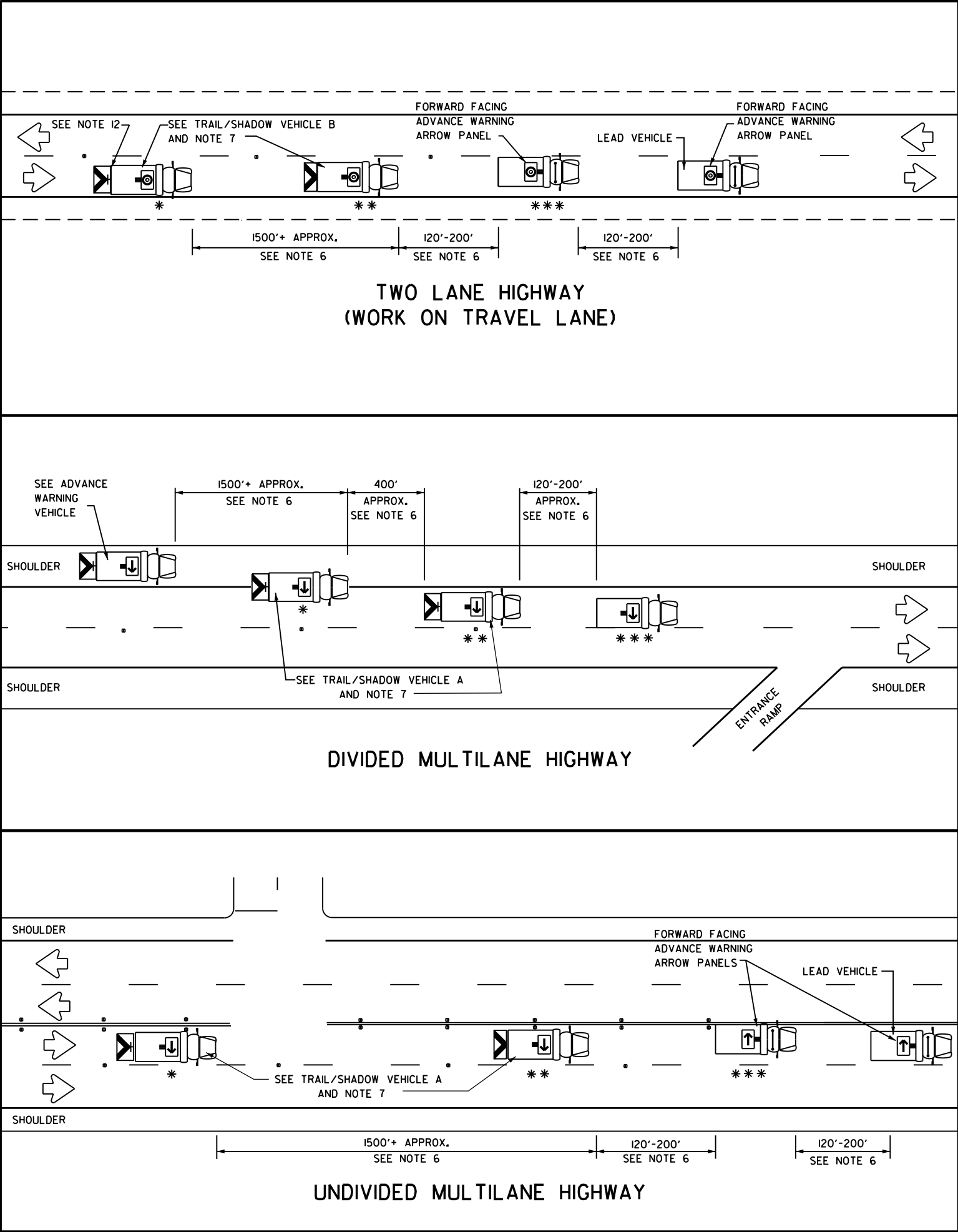


STAGE 3 DEMO

CONSTRUCTION PAVEMENT MARKING WHITE (6") = 3420 LIN. FT.  
CONSTRUCTION PAVEMENT MARKING WHITE (12") = 55 LIN. FT.  
CONSTRUCTION PAVEMENT MARKING YELLOW (6") = 4046 LIN. FT.  
CONSTRUCTION PAVEMENT MARKING YELLOW (12") = 232 LIN. FT.  
R1-1(30"x30") - STOP SIGN = 2 EACH



STAGE 3  
MAINTENANCE OF TRAFFIC DETAILS



| DATE<br>REVISED                | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|--------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                |                 | 6                     | ARK.  | 020802  | 19           | 42              |
| MAINTENANCE OF TRAFFIC DETAILS |                 |                       |       |         |              |                 |



| LEGEND |                                |                                     |                                                 |
|--------|--------------------------------|-------------------------------------|-------------------------------------------------|
| *      | TRAIL VEHICLE                  | ADVANCE WARNING ARROW PANEL DISPLAY |                                                 |
| **     | SHADOW VEHICLE                 |                                     |                                                 |
| ***    | WORK VEHICLE                   |                                     | RIGHT DIRECTIONAL                               |
|        | HEAVY WORK VEHICLE             |                                     | LEFT DIRECTIONAL                                |
|        | TRUCK MOUNTED ATTENUATOR (TMA) |                                     | DOUBLE ARROW                                    |
|        | TRAFFIC FLOW                   |                                     | CAUTION (ALTERNATING DIAMOND OR 4 CORNER FLASH) |

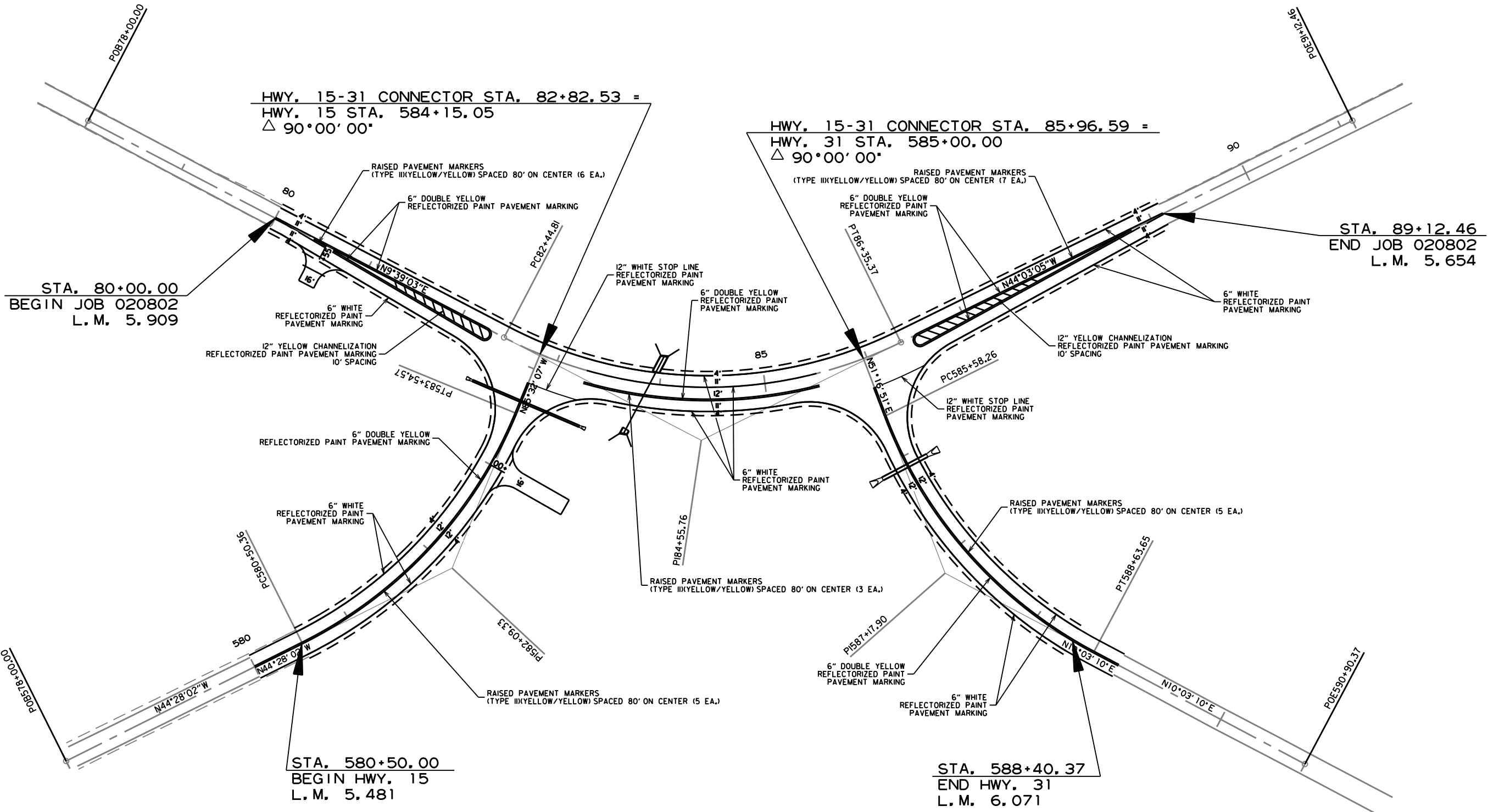
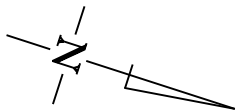
TYPICAL APPLICATION - MOBILE WORK ZONE

- GENERAL NOTES:
- TRAIL, SHADOW, AND LEAD VEHICLES SHALL BE EQUIPPED WITH ADVANCE WARNING ARROW PANELS AS ILLUSTRATED.
  - THE USE OF AMBER OR GREEN HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS ON ALL VEHICLES ARE REQUIRED. VEHICLE HAZARD WARNING SIGNALS SHALL NOT BE USED INSTEAD OF THE VEHICLE'S HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.
  - THE USE OF TRUCK MOUNTED ATTENUATORS (TMA) ON THE SHADOW VEHICLE, ADVANCE WARNING AND TRAIL VEHICLE ARE REQUIRED.
  - EACH VEHICLE SHALL HAVE TWO-WAY RADIO COMMUNICATION CAPABILITY.
  - WHEN WORK CONVOYS MUST CHANGE LANES, THE TRAIL VEHICLE SHOULD CHANGE LANES FIRST TO SHADOW THE OTHER CONVOY VEHICLES. WHEN WORK CONVOY EXITS THE ROADWAY, THE TRAIL VEHICLE SHOULD EXIT LAST.
  - VEHICLE SPACING BETWEEN THE TRAIL VEHICLE AND THE SHADOW VEHICLE WILL VARY DEPENDING ON SIGHT DISTANCE RESTRICTIONS AND QUEUE LENGTHS. MOTORISTS APPROACHING THE CONVOY SHOULD BE ABLE TO SEE THE TRAIL VEHICLE IN TIME TO SLOW DOWN AND/OR CHANGE LANES AS THEY APPROACH THE TRAIL VEHICLE. VEHICLE SPACING BETWEEN THE WORK VEHICLE AND SHADOW VEHICLE AND VEHICLE SPACING BETWEEN THE WORK VEHICLE AND LEAD VEHICLE MAY VARY ACCORDING TO TERRAIN, WORK ACTIVITY AND OTHER FACTORS.
  - X VEHICLE CONVOY (WZ-2) OR WORK CONVOY (WZ-3) SIGNS SHALL BE USED ON TRAIL VEHICLES AND SHADOW VEHICLES AS SHOWN. AS AN OPTION 48" X 48" DIAMOND SHAPED WORK CONVOY (WZ-2A) OR X VEHICLE CONVOY (WZ-3A) SIGNS MAY BE USED WHERE ADEQUATE MOUNTING SPACE EXISTS. WHEN USED, THE X VEHICLE CONVOY SIGN SHALL HAVE THE NUMBER OF THE CONVOY VEHICLES DISPLAYED ON THE SIGN IN THE NUMBER DESIGNATION "X" LOCATION. THE X VEHICLE CONVOY SIGN SHALL NOT BE USED ON THE SHADOW VEHICLE.
  - FOR DIVIDED HIGHWAYS WITH TWO OR THREE LANES IN ONE DIRECTION, THE APPROPRIATE LEFT LANE CLOSED (WZ-W20-5L), RIGHT LANE CLOSED (WZ-W20-5R), OR CENTER LANE CLOSED (WZ-W20-5C) SIGN SHOULD BE USED ON THE ADVANCE WARNING VEHICLE. AS AN OPTION, A PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) OR TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (TMCMS) WITH A MINIMUM CHARACTER HEIGHT OF 12", AND DISPLAYING THE SAME LEGEND MAY BE SUBSTITUTED FOR THESE SIGNS. AN APPROPRIATE DIRECTIONAL ARROW DISPLAY, SIMULATING THE SIZE AND LEGIBILITY OF THE ADVANCE WARNING ARROW PANEL MAY BE USED IN THE SECOND PHASE OF THE PCMS/TMCMS MESSAGE. WHEN THIS IS DONE, THE ARROW BOARD WILL NOT BE REQUIRED ON THE ADVANCE WARNING VEHICLE.
  - A DOUBLE ARROW SHALL NOT BE DISPLAYED ON THE ADVANCE WARNING ARROW PANEL ON THE ADVANCE WARNING VEHICLE.
  - STANDARD DIAMOND SHAPE VERSIONS OF THE WZ SERIES SIGNS MAY BE USED AS AN OPTION IF THE RECTANGULAR SIGNS SHOWN ARE NOT AVAILABLE.
  - THE ADVANCE WARNING VEHICLE MAY STRADDLE THE EDGELINE WHEN SHOULDER WIDTH MAKES IT NECESSARY.
  - ON TWO-LANE TWO-WAY ROADWAYS, THE WORK AND PROTECTION VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW MOTOR VEHICLE TRAFFIC TO PASS. A DO NOT PASS (R4-1) SIGN SHALL BE PLACED ON THE BACK OF THE REARMOST PROTECTION VEHICLE.
  - MOBILE WORK ZONE METHODS AS DEPICTED IN THIS STANDARD DRAWING SHALL BE UTILIZED ON ALL PROJECTS THAT INCLUDE INSTALLATION OR REMOVAL OF RAISED PAVEMENT MARKERS OR PAVEMENT MARKINGS UNLESS APPROVED BY THE ENGINEER ON PROJECTS LESS THAN 0.5 MILE IN LENGTH.
  - NO DIRECT PAYMENT WILL BE MADE FOR COMPLIANCE WITH THE METHODS DEPICTED IN THIS STANDARD DRAWING (WHICH INCLUDES ALL SIGNS, DEVICES, MATERIALS, LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLY) BUT SHALL BE CONSIDERED SUBSIDIARY TO THE MAINTENANCE OF TRAFFIC PAY ITEM.

| DATE<br>REVISED                    | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|------------------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                                    |                 | 6                     | ARK.  | 020802  | 20           | 42              |
| PERMANENT PAVEMENT MARKING DETAILS |                 |                       |       |         |              |                 |

PERMANENT PAVEMENT MARKINGS

REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6") = 3420 LIN. FT.  
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (12") = 55 LIN. FT.  
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6") = 4046 LIN. FT.  
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (12") = 232 LIN. FT.  
RAISED PAVEMENT MARKERS (TYPE III) (YELLOW/YELLOW) (80' O.C.) = 26 EACH



| DATE<br>REVISED | DATE<br>REVISED | FED.RD.<br>DIST.NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|---------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                   | ARK.  | 020802  | 21           | 42              |
| QUANTITIES      |                 |                     |       |         |              |                 |



CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

| DESCRIPTION                                       | STAGE 1 | STAGE 2 | STAGE 3 | END OF<br>JOB | CONSTRUCTION<br>PAVEMENT<br>MARKINGS | RAISED PAVEMENT<br>MARKERS | REFLECTORIZED PAINT PAVEMENT MARKING |        |       |        |
|---------------------------------------------------|---------|---------|---------|---------------|--------------------------------------|----------------------------|--------------------------------------|--------|-------|--------|
|                                                   |         |         |         |               |                                      | TYPE II                    | 6"                                   |        | 12"   |        |
|                                                   |         |         |         |               |                                      | (YELLOW/YELLOW)            | WHITE                                | YELLOW | WHITE | YELLOW |
|                                                   |         |         |         |               |                                      | EACH                       | LIN. FT.                             |        |       |        |
| CONSTRUCTION PAVEMENT MARKINGS                    | 7708    | 7708    | 7753    |               | 23169                                |                            |                                      |        |       |        |
| RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)   |         |         |         | 26            |                                      | 26                         |                                      |        |       |        |
| REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")   |         |         |         | 3420          |                                      |                            | 3420                                 |        |       |        |
| REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")  |         |         |         | 4046          |                                      |                            |                                      | 4046   |       |        |
| REFLECTORIZED PAINT PAVEMENT MARKING WHITE (12")  |         |         |         | 55            |                                      |                            |                                      |        | 55    |        |
| REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (12") |         |         |         | 232           |                                      |                            |                                      |        |       | 232    |
|                                                   |         |         |         |               |                                      |                            |                                      |        |       |        |
|                                                   |         |         |         |               |                                      |                            |                                      |        |       |        |
| TOTALS:                                           |         |         |         |               | 23169                                | 26                         | 3420                                 | 4046   | 55    | 232    |

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

ADVANCE WARNING SIGNS AND DEVICES

| SIGN<br>NUMBER | DESCRIPTION                                        | SIGN SIZE | STAGE 1         | STAGE 2 | STAGE 3 | MAXIMUM<br>NUMBER<br>REQUIRED | TOTAL SIGNS REQUIRED |         | VERTICAL<br>PANELS | TRAFFIC<br>DRUMS | BARRICADES (TYPE III) |      | FURNISHING &<br>INSTALLING<br>PRECAST CONC.<br>BARRIER | TEMPORARY<br>IMPACT<br>ATTENUATION<br>BARRIER | TEMP. IMPACT<br>ATTEN.BARR.<br>(REPAIR) |
|----------------|----------------------------------------------------|-----------|-----------------|---------|---------|-------------------------------|----------------------|---------|--------------------|------------------|-----------------------|------|--------------------------------------------------------|-----------------------------------------------|-----------------------------------------|
|                |                                                    |           |                 |         |         |                               | NO.                  | SQ. FT. |                    |                  | RIGHT                 | LEFT |                                                        |                                               |                                         |
|                |                                                    |           | LIN. FT. - EACH |         |         |                               |                      |         |                    |                  | 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    |                    |                  |                       |      |                                                        |                                               |                                         |
| G20-2          | END ROAD WORK                                      | 48"x24"   | 4               | 4       | 4       | 4                             | 4                    | 32.0    |                    |                  |                       |      |                                                        |                                               |                                         |
| R11-2          | ROAD CLOSED                                        | 48"x30"   | 4               | 4       | 2       | 4                             | 4                    | 40.0    |                    |                  |                       |      |                                                        |                                               |                                         |
| W8-17          | SHOULDER DROP OFF                                  | 48"x48"   | 4               | 4       |         | 4                             | 4                    | 64.0    |                    |                  |                       |      |                                                        |                                               |                                         |
| R1-1           | STOP                                               | 30"x30"   |                 |         | 2       | 2                             | 2                    | 10.4    |                    |                  |                       |      |                                                        |                                               |                                         |
| WZ-4           | NO HAND-HELD PHONE USE BY DRIVER                   | 36"x54"   | 4               | 4       | 4       | 4                             | 4                    | 54.0    |                    |                  |                       |      |                                                        |                                               |                                         |
|                | VERTICAL PANELS                                    |           | 40              | 27      | 52      | 52                            |                      |         | 52                 |                  |                       |      |                                                        |                                               |                                         |
|                | TRAFFIC DRUMS                                      |           | 40              | 27      | 52      | 52                            |                      |         |                    | 52               |                       |      |                                                        |                                               |                                         |
|                | TYPE III BARRICADE-RT. (8')                        |           | 4               | 4       | 2       | 4                             |                      |         |                    |                  | 32                    |      |                                                        |                                               |                                         |
|                | TYPE III BARRICADE-LT. (8')                        |           | 4               | 4       | 2       | 4                             |                      |         |                    |                  |                       | 32   |                                                        |                                               |                                         |
|                | FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER |           |                 |         |         |                               |                      |         |                    |                  |                       |      | 519                                                    |                                               |                                         |
|                | TEMPORARY IMPACT ATTENUATION BARRIER               |           |                 |         |         |                               |                      |         |                    |                  |                       |      |                                                        | 1                                             |                                         |
|                | TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)      |           |                 |         |         |                               |                      |         |                    |                  |                       |      |                                                        |                                               | 1                                       |
| TOTALS:        |                                                    |           |                 |         |         |                               |                      | 392.4   | 52                 | 52               | 32                    | 32   | 519                                                    | 1                                             | 1                                       |

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

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

| DATE<br>REVISED | DATE<br>REVISED | FED.RD.<br>DIST.NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|---------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                   | ARK.  | 020802  | 22           | 42              |
| QUANTITIES      |                 |                     |       |         |              |                 |



| EROSION CONTROL                                                   |         |                       |                           |      |             |        |                            |                           |             |        |                   |                    |                              |
|-------------------------------------------------------------------|---------|-----------------------|---------------------------|------|-------------|--------|----------------------------|---------------------------|-------------|--------|-------------------|--------------------|------------------------------|
| STATION                                                           | STATION | LOCATION              | PERMANENT EROSION CONTROL |      |             |        |                            | TEMPORARY EROSION CONTROL |             |        |                   |                    |                              |
|                                                                   |         |                       | SEEDING                   | LIME | MULCH COVER | WATER  | SECOND SEEDING APPLICATION | TEMPORARY SEEDING         | MULCH COVER | WATER  | ROCK DITCH CHECKS | SILT FENCE         | *SEDIMENT REMOVAL & DISPOSAL |
|                                                                   |         |                       | ACRE                      | TON  | ACRE        | M.GAL. | ACRE                       | ACRE                      | ACRE        | M.GAL. | (E-6)<br>CU.YD.   | (E-11)<br>LIN. FT. | CU. YD.                      |
| ENTIRE                                                            | PROJECT | CLEARING AND GRUBBING |                           |      |             |        |                            |                           |             |        | 33                | 2620               | 108                          |
| ENTIRE                                                            | PROJECT | STAGE 1               | 0.71                      | 1.42 | 0.71        | 72.4   | 0.71                       | 0.71                      | 0.71        | 14.5   | 18                |                    | 6                            |
| ENTIRE                                                            | PROJECT | STAGE 2               | 0.36                      | 0.72 | 0.36        | 36.7   | 0.36                       | 0.36                      | 0.36        | 7.3    | 18                |                    | 6                            |
| ENTIRE                                                            | PROJECT | STAGE 3               | 1.00                      | 2.00 | 1.00        | 102.0  | 1.00                       | 1.00                      | 1.00        | 20.4   |                   |                    |                              |
| *ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. |         |                       |                           |      |             |        |                            |                           |             |        |                   |                    |                              |
| TOTALS:                                                           |         |                       | 2.07                      | 4.14 | 2.07        | 211.1  | 2.07                       | 2.07                      | 2.07        | 42.2   | 69                | 2620               | 120                          |

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  
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.

| DRIVEWAYS & TURNOUTS            |      |                      |       |                                                            |       |                                 |             |                                         |
|---------------------------------|------|----------------------|-------|------------------------------------------------------------|-------|---------------------------------|-------------|-----------------------------------------|
| STATION                         | SIDE | LOCATION             | WIDTH | ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22) |       | AGGREGATE BASE COURSE (CLASS 7) | SIDE DRAINS | STANDARD DRAWINGS                       |
|                                 |      |                      | FEET  | SQ. YD.                                                    | TON   | TON                             | 18"         |                                         |
|                                 |      |                      |       |                                                            |       |                                 | LIN. FT.    |                                         |
| 80+55                           | RT   | HWY. 15/31 CONNECTOR | 16    | 37.01                                                      | 4.07  | 24.57                           | 28          | DR-2, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3 |
| 583+00                          | RT   | HWY. 15              | 16    | 126.04                                                     | 13.86 | 51.47                           | 40          | DR-2, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3 |
| ENTIRE PROJECT TEMPORARY DRIVES |      |                      |       |                                                            |       | 20.00                           |             |                                         |
|                                 |      |                      |       |                                                            |       |                                 |             |                                         |
| TOTALS:                         |      |                      |       | 163.05                                                     | 17.93 | 96.04                           | 68          |                                         |

BASIS OF ESTIMATE:  
ACHM SURFACE COURSE (1/2").....95.0% MIN. AGGR.....5.0% ASPHALT BINDER

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.

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.

| STRUCTURES |                                        |                         |                                                   |  |                   |                                                           |  |      |        |        |                          |                                 |                            |               |       |                |                                                         |  |
|------------|----------------------------------------|-------------------------|---------------------------------------------------|--|-------------------|-----------------------------------------------------------|--|------|--------|--------|--------------------------|---------------------------------|----------------------------|---------------|-------|----------------|---------------------------------------------------------|--|
| STATION    | DESCRIPTION                            | PIPE CULVERT ALTERNATES |                                                   |  |                   | FLARED END SECTION ALTERNATES FOR PIPE CULVERT ALTERNATES |  | SPAN | HEIGHT | LENGTH | CLASS S CONCRETE ROADWAY | REINF. STEEL-ROADWAY (GRADE 60) | UNCL.EXC. FOR STR.-ROADWAY | SOLID SODDING | WATER | STD. DWG. NOS. |                                                         |  |
|            |                                        | ALT. 1 (CLASS III)      | ALT. 2, 3, 4, 5, 6, AND 7 (WITH CLASS III ALT. 1) |  | ALT. 1 (CLASS IV) | ALT. 2, 3, 4, 5, 6, AND 7 (WITH CLASS IV ALT. 1)          |  |      |        |        |                          |                                 |                            |               |       |                |                                                         |  |
|            |                                        | 24"                     | 24"                                               |  | 36"               | 36"                                                       |  |      |        |        |                          |                                 |                            |               |       |                |                                                         |  |
|            |                                        | LIN. FT.                |                                                   |  |                   | EACH                                                      |  |      |        |        |                          |                                 |                            |               |       |                | LIN. FT.                                                |  |
| 583+67     | HWY. 15 - 24" X 122' R.C. PIPE CULVERT | 122                     | 122                                               |  | 72                | 72                                                        |  | 2    | 2      |        |                          |                                 |                            |               | 16    | 0.20           | PCC-1, PCM-1, PCP-1, PCP-2, PCP-3, FES-1, FES-2         |  |
| 586+10     | HWY. 31 - 36" X 72' R.C. PIPE CULVERT  |                         |                                                   |  | 72                | 72                                                        |  |      |        |        |                          |                                 |                            |               | 34    | 0.43           | PCC-1, PCM-1, PCP-1, PCP-2, PCP-3, FES-1, FES-2         |  |
| 83+91      | EXTEND 4'X6' R.C. BOX CULVERT          |                         |                                                   |  |                   |                                                           |  |      |        | 6      | 4                        | 23                              | 19.90                      | 1965          | 45    | 0.19           | RCB-1, RCB-2, RCB-3, R-100X-0, W-X003-1, SPECIAL DETAIL |  |
| TOTALS:    |                                        | 122                     | 122                                               |  | 72                | 72                                                        |  | 2    | 2      |        |                          |                                 | 19.90                      | 1965          | 45    | 65             | 0.82                                                    |  |

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.

| DATE<br>REVISED | DATE<br>REVISED | FED.RD.<br>DIST.NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|---------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                   | ARK.  | 020802  | 23           | 42              |
| QUANTITIES      |                 |                     |       |         |              |                 |



REMOVAL AND DISPOSAL OF CULVERTS

| STATION | DESCRIPTION                    | PIPE<br>CULVERTS | BOX<br>CULVERTS |
|---------|--------------------------------|------------------|-----------------|
|         |                                | EACH             | EACH            |
| 582+95  | HWY. 15 - RT. SIDE             | 1                |                 |
| 586+25  | HWY. 31 - RT. SIDE             | 1                |                 |
| 82+68   | HWY. 15/31 CONNECTOR - RT SIDE | 1                |                 |
| 84+70   | HWY. 15/31 CONNECTOR - RT SIDE | 1                | 1               |
| TOTALS: |                                | 4                | 1               |

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

FLOWABLE SELECT MATERIAL

| STATION | LOCATION                       | CU. YD. |
|---------|--------------------------------|---------|
| 82+68   | HWY. 15/31 CONNECTOR - RT SIDE | 4       |
| 84+70   | HWY. 15/31 CONNECTOR - RT SIDE | 24      |
| TOTAL:  |                                | 28      |

ACHM PATCHING OF EXISTING ROADWAY

| DESCRIPTION                                                          | ACHM<br>PATCHING<br>(TON) |
|----------------------------------------------------------------------|---------------------------|
| ENTIRE PROJECT - TO BE USED IF AND WHERE<br>DIRECTED BY THE ENGINEER | 8                         |
| TOTAL:                                                               | 8                         |

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

CLEARING AND GRUBBING

| STATION | STATION | LOCATION | CLEARING | GRUBBING |
|---------|---------|----------|----------|----------|
|         |         |          | STATION  |          |
| 582+29  | 583+94  | HWY. 15  | 2        | 2        |
| 585+22  | 587+13  | HWY. 31  | 2        | 2        |
| TOTALS: |         |          | 4        | 4        |

REMOVAL AND DISPOSAL OF ITEMS

| STATION | STATION | LOCATION                        | MAILBOXES | CONCRETE<br>ISLANDS |
|---------|---------|---------------------------------|-----------|---------------------|
|         |         |                                 | EACH      | SQ. YD.             |
| 583+25  |         | HWY. 15 - RT. SIDE              |           | 44                  |
| 82+48   |         | HWY. 15/31 CONNECTOR - RT. SIDE | 1         |                     |
| TOTALS: |         |                                 | 1         | 44                  |

EARTHWORK

| STATION | STATION | LOCATION / DESCRIPTION | UNCLASSIFIED<br>EXCAVATION | COMPACTED<br>EMBANKMEN |
|---------|---------|------------------------|----------------------------|------------------------|
|         |         |                        | CU. YD.                    |                        |
| ENTIRE  | PROJECT | STAGE 1-MAIN LANES     | 270                        | 5525                   |
| ENTIRE  | PROJECT | STAGE 2-MAIN LANES     | 6                          | 1369                   |
| ENTIRE  | PROJECT | STAGE 3-MAIN LANES     | 475                        | 180                    |
| ENTIRE  | PROJECT | APPROACHES             |                            | 180                    |
| ENTIRE  | PROJECT | TEMPORARY APPROACHES   |                            |                        |
| ENTIRE  | PROJECT | ADD. ASPHALT REMOVAL   | 474                        |                        |
| 83+91   |         | CHANNEL CHANGE         | 45                         |                        |
| TOTALS: |         |                        | 1270                       | 7254                   |

NOTE: EARTHWORK QUANTITIES SHALL BE PAID AS PLAN QUANTITY.

SOIL STABILIZATION

| STATION | STATION | LOCATION / DESCRIPTION                              | SOIL<br>STABILIZATION |
|---------|---------|-----------------------------------------------------|-----------------------|
|         |         |                                                     | TON                   |
| ENTIRE  | PROJECT | TO BE USED IF AND WHERE<br>DIRECTED BY THE ENGINEER | 75                    |
| TOTAL:  |         |                                                     | 75                    |

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

COLD MILLING ASPHALT PAVEMENT

| STATION   | STATION   | LOCATION             | AVG. WIDTH | COLD MILLING<br>ASPHALT<br>PAVEMENT |
|-----------|-----------|----------------------|------------|-------------------------------------|
|           |           |                      | FEET       | SQ. YD.                             |
| 79+00.00  | 80+00.00  | HWY. 15/31 CONNECTOR | 22.00      | 244.44                              |
| 89+12.46  | 90+12.46  | HWY. 15/31 CONNECTOR | 22.00      | 244.44                              |
| 580+00.00 | 580+50.00 | HWY. 15              | 23.00      | 127.78                              |
| 588+40.37 | 588+90.37 | HWY. 31              | 23.00      | 127.78                              |
| TOTAL:    |           |                      |            | 744.44                              |

NOTE: COORDINATE COLD MILLING STOCKPILE LOCATIONS WITH DISTRICT ENGINEER.  
STOCKPILE LOCATIONS SHALL BE NO FARTHER THAN FIVE MILES FROM EACH SITE.

| DATE<br>REVISED | DATE<br>REVISED | FED.RD.<br>DIST.NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|---------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                   | ARK.  | 020802  | 24           | 42              |
| QUANTITIES      |                 |                     |       |         |              |                 |



| BASE AND SURFACING            |           |                                               |        |                                 |         |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
|-------------------------------|-----------|-----------------------------------------------|--------|---------------------------------|---------|-------------------------|---------|-----------------|-------------------------|---------|--------|---------------|-------------------------|---------|----------------|----------|----------------------------|---------|----------------|----------|-----------|---------|----------------|----------|----------------|-------|-------|-----|------|-----|
| STATION                       | STATION   | LOCATION                                      | LENGTH | AGGREGATE BASE COURSE (CLASS 7) |         | TACK COAT               |         |                 |                         |         |        |               | ACHM BINDER COURSE (1") |         |                |          | ACHM SURFACE COURSE (1/2") |         |                |          |           |         |                |          |                |       |       |     |      |     |
|                               |           |                                               |        | TON / STATION                   | TON     | (0.05 GAL. PER SQ. YD.) |         |                 | (0.17 GAL. PER SQ. YD.) |         |        | TOTAL GALLONS | AVG. WID.               | SQ.YD.  | POUND / SQ.YD. | PG 64-22 | AVG. WID.                  | SQ.YD.  | POUND / SQ.YD. | PG 64-22 | AVG. WID. | SQ.YD.  | POUND / SQ.YD. | PG 64-22 | TOTAL PG 64-22 |       |       |     |      |     |
|                               |           |                                               | FEET   |                                 |         | SQ.YD.                  | GALLON  | TOTAL WID. FEET | SQ.YD.                  | GALLON  | FEET   |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                | TON   | FEET  | TON | FEET | TON |
|                               |           |                                               |        |                                 |         |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| MAIN LANES                    |           |                                               |        |                                 |         |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| 79+00.00                      | 80+00.00  | HWY. 15/31 CONNECTOR - TRANSITION             | 100.00 |                                 |         |                         |         |                 |                         | 22.00   | 244.44 | 41.55         | 41.55                   |         |                |          |                            |         |                |          |           |         | 30.00          | 333.33   | 220.00         | 36.67 | 36.67 |     |      |     |
| 80+00.00                      | 82+44.81  | HWY. 15/31 CONNECTOR - NOTCH & WIDEN (TAPER)  | 244.81 | 154.63                          | 378.55  | 12.00                   | 326.41  | 16.32           | 22.00                   | 598.42  | 101.73 | 118.05        | 6.00                    | 163.21  | 330.00         | 26.93    | 6.00                       | 163.21  | 220.00         | 17.95    | 36.00     | 979.24  | 220.00         | 107.72   | 125.67         |       |       |     |      |     |
| 82+44.81                      | 86+35.37  | HWY. 15/31 CONNECTOR - NOTCH & WIDEN (3 LANE) | 390.56 | 201.30                          | 786.20  | 24.00                   | 1041.49 | 52.07           | 22.00                   | 954.70  | 162.30 | 214.37        | 12.00                   | 520.75  | 330.00         | 85.92    | 12.00                      | 520.75  | 220.00         | 57.28    | 42.00     | 1822.61 | 220.00         | 200.49   | 257.77         |       |       |     |      |     |
| 86+35.37                      | 89+12.46  | HWY. 15/31 CONNECTOR - NOTCH & WIDEN (TAPER)  | 277.09 | 154.63                          | 428.46  | 12.00                   | 369.45  | 18.47           | 22.00                   | 677.33  | 115.15 | 133.62        | 6.00                    | 184.73  | 330.00         | 30.48    | 6.00                       | 184.73  | 220.00         | 20.32    | 36.00     | 1108.36 | 220.00         | 121.92   | 142.24         |       |       |     |      |     |
| 89+12.46                      | 90+12.46  | HWY. 15/31 CONNECTOR - TRANSITION             | 100.00 |                                 |         |                         |         |                 | 22.00                   | 244.44  | 41.55  | 41.55         |                         |         |                |          |                            |         |                |          |           | 30.00   | 333.33         | 220.00   | 36.67          | 36.67 |       |     |      |     |
| 580+00.00                     | 580+50.00 | HWY. 15 - TRANSITION                          | 50.00  |                                 |         |                         |         |                 | 22.00                   | 122.22  | 20.78  | 20.78         |                         |         |                |          |                            |         |                |          | 30.00     | 166.67  | 220.00         | 18.33    | 18.33          |       |       |     |      |     |
| 580+50.00                     | 581+82.80 | HWY. 15 - NOTCH & WIDEN                       | 132.80 | 201.30                          | 267.33  | 13.00                   | 191.82  | 9.59            | 11.00                   | 162.31  | 27.59  | 37.18         | 13.00                   | 191.82  | 330.00         | 31.65    | 13.00                      | 191.82  | 220.00         | 21.10    | 32.00     | 472.18  | 220.00         | 51.94    | 73.04          |       |       |     |      |     |
| 581+82.80                     | 583+92.05 | HWY. 15 - FULL DEPTH                          | 209.25 | 294.63                          | 616.51  | 24.00                   | 558.00  | 27.90           |                         |         |        | 27.90         | 24.00                   | 558.00  | 330.00         | 92.07    | 24.00                      | 558.00  | 220.00         | 61.38    | 32.00     | 744.00  | 220.00         | 81.84    | 143.22         |       |       |     |      |     |
| 585+23.67                     | 587+25.69 | HWY. 31 - FULL DEPTH                          | 202.02 | 294.63                          | 595.21  | 24.00                   | 538.72  | 26.94           |                         |         |        | 26.94         | 24.00                   | 538.72  | 330.00         | 88.89    | 24.00                      | 538.72  | 220.00         | 59.26    | 32.00     | 718.29  | 220.00         | 79.01    | 138.27         |       |       |     |      |     |
| 587+25.69                     | 588+40.37 | HWY. 31 - NOTCH & WIDEN                       | 114.68 | 201.30                          | 230.85  | 13.00                   | 165.65  | 8.28            | 11.00                   | 140.16  | 23.83  | 32.11         | 13.00                   | 165.65  | 330.00         | 27.33    | 13.00                      | 165.65  | 220.00         | 18.22    | 32.00     | 407.75  | 220.00         | 44.85    | 63.07          |       |       |     |      |     |
| 588+40.37                     | 588+90.37 | HWY. 31 - TRANSITION                          | 50.00  |                                 |         |                         |         |                 | 22.00                   | 122.22  | 20.78  | 20.78         |                         |         |                |          |                            |         |                |          | 30.00     | 166.67  | 220.00         | 18.33    | 18.33          |       |       |     |      |     |
|                               |           |                                               |        |                                 |         |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
|                               |           |                                               |        |                                 |         |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
|                               |           |                                               |        |                                 |         |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| ADDITIONAL FOR LEVELING       |           |                                               |        |                                 |         |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| 80+19.81                      | 83+19.81  | HWY. 15/31 CONNECTOR - LEVELING               | 300.00 |                                 |         | 22.00                   | 733.33  | 36.67           |                         |         |        | 36.67         |                         |         |                |          | 22.00                      | 733.33  | VAR.           | 216.90   |           |         |                |          | 216.90         |       |       |     |      |     |
| 83+19.81                      | 85+60.37  | HWY. 15/31 CONNECTOR - LEVELING               | 240.56 |                                 |         | 22.00                   | 588.04  | 29.40           |                         |         |        | 29.40         |                         |         |                |          | 22.00                      | 588.04  | VAR.           | 347.39   |           |         |                |          | 347.39         |       |       |     |      |     |
| 85+60.37                      | 88+60.37  | HWY. 15/31 CONNECTOR - LEVELING               | 300.00 |                                 |         | 22.00                   | 733.33  | 36.67           |                         |         |        | 36.67         |                         |         |                |          | 22.00                      | 733.33  | VAR.           | 250.29   |           |         |                |          | 250.29         |       |       |     |      |     |
| ADDITIONAL FOR SUPERELEVATION |           |                                               |        |                                 |         |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| 80+19.81                      | 83+19.81  | HWY. 15/31 CONNECTOR - S.E. TRANS.            | 300.00 | 142.49                          | 427.47  |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| 83+19.81                      | 85+60.37  | HWY. 15/31 CONNECTOR - MAX. S.E.              | 240.56 | 269.42                          | 648.12  |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| 85+60.37                      | 88+60.37  | HWY. 15/31 CONNECTOR - S.E. TRANS.            | 300.00 | 142.49                          | 427.47  |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| 580+50.00                     | 583+92.05 | HWY. 15                                       | 342.05 | 41.63                           | 142.40  |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| 585+23.67                     | 588+40.37 | HWY. 31                                       | 316.70 | 41.59                           | 131.72  |                         |         |                 |                         |         |        |               |                         |         |                |          |                            |         |                |          |           |         |                |          |                |       |       |     |      |     |
| TOTALS:                       |           |                                               |        |                                 | 5080.29 |                         | 5246.24 | 262.31          |                         | 3266.24 | 555.26 | 817.57        |                         | 2322.88 |                | 383.27   |                            | 4377.58 |                | 1070.09  |           | 7252.43 |                | 797.77   | 1867.86        |       |       |     |      |     |

BASIS OF ESTIMATE:  
ACHM SURFACE COURSE (1/2").....95.0% MIN. AGGR.....5.0% ASPHALT BINDER  
ACHM BINDER COURSE (1").....95.0% MIN. AGGR.....5.0% ASPHALT BINDER  
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

| ITEM NUMBER   | ITEM                                                                            | QUANTITY              | UNIT     |
|---------------|---------------------------------------------------------------------------------|-----------------------|----------|
| 201           | CLEARING                                                                        | 4                     | STATION  |
| 201           | GRUBBING                                                                        | 4                     | STATION  |
| 202           | REMOVAL AND DISPOSAL OF CONCRETE ISLANDS                                        | 44                    | SQ. YD.  |
| 202           | REMOVAL AND DISPOSAL OF PIPE CULVERTS                                           | 4                     | EACH     |
| 202           | REMOVAL AND DISPOSAL OF BOX CULVERTS                                            | 1                     | EACH     |
| 202           | REMOVAL AND DISPOSAL OF MAILBOXES                                               | 1                     | EACH     |
| SS & 206      | FLOWABLE SELECT MATERIAL                                                        | 28                    | CU. YD.  |
| SP, SS, & 210 | UNCLASSIFIED EXCAVATION                                                         | 1270                  | CU. YD.  |
| SP & 210      | COMPACTED EMBANKMENT                                                            | 7254                  | CU. YD.  |
| SP & 210      | SOIL STABILIZATION                                                              | 75                    | TON      |
| SP, SS, & 303 | AGGREGATE BASE COURSE (CLASS 7)                                                 | 5176                  | TON      |
| SS & 401      | TACK COAT                                                                       | 818                   | GAL.     |
| SP, SS, & 406 | MINERAL AGGREGATE IN ACHM BINDER COURSE (1")                                    | 364                   | TON      |
| SP, SS, & 406 | ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")                            | 19                    | TON      |
| SP, SS, & 407 | MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")                                 | 1792                  | TON      |
| SP, SS, & 407 | ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")                         | 94                    | TON      |
| SP & 412      | COLD MILLING ASPHALT PAVEMENT                                                   | 744                   | SQ. YD.  |
| SP, SS, & 415 | ACHM PATCHING OF EXISTING ROADWAY                                               | 8                     | TON      |
| 601           | MOBILIZATION                                                                    | 1.00                  | LUMP SUM |
| SS & 603      | MAINTENANCE OF TRAFFIC                                                          | 1.00                  | LUMP SUM |
| SS & 604      | SIGNS                                                                           | 392                   | SQ. FT.  |
| SS & 604      | BARRICADES                                                                      | 64                    | LIN. FT. |
| SS & 604      | TRAFFIC DRUMS                                                                   | 52                    | EACH     |
| SS & 604      | FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER                              | 519                   | LIN. FT. |
| 604           | CONSTRUCTION PAVEMENT MARKINGS                                                  | 23169                 | LIN. FT. |
| SS & 604      | VERTICAL PANELS                                                                 | 52                    | EACH     |
| SS & 606      | 24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)                               | (ALTERNATE NO. 1) 122 | LIN. FT. |
| SS & 606      | 24" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)                    | (ALTERNATE NO. 2) 122 | LIN. FT. |
| SS & 606      | 24" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)                   | (ALTERNATE NO. 3) 122 | LIN. FT. |
| SS & 606      | 24" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE) | (ALTERNATE NO. 4) 122 | LIN. FT. |
| SP, SS, & 606 | 24" POLYPROPYLENE PIPE                                                          | (ALTERNATE NO. 5) 122 | LIN. FT. |
| SP, SS, & 606 | 24" HIGH DENSITY POLYETHYLENE PIPE                                              | (ALTERNATE NO. 6) 122 | LIN. FT. |
| SP, SS, & 606 | 24" PVC PIPE                                                                    | (ALTERNATE NO. 7) 122 | LIN. FT. |
| SS & 606      | 36" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)                                | (ALTERNATE NO. 1) 72  | LIN. FT. |
| SS & 606      | 36" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)                    | (ALTERNATE NO. 2) 72  | LIN. FT. |
| SS & 606      | 36" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)                   | (ALTERNATE NO. 3) 72  | LIN. FT. |
| SS & 606      | 36" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (14 GAUGE)  | (ALTERNATE NO. 4) 72  | LIN. FT. |
| SP, SS, & 606 | 36" POLYPROPYLENE PIPE                                                          | (ALTERNATE NO. 5) 72  | LIN. FT. |
| SP, SS, & 606 | 36" HIGH DENSITY POLYETHYLENE PIPE                                              | (ALTERNATE NO. 6) 72  | LIN. FT. |
| SP, SS, & 606 | 36" PVC PIPE                                                                    | (ALTERNATE NO. 7) 72  | LIN. FT. |
| SS & 606      | 24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS                   | (ALTERNATE NO. 1) 2   | EACH     |
| SS & 606      | 24" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS                      | (ALTERNATE NO. 2) 2   | EACH     |
| SS & 606      | 36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS                   | (ALTERNATE NO. 1) 2   | EACH     |
| SS & 606      | 36" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS                      | (ALTERNATE NO. 2) 2   | EACH     |
| SP, SS, & 606 | 18" SIDE DRAIN                                                                  | 68                    | LIN. FT. |
| 620           | LIME                                                                            | 4                     | TON      |
| 620           | SEEDING                                                                         | 2.07                  | ACRE     |
| SS & 620      | MULCH COVER                                                                     | 4.14                  | ACRE     |
| 620           | WATER                                                                           | 254.1                 | M. GAL.  |
| 621           | TEMPORARY SEEDING                                                               | 2.07                  | ACRE     |
| 621           | SILT FENCE                                                                      | 2620                  | LIN. FT. |
| 621           | SEDIMENT REMOVAL AND DISPOSAL                                                   | 120                   | CU. YD.  |
| 621           | ROCK DITCH CHECKS                                                               | 69                    | CU. YD.  |
| 623           | SECOND SEEDING APPLICATION                                                      | 2.07                  | ACRE     |
| 624           | SOLID SODDING                                                                   | 65                    | SQ. YD.  |
| 635           | ROADWAY CONSTRUCTION CONTROL                                                    | 1.00                  | LUMP SUM |
| 718           | REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")                                 | 3420                  | LIN. FT. |
| 718           | REFLECTORIZED PAINT PAVEMENT MARKING WHITE (12")                                | 55                    | LIN. FT. |
| 718           | REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")                                | 4046                  | LIN. FT. |
| 718           | REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (12")                               | 232                   | LIN. FT. |
| 721           | RAISED PAVEMENT MARKERS (TYPE II)                                               | 26                    | EACH     |
| SS & 731      | TEMPORARY IMPACT ATTENUATION BARRIER                                            | 1                     | EACH     |
| SS & 731      | TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)                                   | 1                     | EACH     |
| 801           | UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY                                  | 45                    | CU. YD.  |
| SP, SS, & 802 | CLASS S CONCRETE-ROADWAY                                                        | 19.90                 | CU. YD.  |
| SS & 804      | REINFORCING STEEL-ROADWAY (GRADE 60)                                            | 1965                  | POUND    |

A circular professional engineer seal for the State of Arkansas. The seal features a braided border. Inside the border, the text "STATE OF ARKANSAS" is at the top, followed by "REGISTERED PROFESSIONAL ENGINEER" in large, bold letters. Below that is "No. 14044" and the name "JASON MacDonald" at the bottom. A blue ink signature is written across the seal, and the date "03/02/26" is handwritten in blue ink at the bottom right.[illegible]

## SUMMARY OF QUANTITIES AND REVISIONS

| DATE<br>REVISED        | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                        |                 | 6                     | ARK.  | 020802  | 26           | 42              |
| SURVEY CONTROL DETAILS |                 |                       |       |         |              |                 |



SURVEY CONTROL COORDINATES

Project Name: s012384H  
Date: 3/10/2021  
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL.  
THIS JOB IS IN GRID, ALL COORDS ARE GRID.  
Units: U.S. SURVEY FOOT

| Point<br>Name | Northing     | Easting      | Elev    | Feature | Description                     |
|---------------|--------------|--------------|---------|---------|---------------------------------|
| 1             | 1934966.0370 | 1329182.7960 | 215.584 | CTL     | ARDOT STD MON STAMPED PN# 1     |
| 2             | 1935453.4940 | 1329230.4290 | 217.130 | CTL     | ARDOT STD MON STAMPED PN# 2     |
| 3             | 1935749.2920 | 1328858.8880 | 215.072 | CTL     | ARDOT STD MON STAMPED PN# 3     |
| 4             | 1934919.7400 | 1329663.0040 | 214.669 | CTL     | ARDOT STD MON STAMPED PN# 4     |
| 900           | 1935365.2670 | 1329282.0560 | 215.631 | TBM     | 20' E OF CL HWY 15 S 51' S OF C |
| 999           | 1937345.9320 | 1327224.3240 | 221.858 | BM      |                                 |

\*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped  
\*(standard markings common to all caps), or as indicated  
(other markings indicated in the point description of the individual point).  
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT  
THIS JOB IS IN GRID, ALL COORDINATES LISTED ARE GRID COORDINATES  
GRID COORDINATES ARE STORED UNDER FILE NAME s012384Hgi.cti  
HORIZONTAL DATUM: NAD 83 (1997)  
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE  
AT A SPECIFIC POINT.

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

BASIS OF BEARING:  
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE  
DETERMINED FROM GPS CONTROL POINTS, BASED ON STATIC OBS ON PN# 3 & 4  
CONVERGENCE ANGLE: 00 01 52.8 RIGHT AT LAT N34°22'44.58" LON W91°56'38.40"  
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

C.L. HWY. 15-31 CONNECTOR  
PI = 84+55.76  
Δ = 53°42'08" LT.  
D = 13°45'00"  
T = 210.95'  
L = 390.56'  
PC = 82+44.81  
PT = 86+35.37  
SE = 0.100 ' / ' /

C.L. HWY. 15  
PI = 582+09.33  
Δ = 41°04'05" LT.  
D = 13°30'00"  
T = 158.96'  
L = 304.20'  
PC = 580+50.37  
PT = 583+54.57  
SE = 0.100 ' / ' /

C.L. HWY. 31  
PI = 587+17.90  
Δ = 41°13'41" LT.  
D = 13°30'00"  
T = 159.64'  
L = 305.39'  
PC = 585+58.26  
PT = 588+63.65  
SE = 0.100 ' / ' /

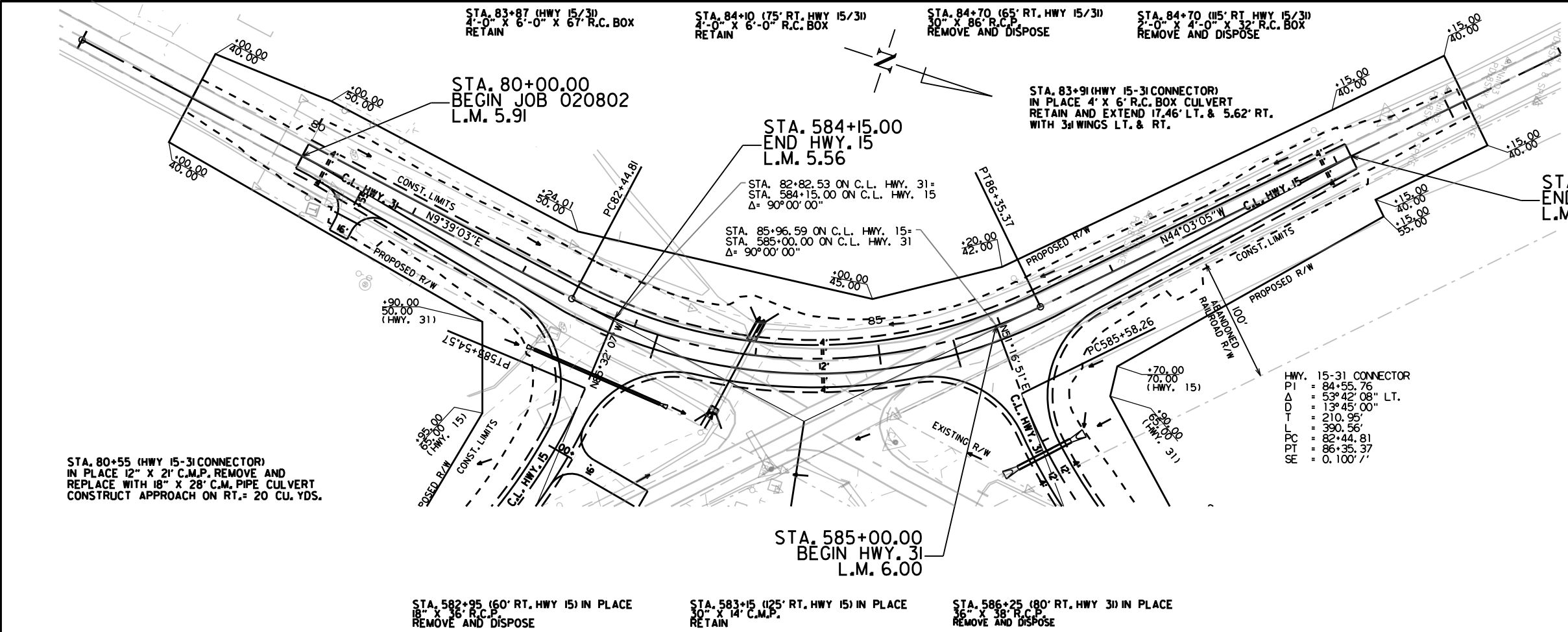
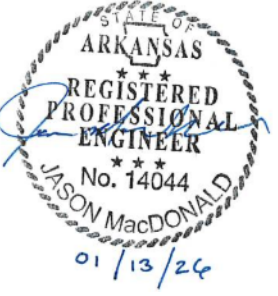
| HWY. 31/15<br>POINT NO. | TYPE | STATION  | NORTHING     | EASTING      |
|-------------------------|------|----------|--------------|--------------|
| 8000                    | POB  | 78+00.00 | 1934731.8963 | 1329127.3954 |
| 8001                    | PC   | 82+44.81 | 1935170.4081 | 1329201.9644 |
| 8002                    | PT   | 86+35.37 | 1935529.9984 | 1329090.6504 |
| 8003                    | POE  | 91+12.46 | 1935872.8924 | 1328758.9259 |

| HWY. 15<br>POINT NO. | TYPE | STATION   | NORTHING     | EASTING      |
|----------------------|------|-----------|--------------|--------------|
| 8004                 | POB  | 578+00.00 | 1934898.6237 | 1329712.1136 |
| 8005                 | PC   | 580+50.36 | 1935077.2964 | 1329536.7335 |
| 8006                 | PT   | 583+54.57 | 1935203.1201 | 1329266.8881 |
| 8007                 | POE  | 584+15.05 | 1935207.8277 | 1329206.5972 |

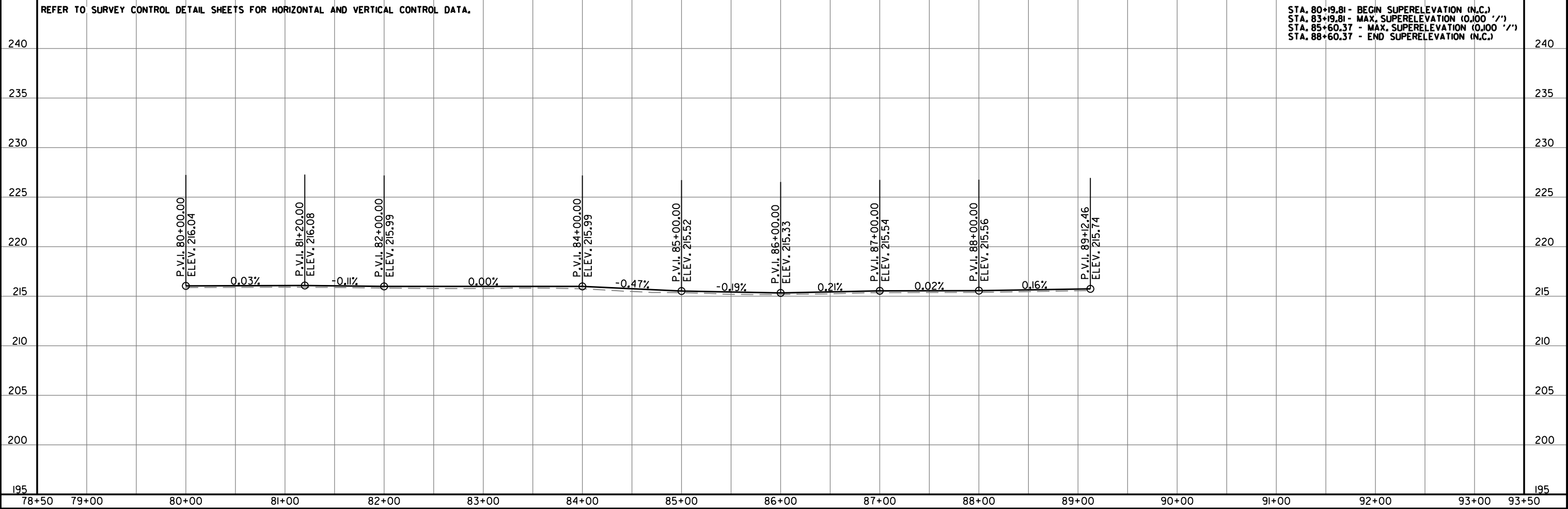
| HWY. 31<br>POINT NO. | TYPE | STATION   | NORTHING     | EASTING      |
|----------------------|------|-----------|--------------|--------------|
| 8008                 | POB  | 585+00.00 | 1935500.9121 | 1329116.2802 |
| 8009                 | PC   | 585+58.26 | 1935537.3522 | 1329161.7339 |
| 8010                 | PT   | 588+63.65 | 1935794.4053 | 1329314.1596 |
| 8011                 | POE  | 590+90.37 | 1936017.6460 | 1329353.7350 |

SURVEY CONTROL DETAILS

| DATE<br>REVISED         | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                         |                 | 6                     | ARK.  | 020802  | 27           | 42              |
| PLAN AND PROFILE SHEETS |                 |                       |       |         |              |                 |



HWY. 15-31 CONNECTOR



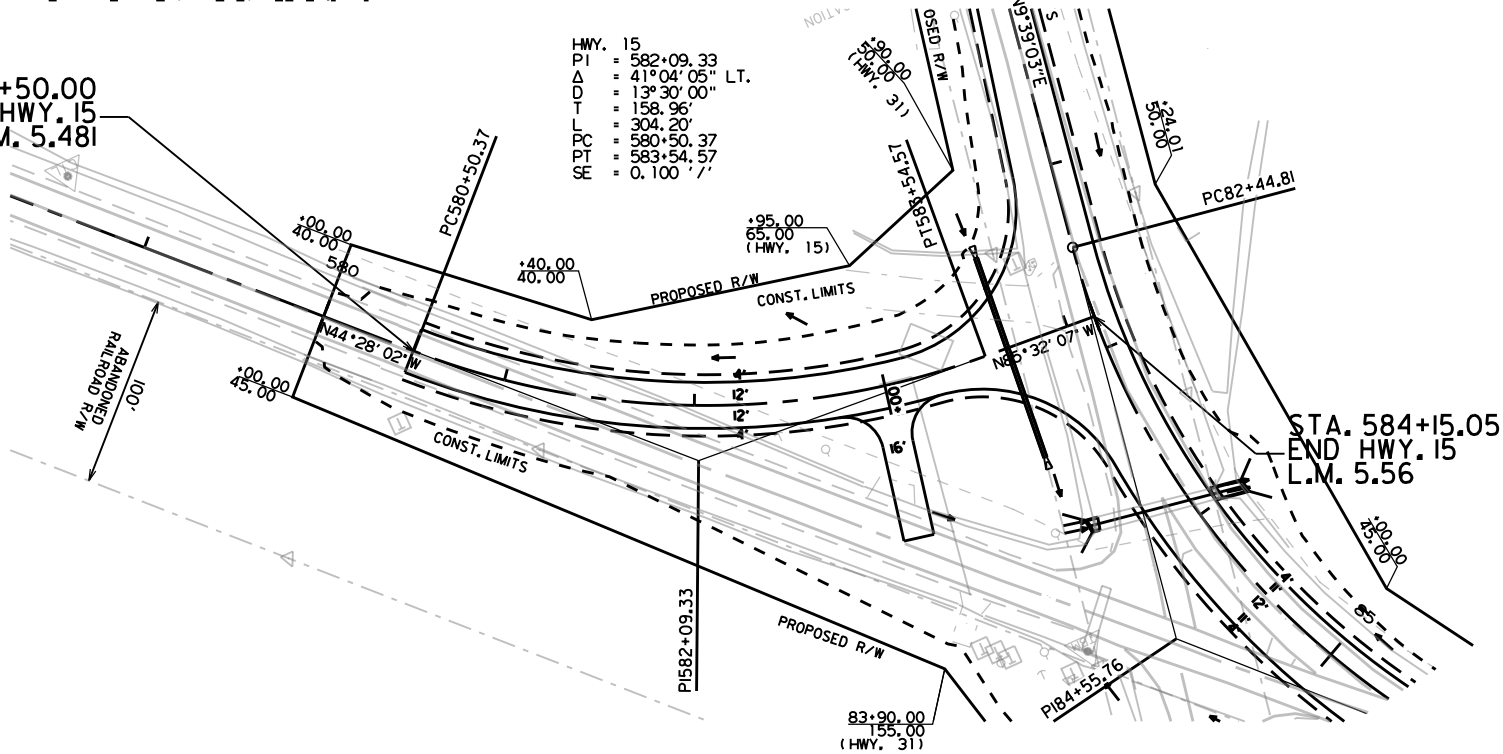
| DATE<br>REVISED         | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                         |                 | 6                     | ARK.  | 020802  | 28           | 42              |
| PLAN AND PROFILE SHEETS |                 |                       |       |         |              |                 |



STA. 583+67 CONSTRUCT  
24" X 122" PIPE CULVERT  
WITH FES L.I. & RT.  
INV. UP = 213.50'  
INV. DN = 212.10'  
24" R.C. PIPE (CLASS III) TYPE 31= 122 LIN. FT.  
24" ASCCS PIPE (TYPE 2)= 122 LIN. FT.  
24" ALCCS PIPE (TYPE 2)= 122 LIN. FT.  
24" PCCS PIPE (TYPE 2)= 122 LIN. FT.  
24" HDPE PIPE (TYPE 2)= 122 LIN. FT.  
24" PVC PIPE (TYPE 2)= 122 LIN. FT.  
24" PPL PIPE (TYPE 2)= 122 LIN. FT.

STA. 580+50.00  
BEGIN HWY. 15  
L.M. 5.481

HWY. 15  
PI = 582+09.33  
Δ = 41°04'05" LT.  
D = 13°30'00"  
T = 158.96'  
L = 304.20'  
PC = 580+50.37  
PT = 583+54.57  
SE = 0.100 %

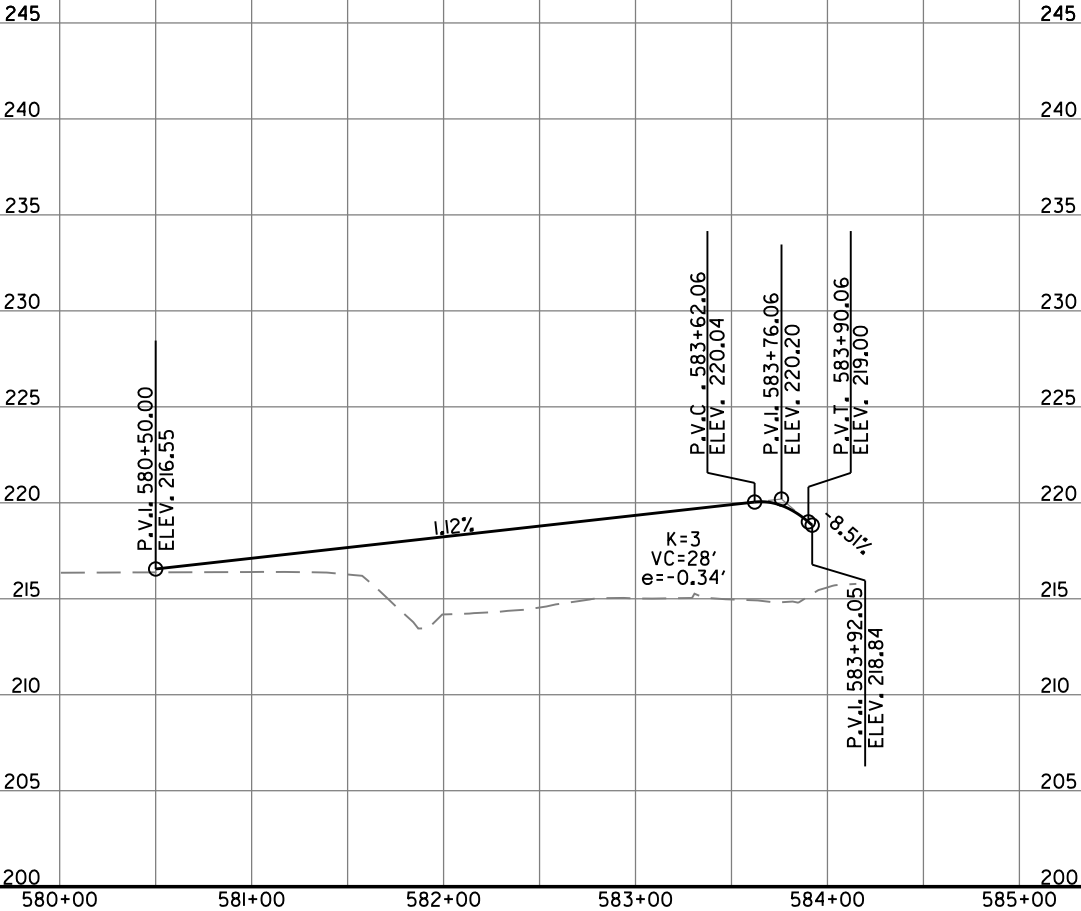


STA. 583+00 (HWY 15)  
IN PLACE 18" X 36" R.C.P.  
REMOVE AND  
REPLACE WITH 18" X 28" C.M. PIPE CULVERT  
CONSTRUCT APPROACH ON RT.= 160 CU. YDS.

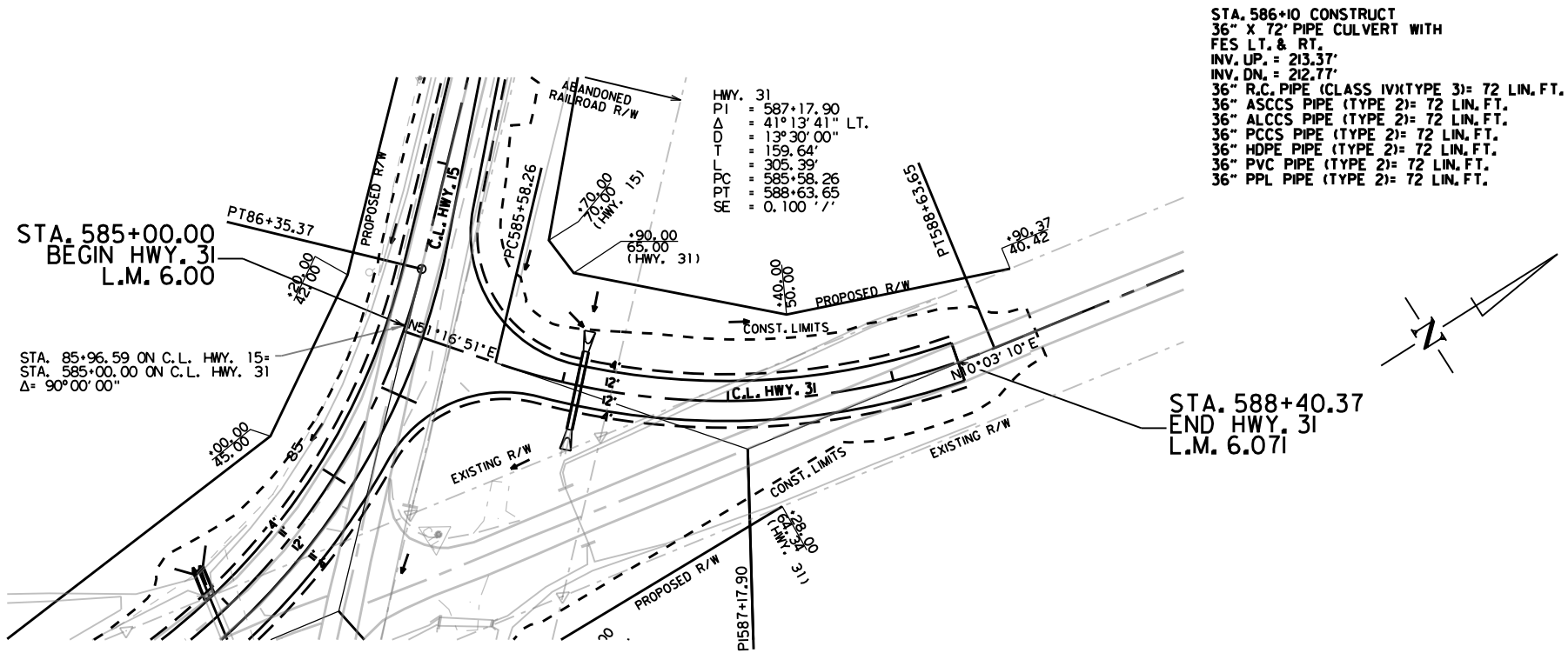
HWY. 15

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

STA. 580+00.00 - BEGIN SUPERELEVATION (N.C.)  
STA. 582+33.78 - MAX. SUPERELEVATION (0.074 %)  
STA. 583+92.05 - END SUPERELEVATION (0.010 %)



| DATE<br>REVISED         | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                         |                 | 6                     | ARK.  | 020802  | 29           | 42              |
| PLAN AND PROFILE SHEETS |                 |                       |       |         |              |                 |



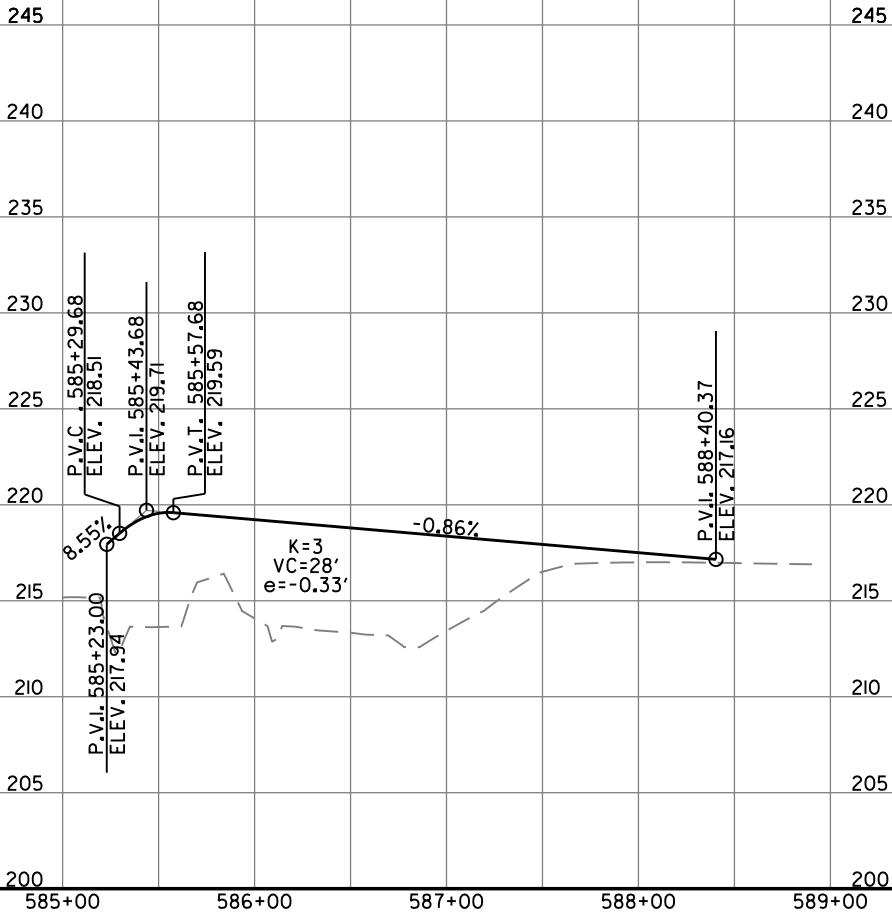
STA. 586+10 CONSTRUCT  
36" X 72" PIPE CULVERT WITH  
FES L.T. & RT.  
INV. UP. = 213.37'  
INV. DN. = 212.77'  
36" R.C. PIPE (CLASS IV)(TYPE 3)= 72 LIN. FT.  
36" ASCCS PIPE (TYPE 2)= 72 LIN. FT.  
36" ALCCS PIPE (TYPE 2)= 72 LIN. FT.  
36" PCCS PIPE (TYPE 2)= 72 LIN. FT.  
36" HDPE PIPE (TYPE 2)= 72 LIN. FT.  
36" PVC PIPE (TYPE 2)= 72 LIN. FT.  
36" PPL PIPE (TYPE 2)= 72 LIN. FT.

STA. 586+25 (80' RT. HWY. 31) IN PLACE  
36" X 38" R.C.P.  
REMOVE AND DISPOSE

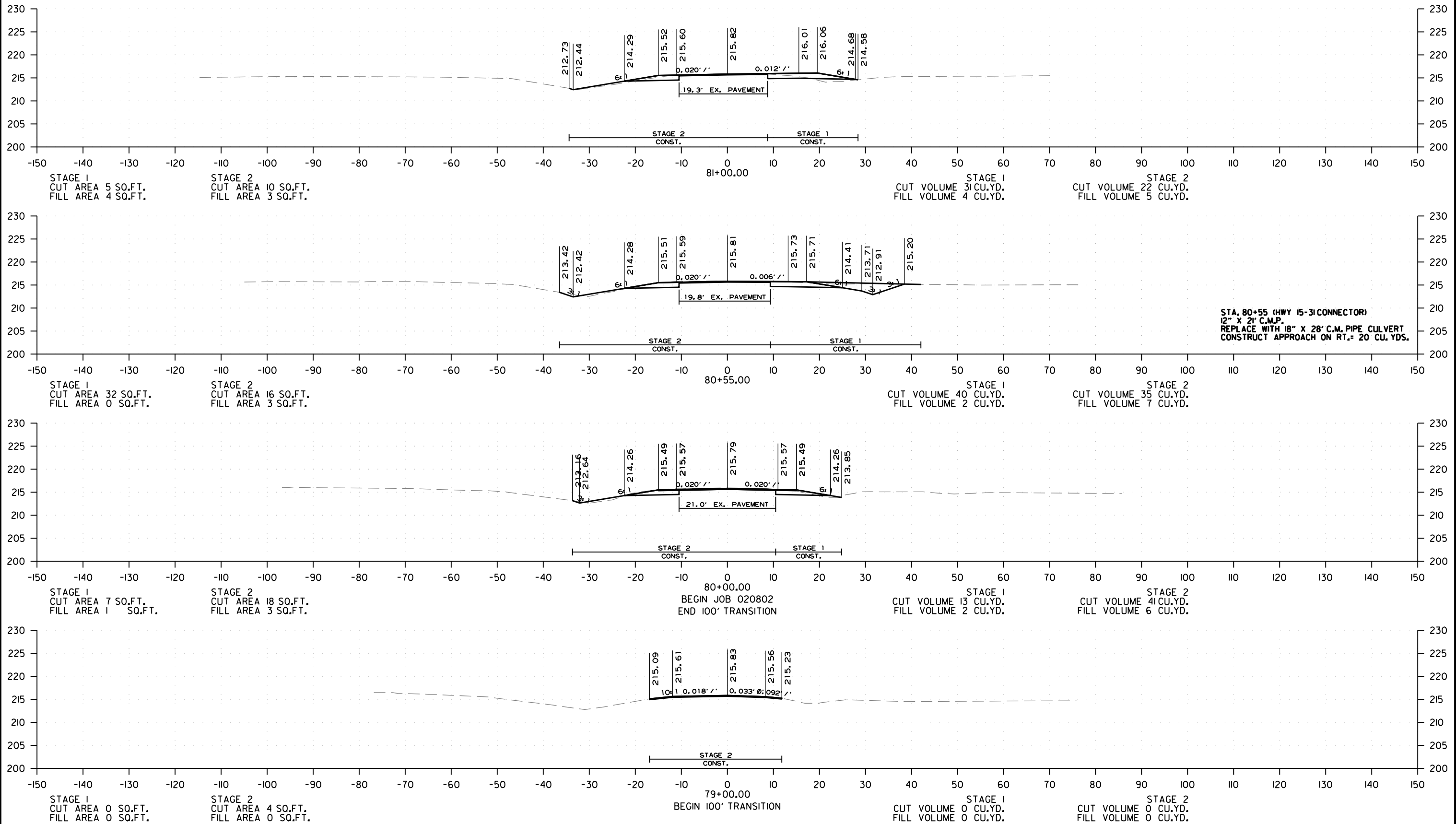
HWY. 31

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

STA. 585+23.67 - BEGIN SUPERELEVATION (0.009 '/')  
STA. 586+70.19 - MAX. SUPERELEVATION (0.068 '/')  
STA. 588+90.37 - END SUPERELEVATION (N.C.)

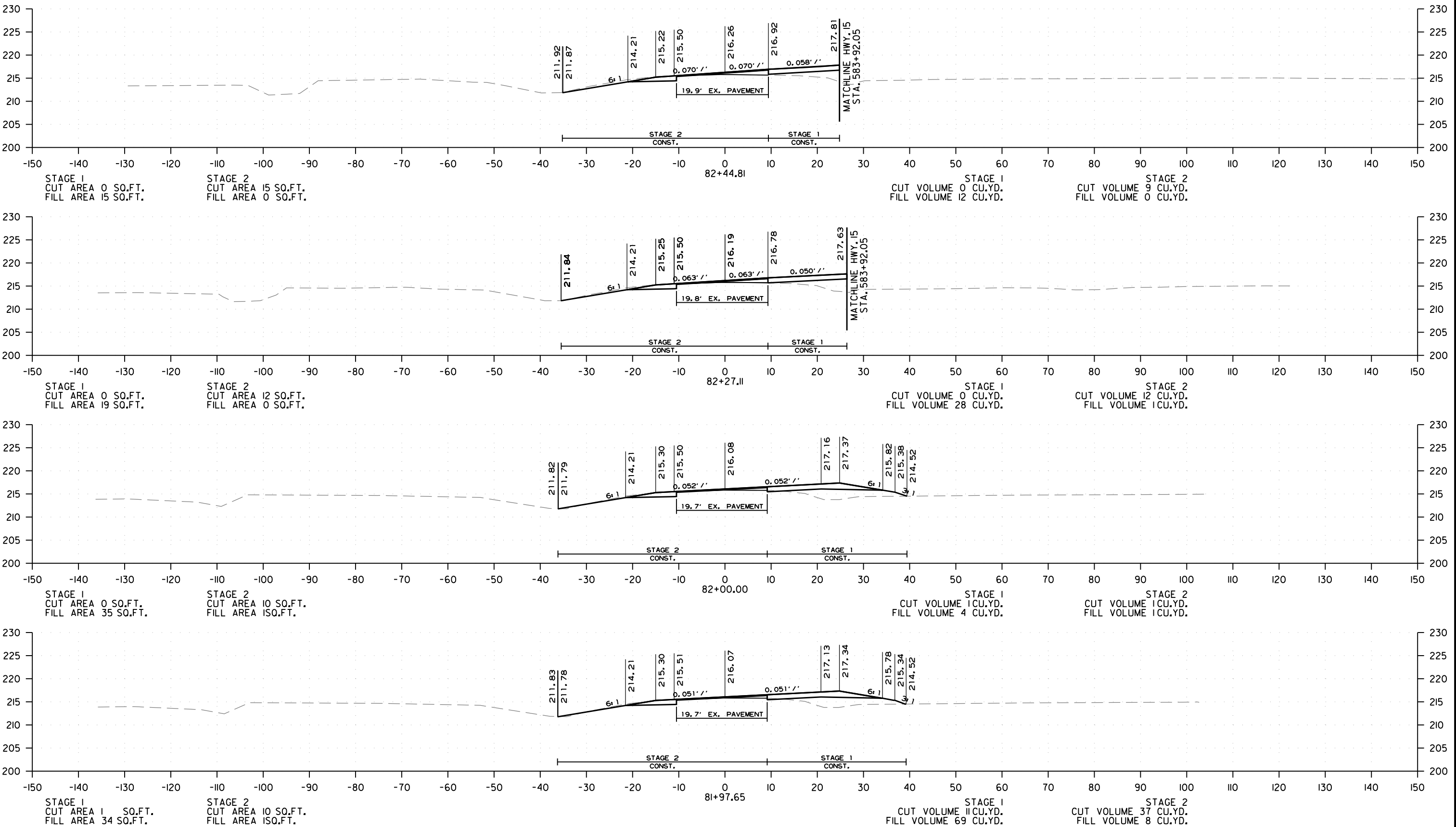


| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 30           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



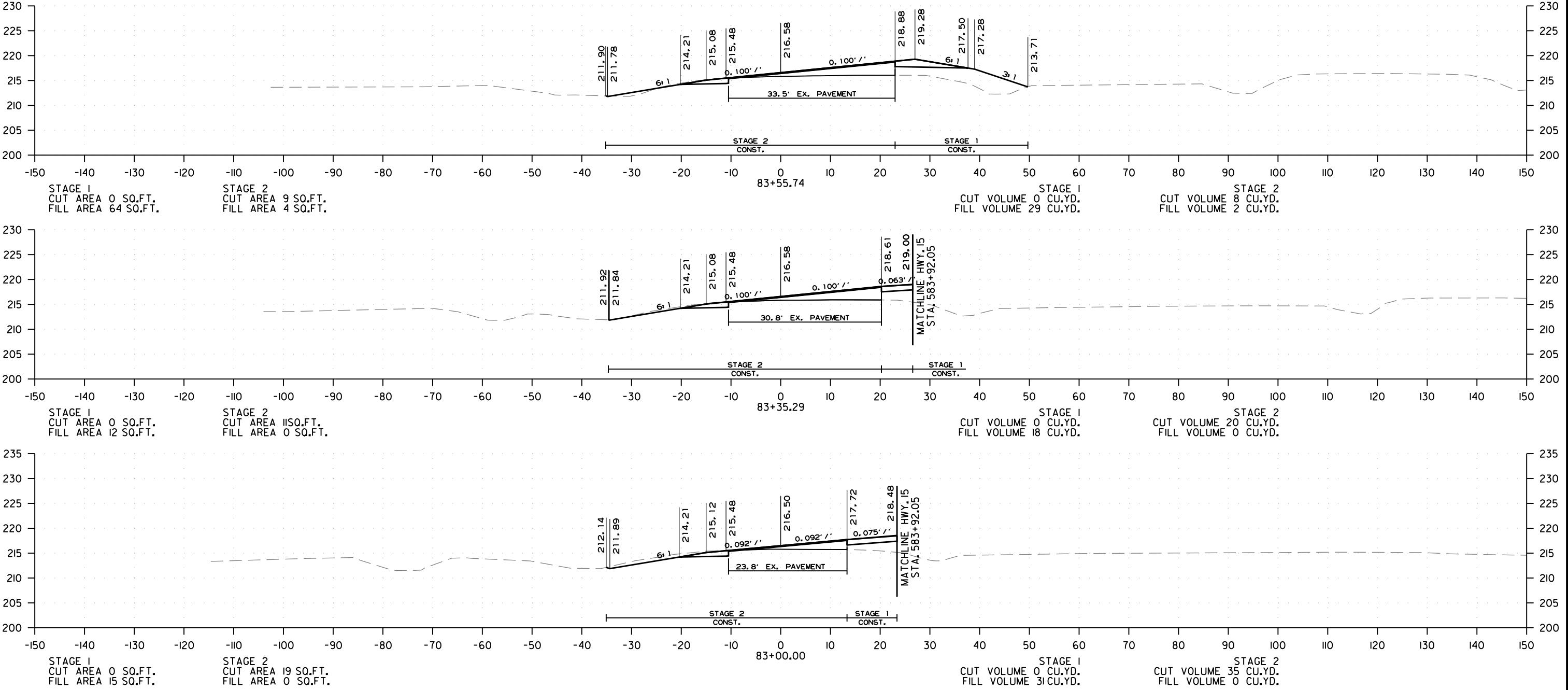
HWY. 15-31 CONNECTOR - CROSS SECTION FROM STA 79+00.00 TO STA. 81+00.00

| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 31           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



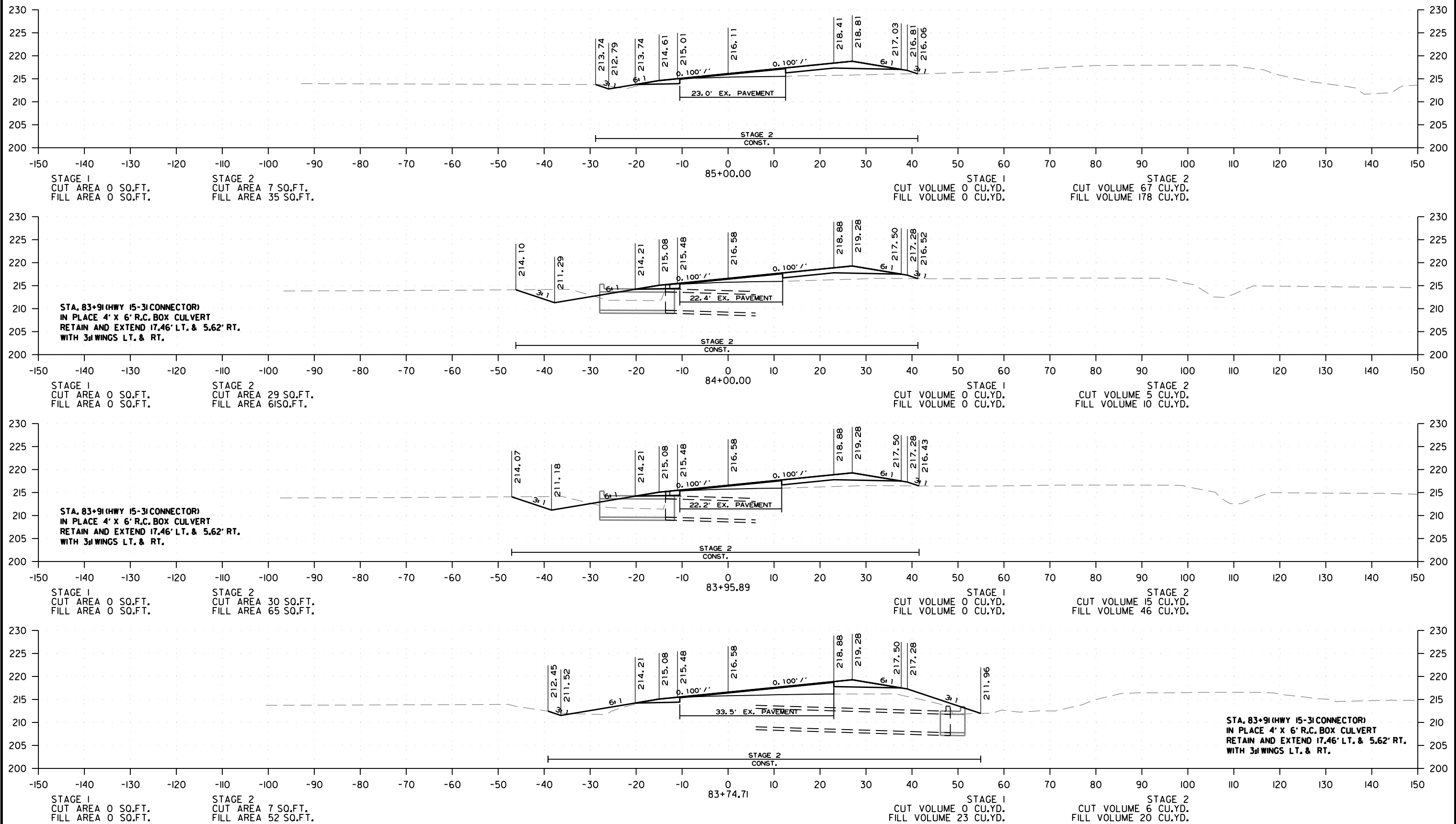
HWY. 15-31 CONNECTOR - CROSS SECTION FROM STA 81+97.65 TO STA. 82+44.81

| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 32           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



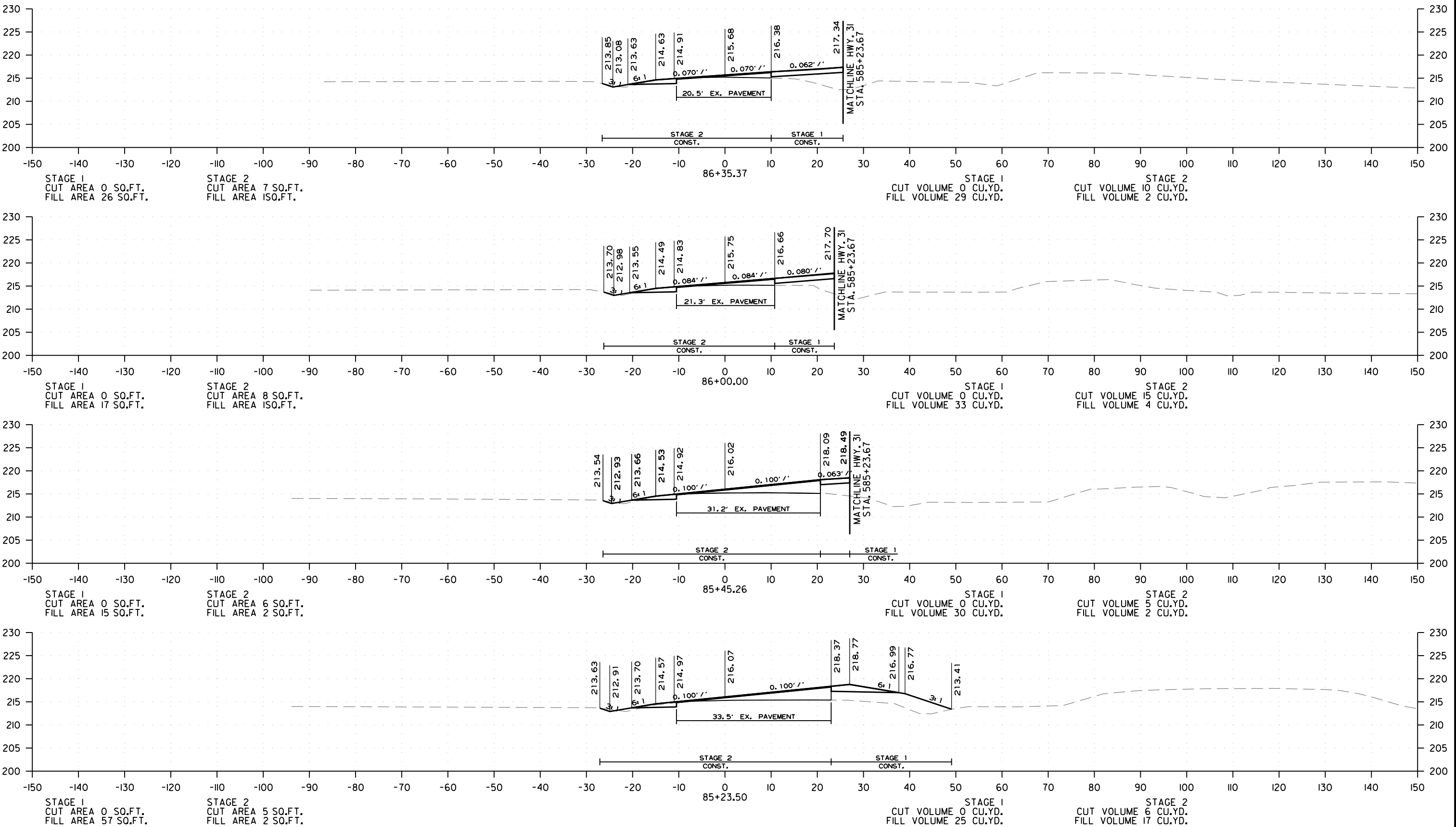
HWY. 15-31 CONNECTOR - CROSS SECTION FROM STA. 83+00.00 TO STA. 83+55.74

| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 33           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



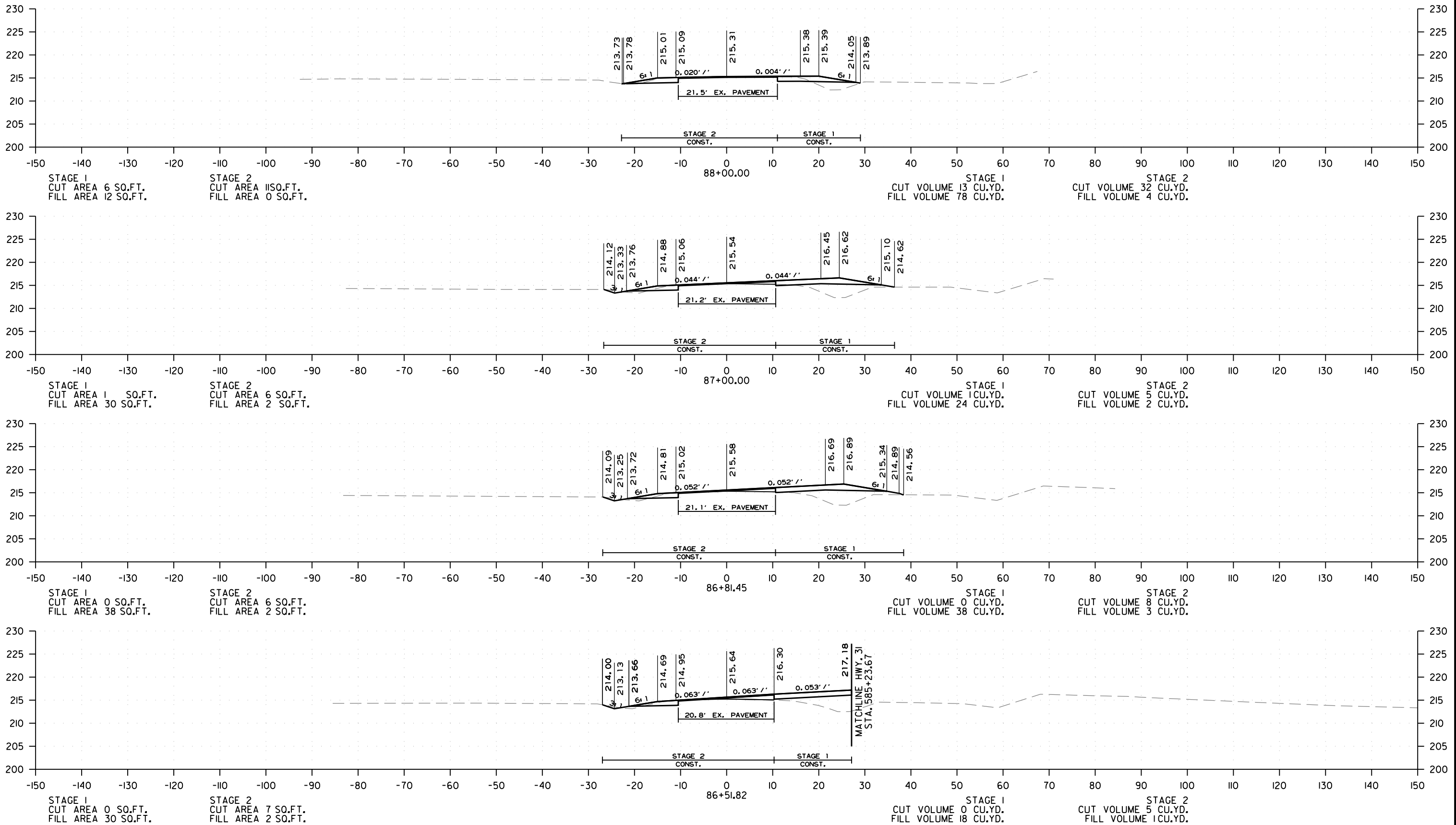
HWY. 15-3 CONNECTOR - CROSS SECTION FROM STA 83+74.71 TO STA. 85+00.00

| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 34           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



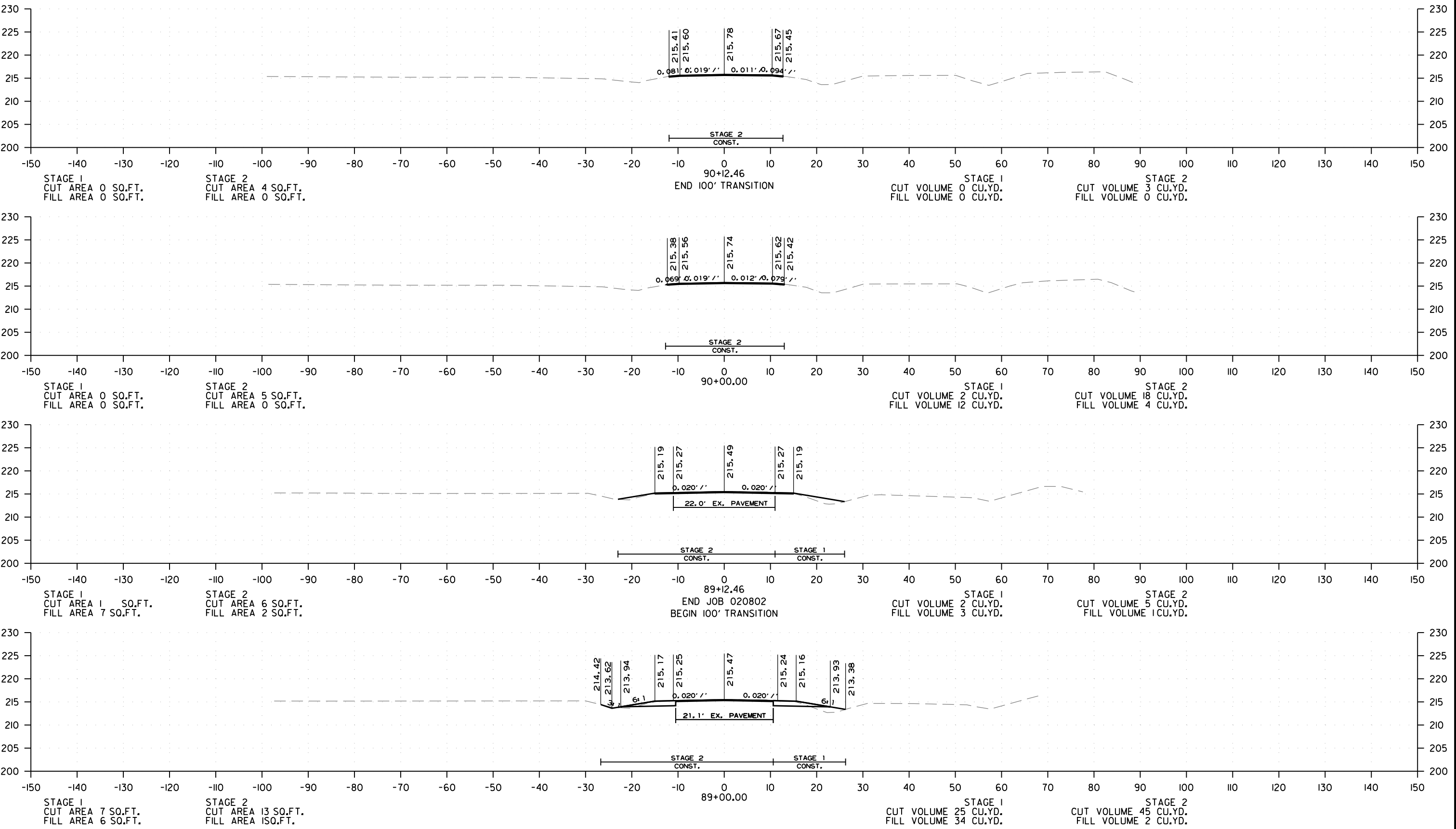
HWY. 15-31 CONNECTOR - CROSS SECTION FROM STA 85+23.50 TO STA. 86+35.37

| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 35           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



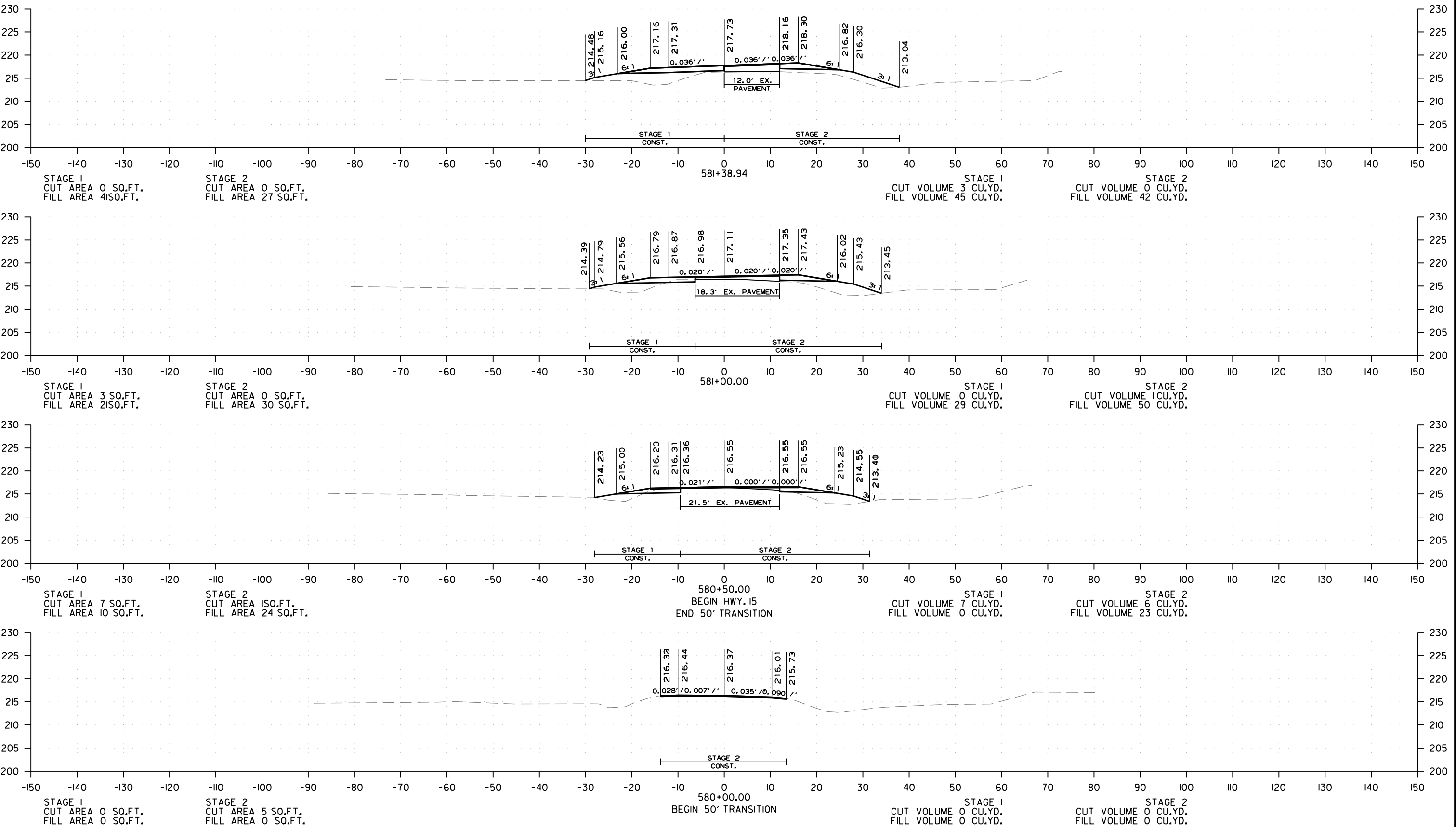
HWY. 15-31 CONNECTOR - CROSS SECTION FROM STA. 86+51.82 TO STA. 88+00.00

| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 36           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



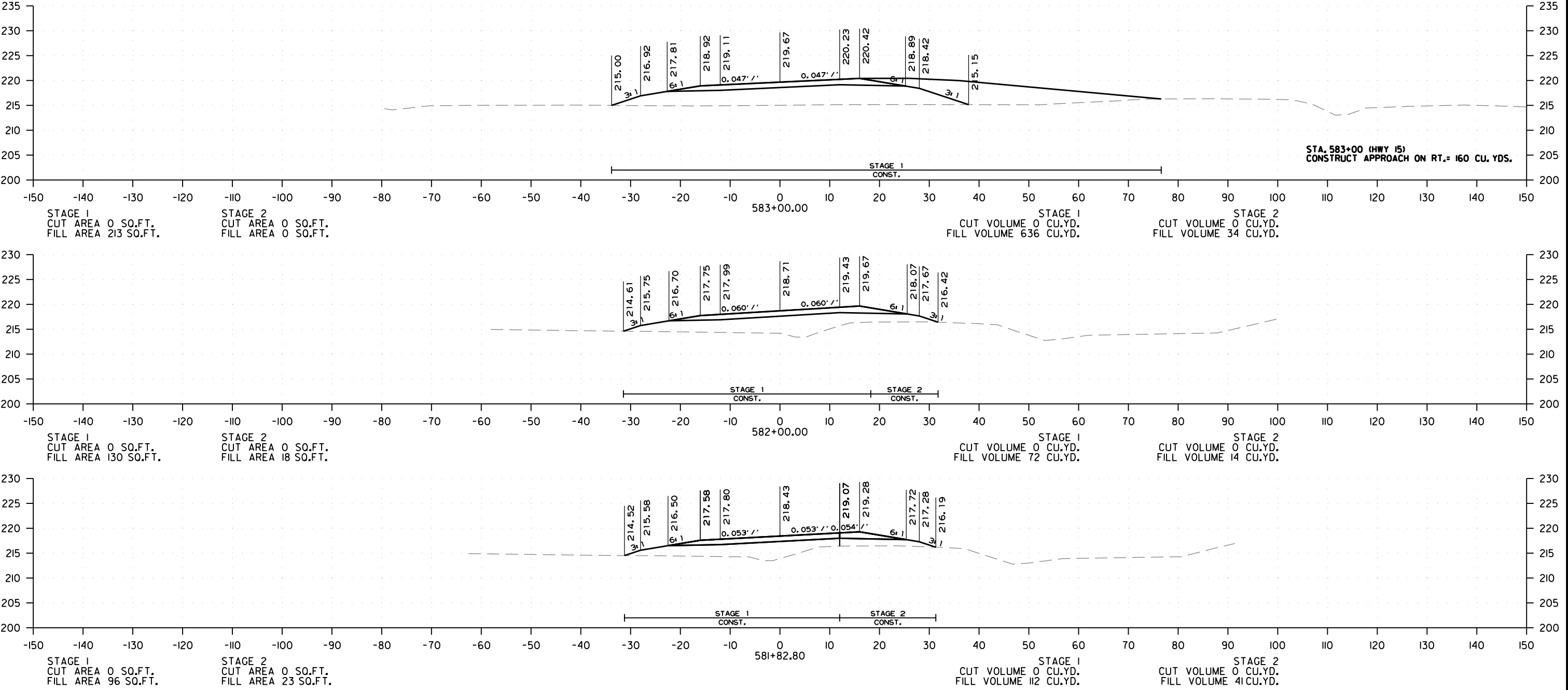
HWY. I5-31 CONNECTOR - CROSS SECTION FROM STA 89+00.00 TO STA. 90+12.46

| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 37           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



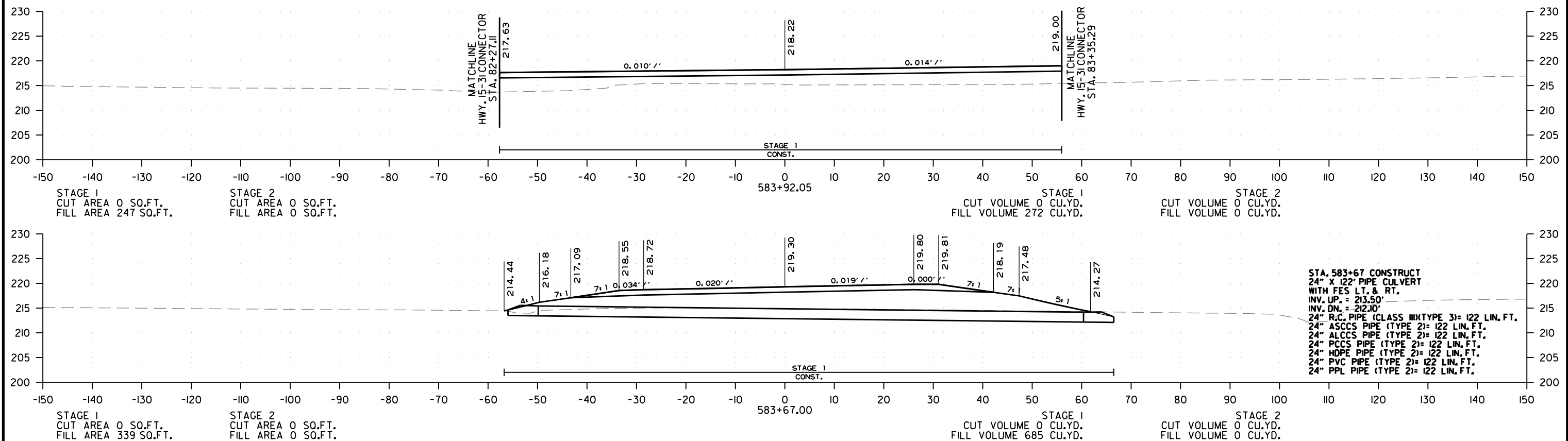
HWY. 15 - CROSS SECTION FROM STA 580+00.00 TO STA. 581+38.94

| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 38           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



HWY. 15 - CROSS SECTION FROM STA 581+82.80 TO STA. 583+00.00

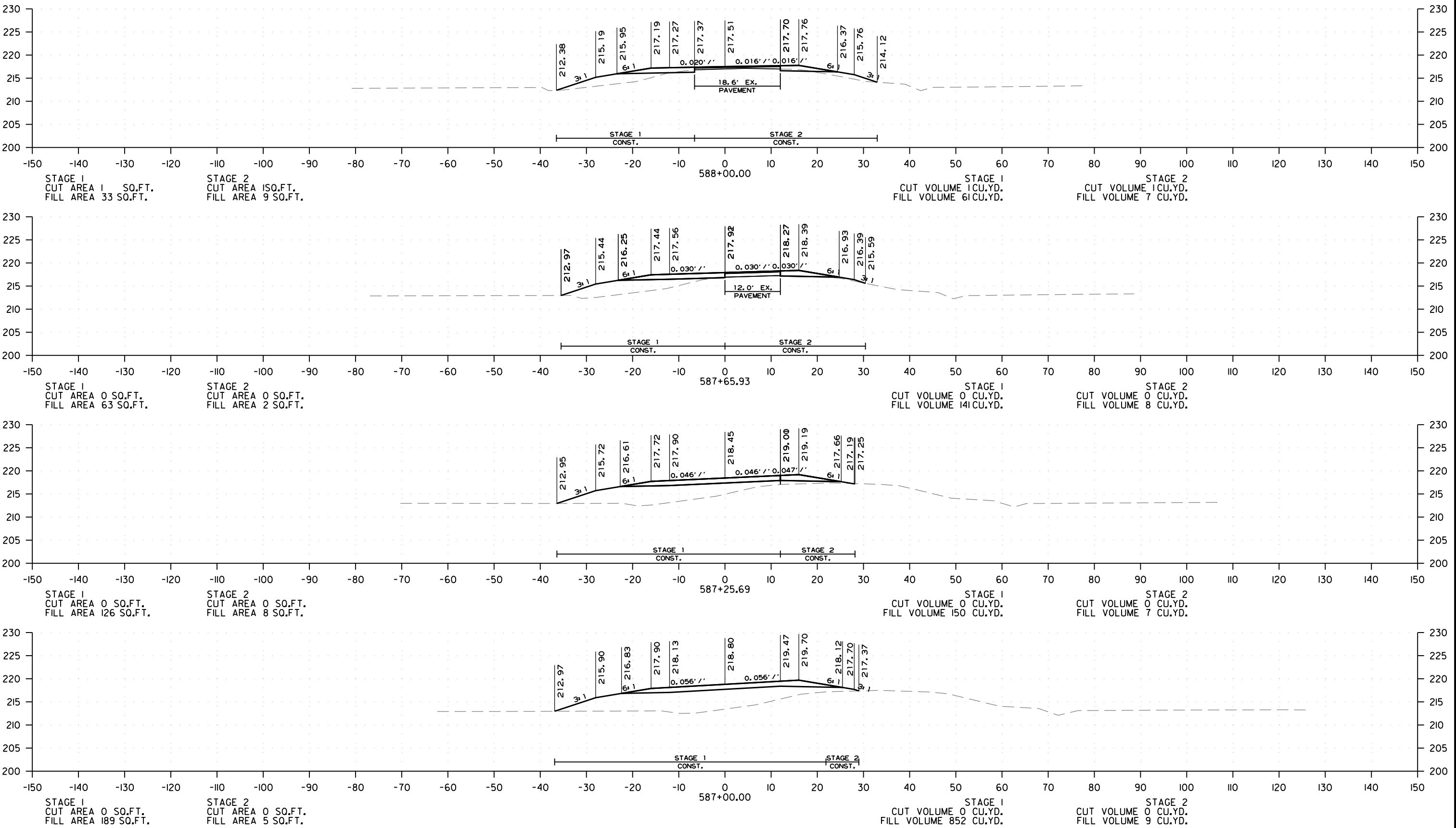
| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 39           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



HWY. 15 - CROSS SECTION FROM STA 583+67.00 TO STA. 583+92.05

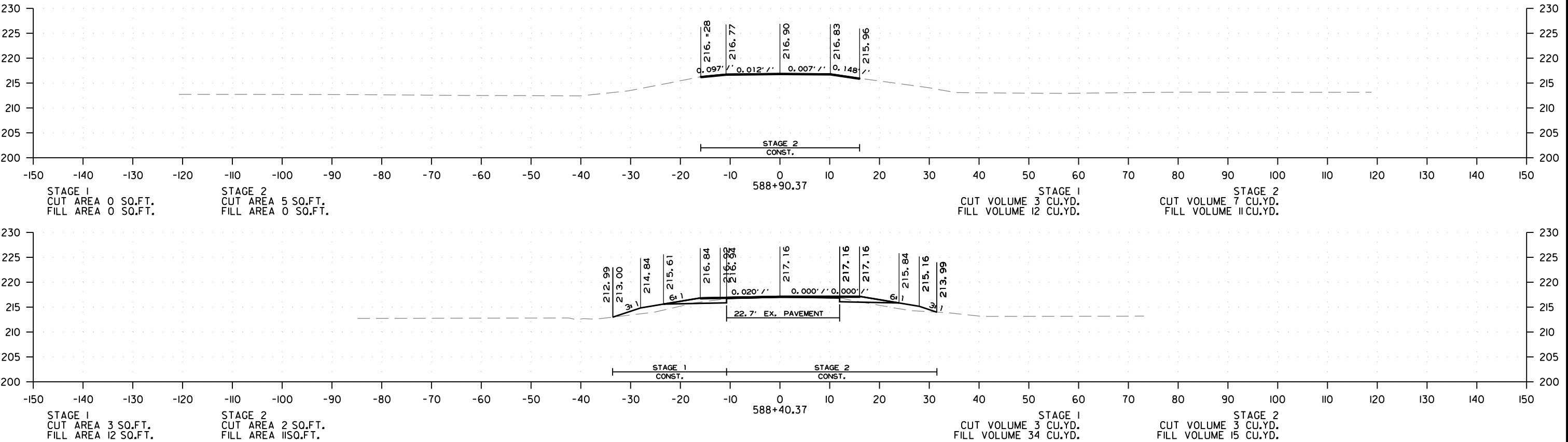


| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 41           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |

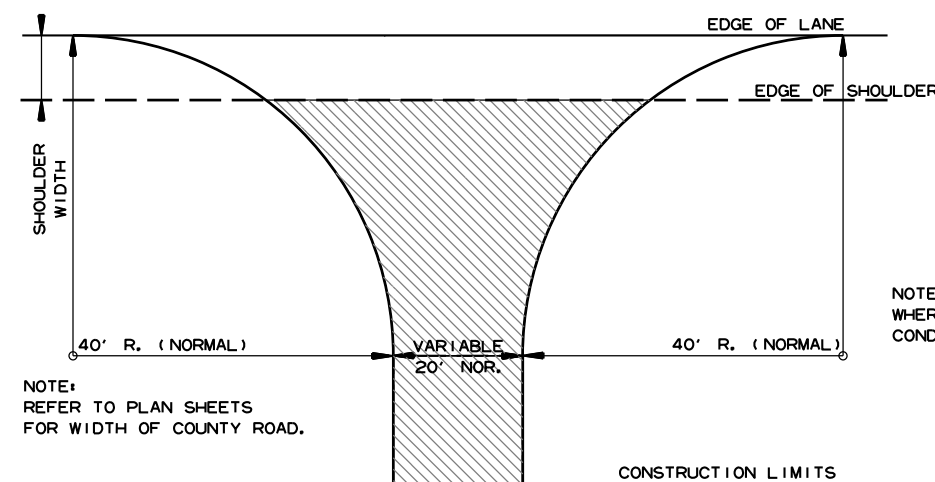


HWY. 31 - CROSS SECTION FROM STA 587+00.00 TO STA. 588+00.00

| DATE<br>REVISED | DATE<br>REVISED | FED. RD.<br>DIST. NO. | STATE | JOB NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------|-----------------|-----------------------|-------|---------|--------------|-----------------|
|                 |                 | 6                     | ARK.  | 020802  | 42           | 42              |
| CROSS SECTIONS  |                 |                       |       |         |              |                 |



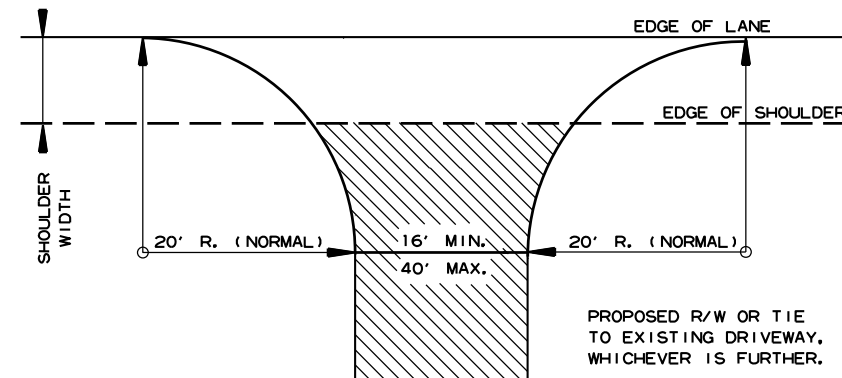
HWY. 31- CROSS SECTION FROM STA 588+40.37 TO STA. 588+90.37



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, UNLESS OTHERWISE SPECIFIED IN PLANS.

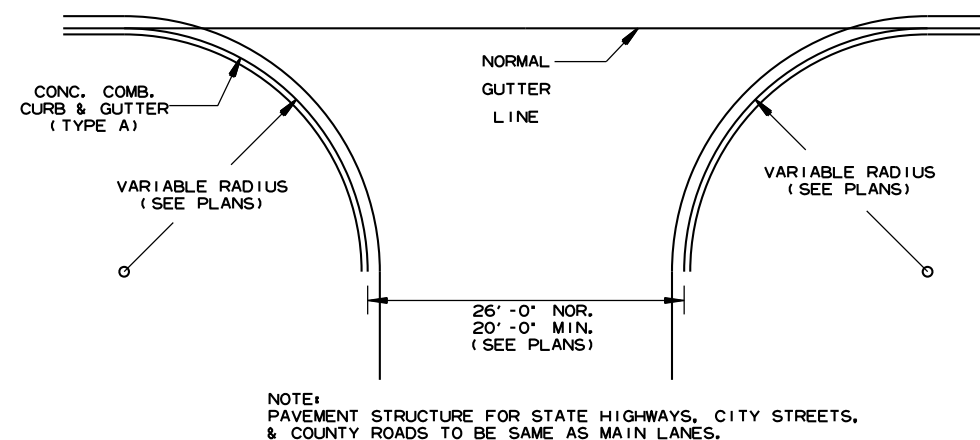
DETAIL FOR COUNTY ROAD TURNOUTS  
OPEN SHOULDER SECTION



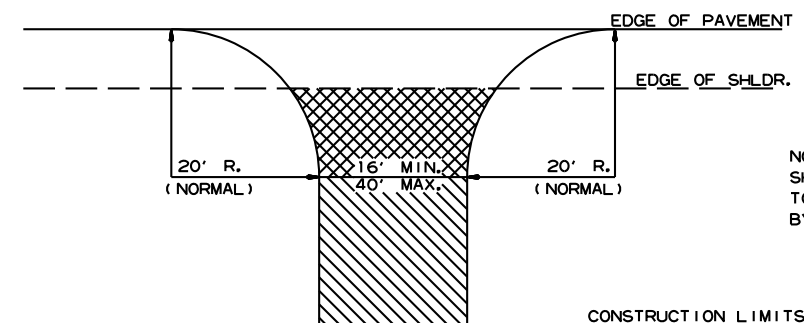
NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

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)



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.

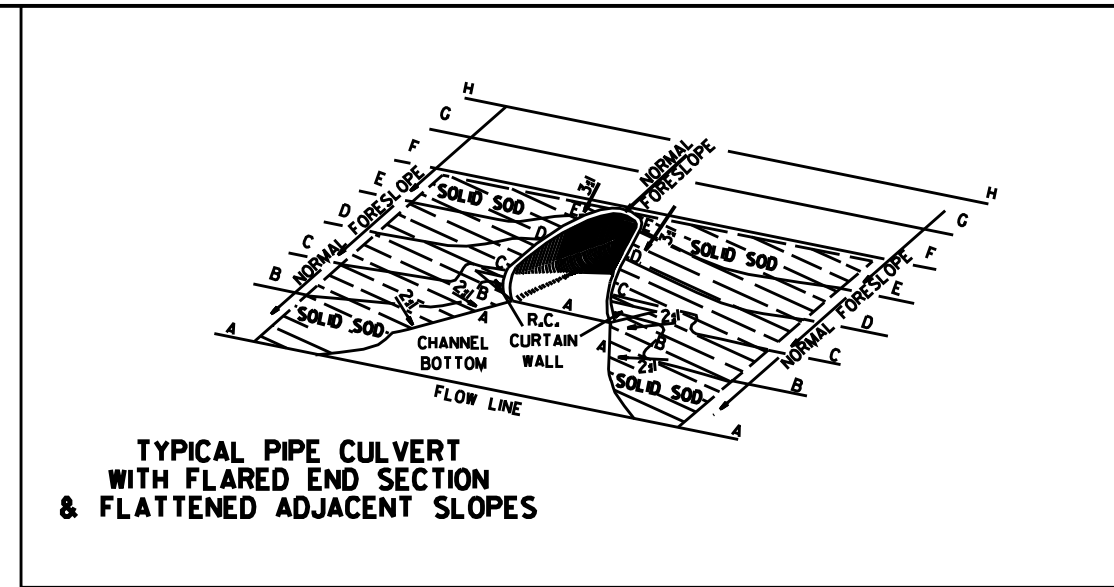
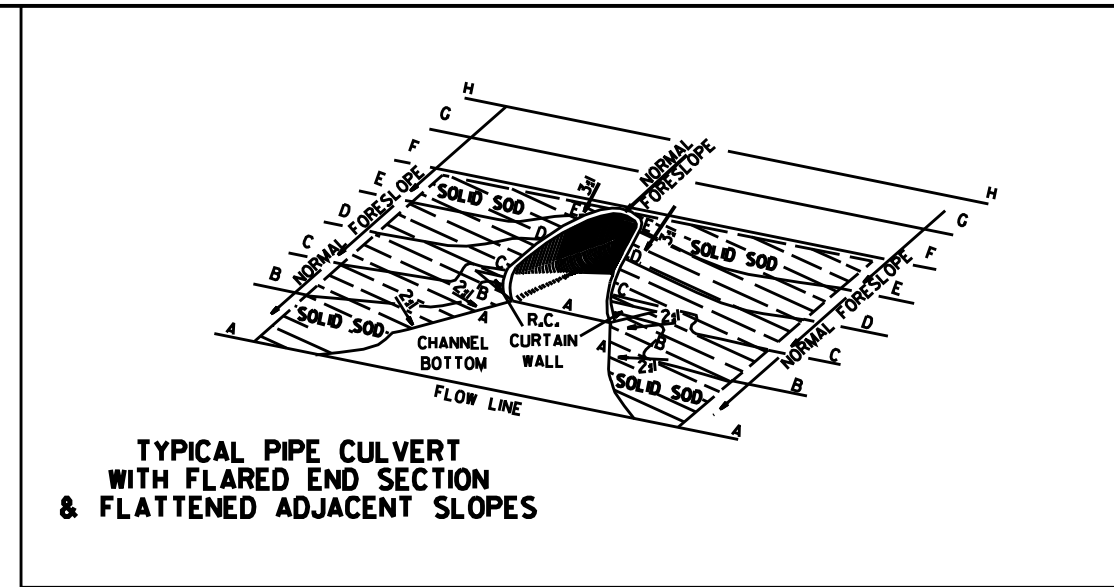
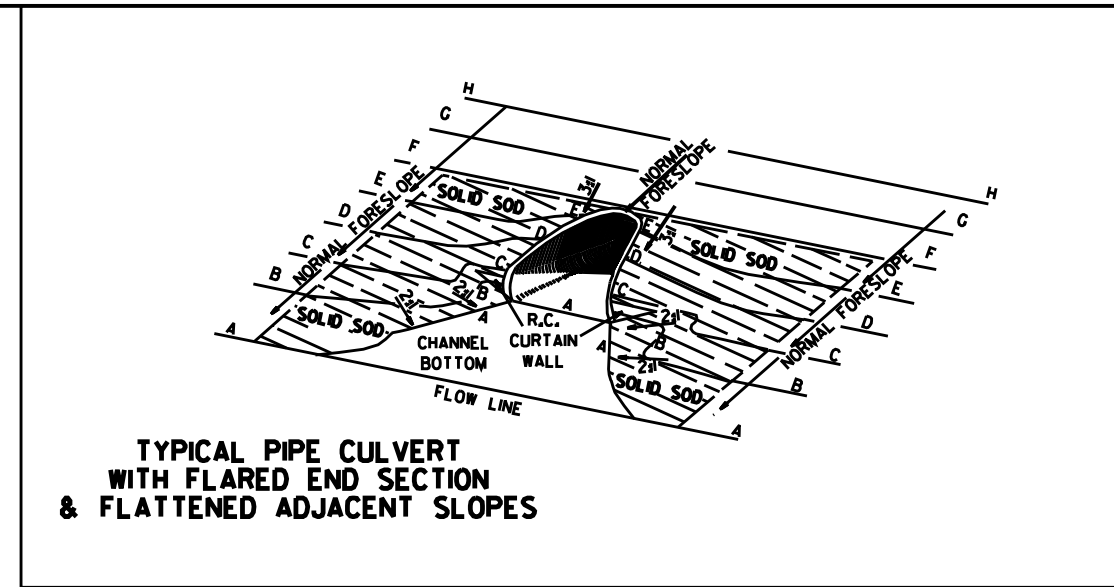
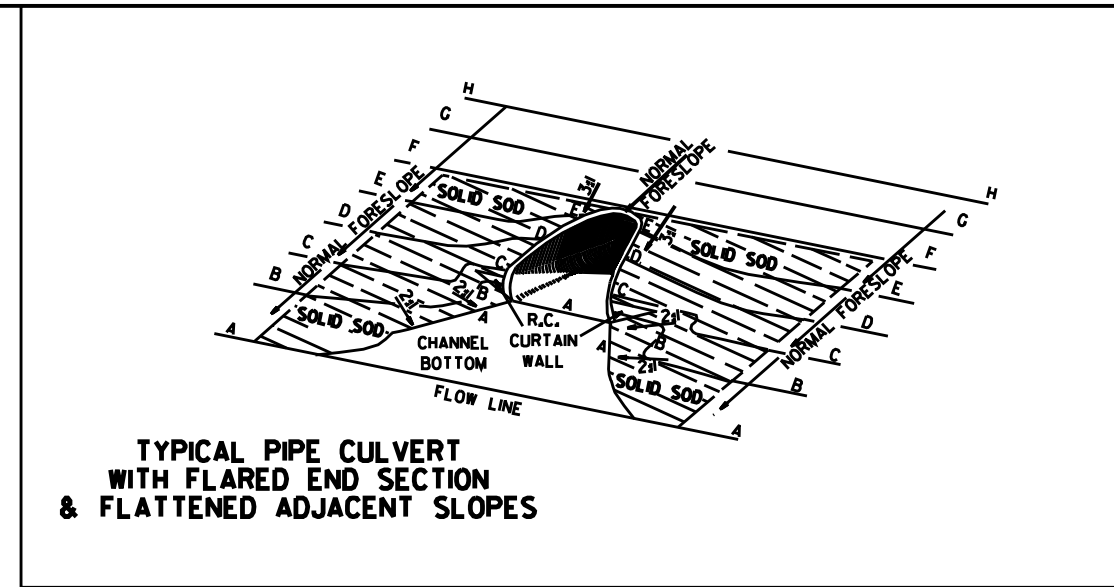
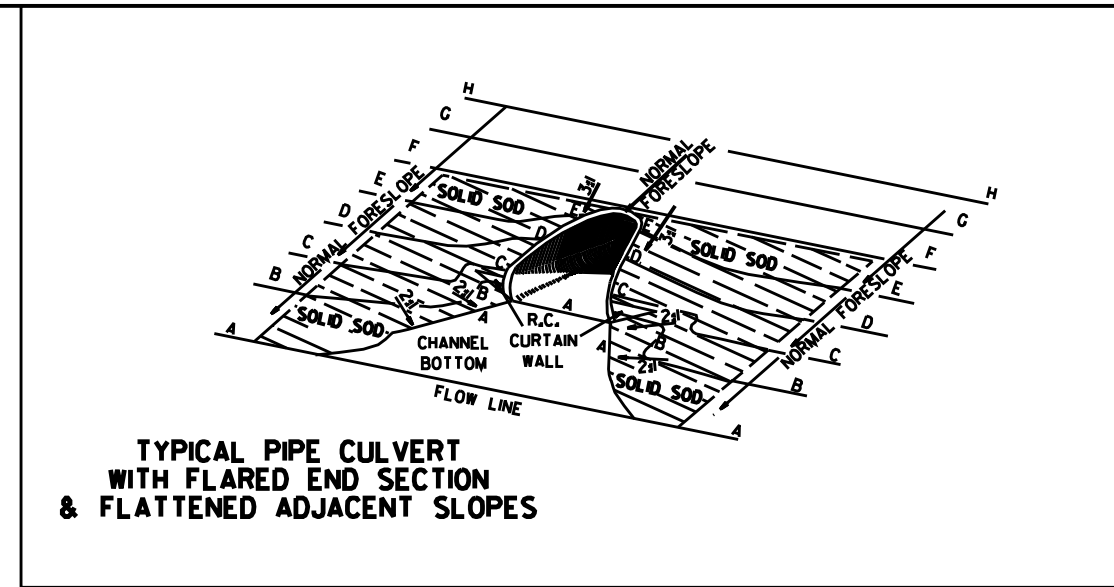
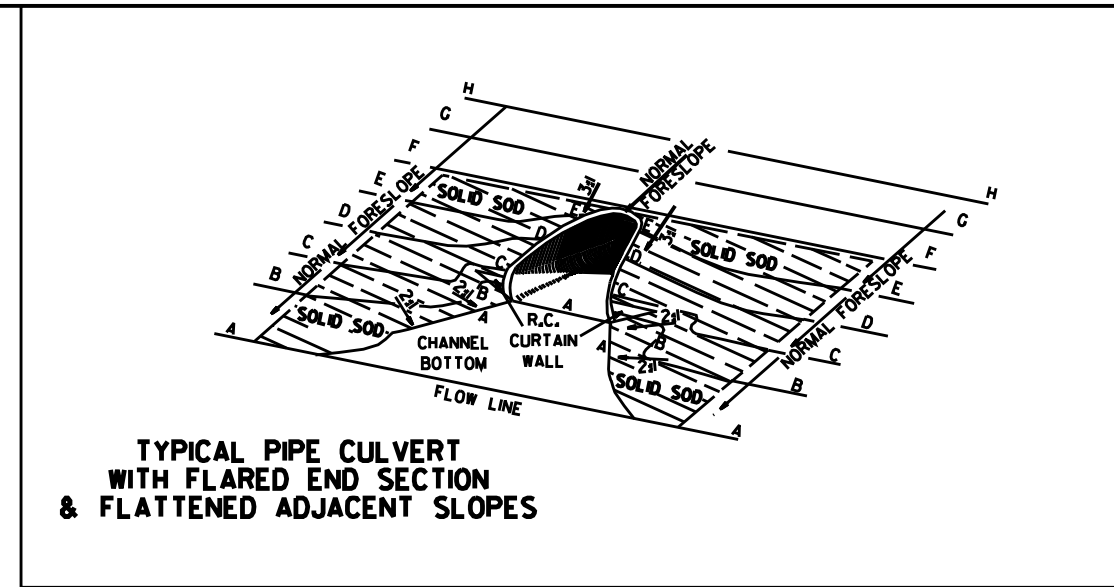
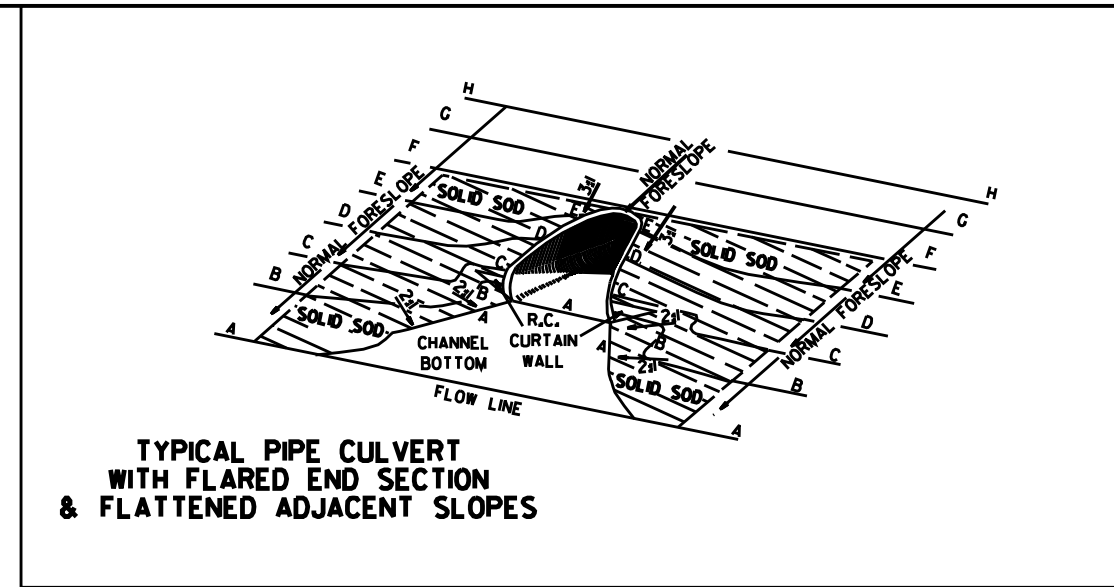
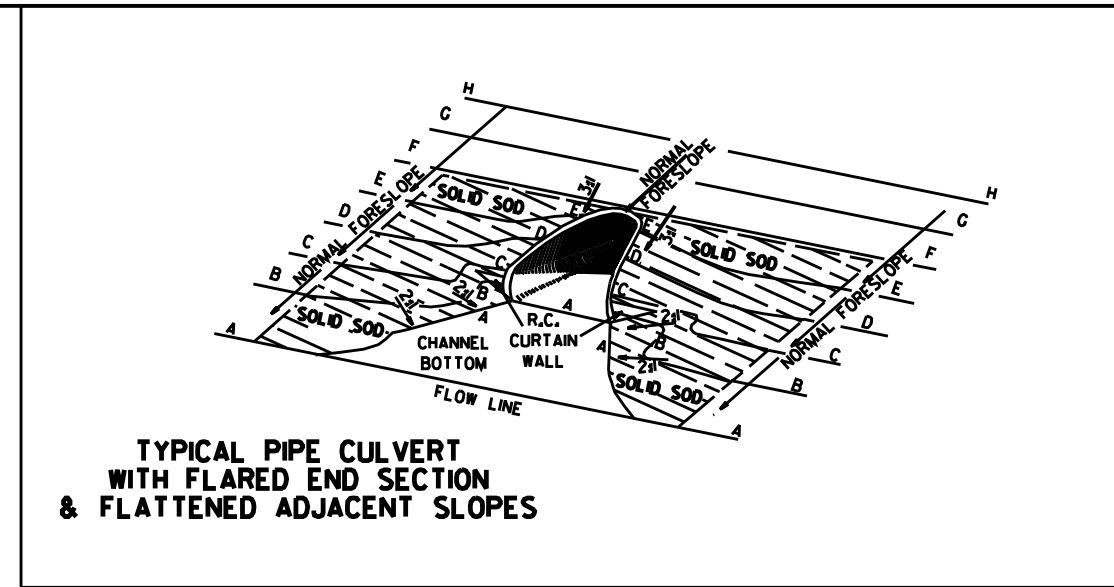
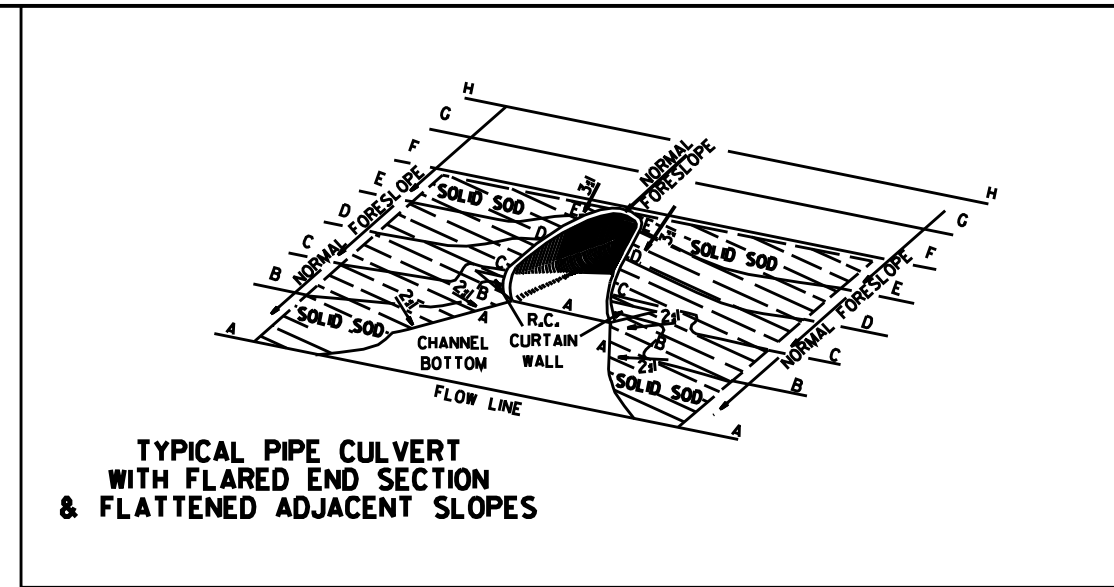
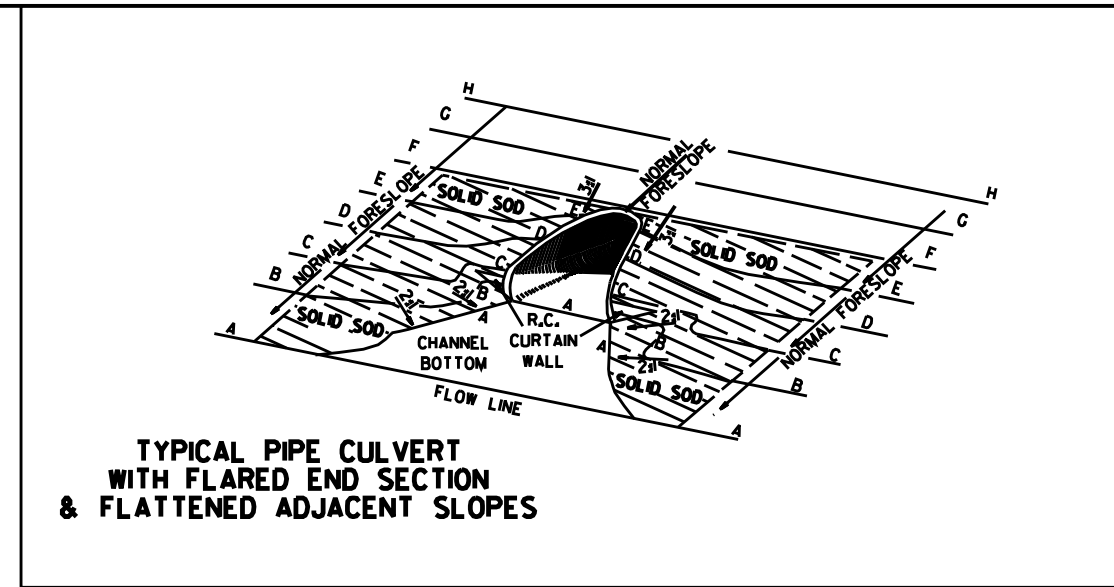
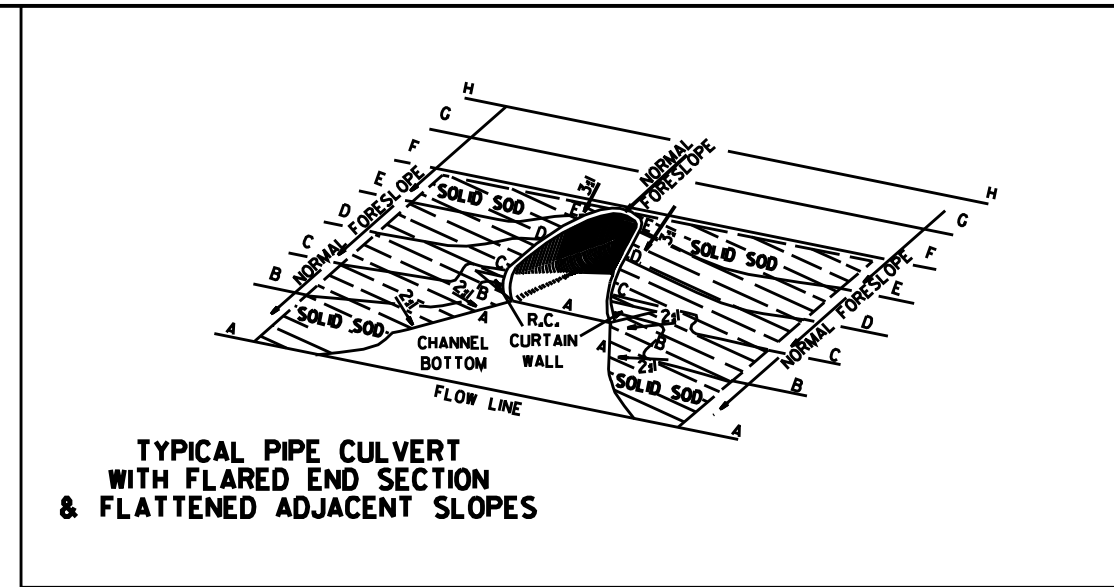
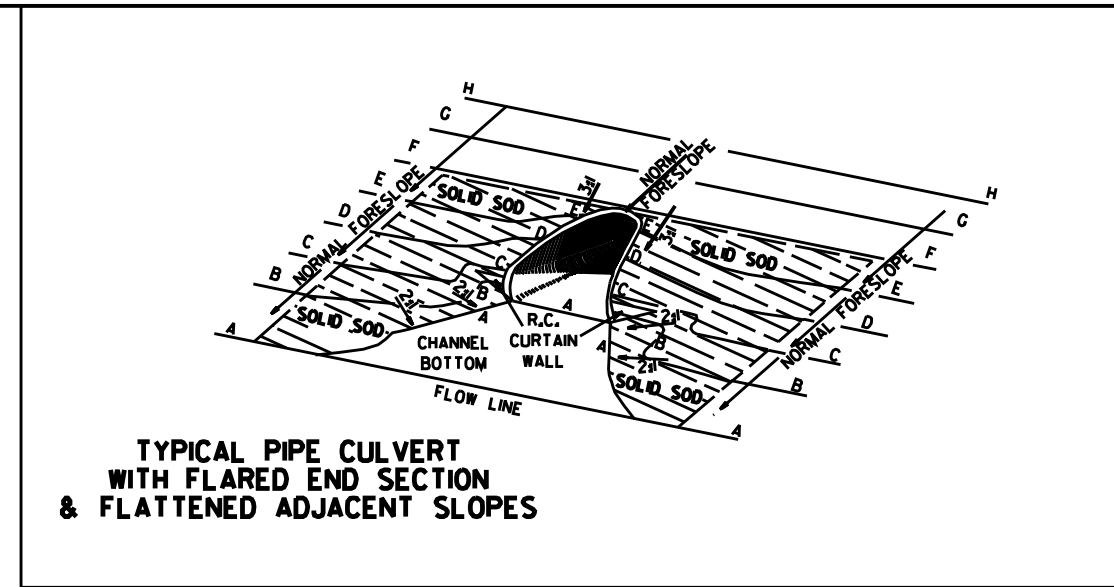
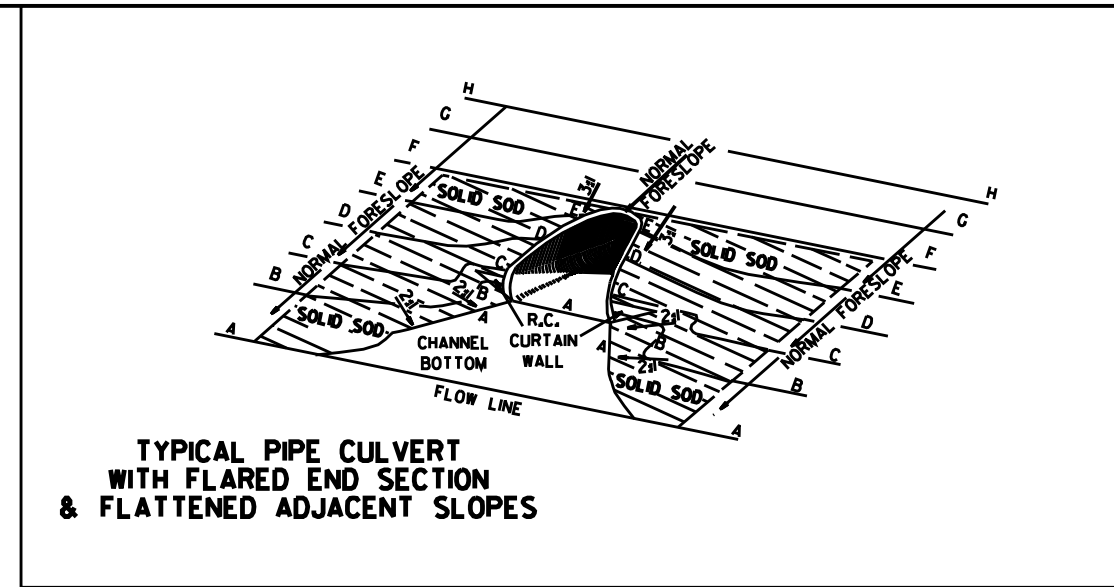
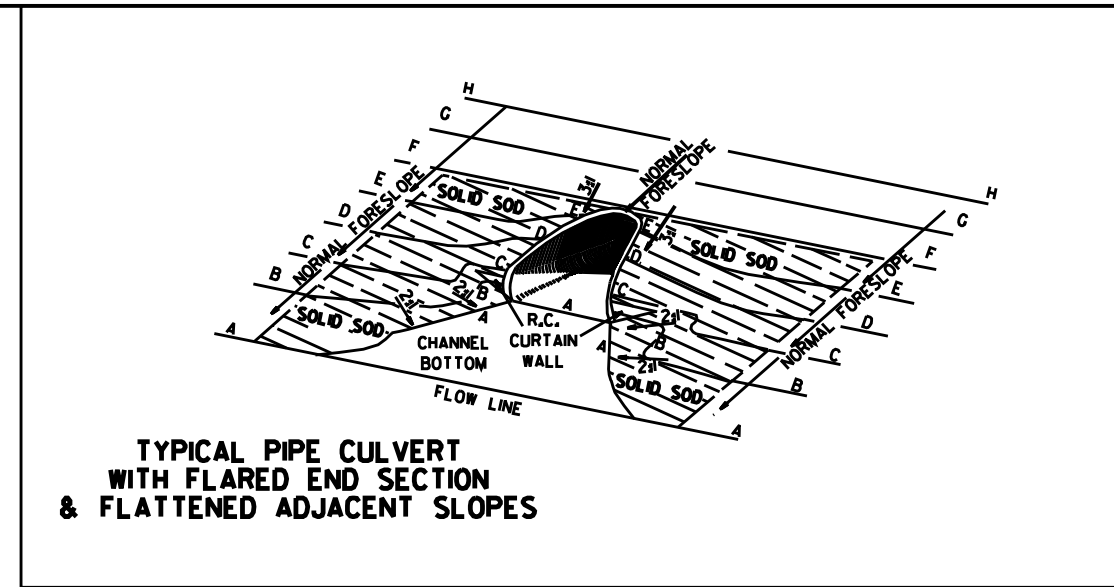
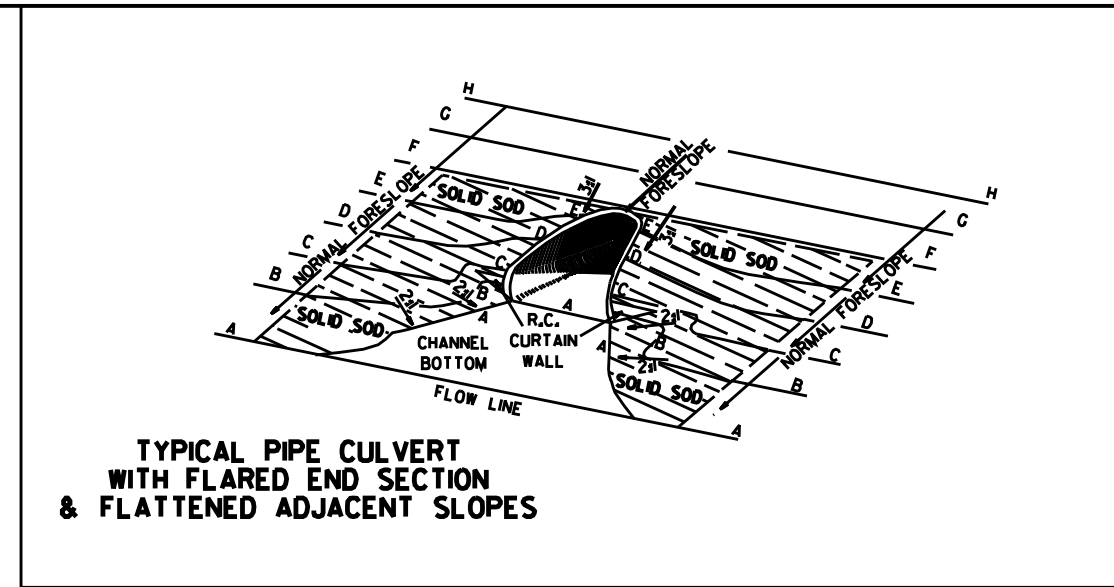
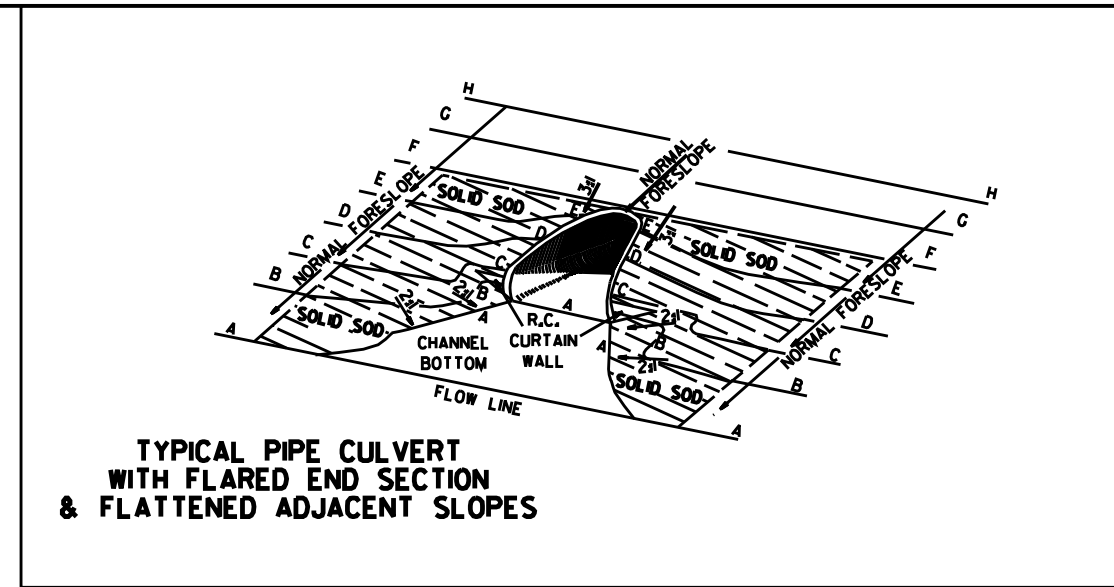
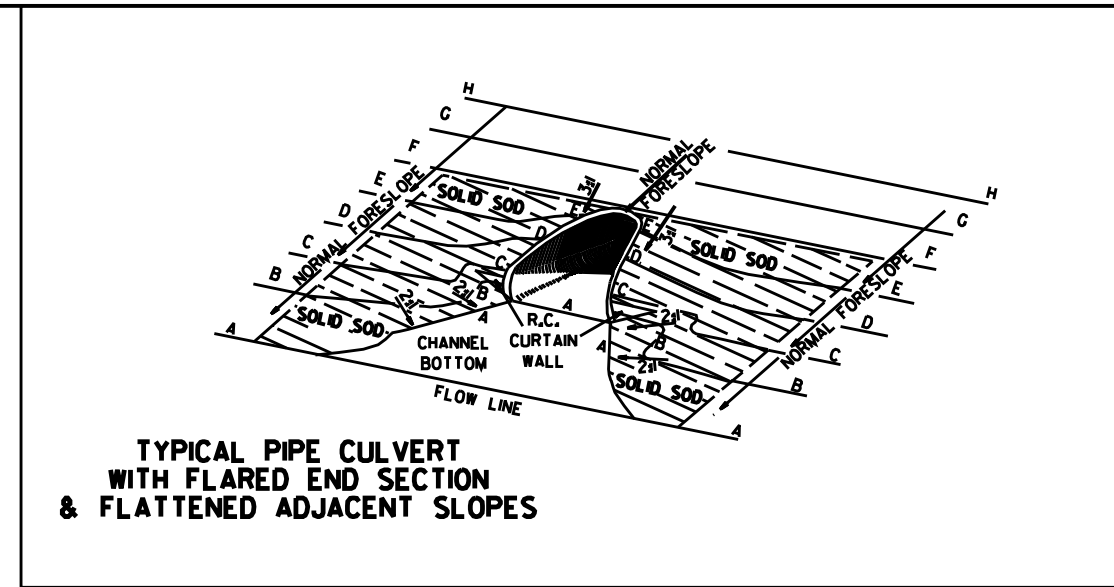
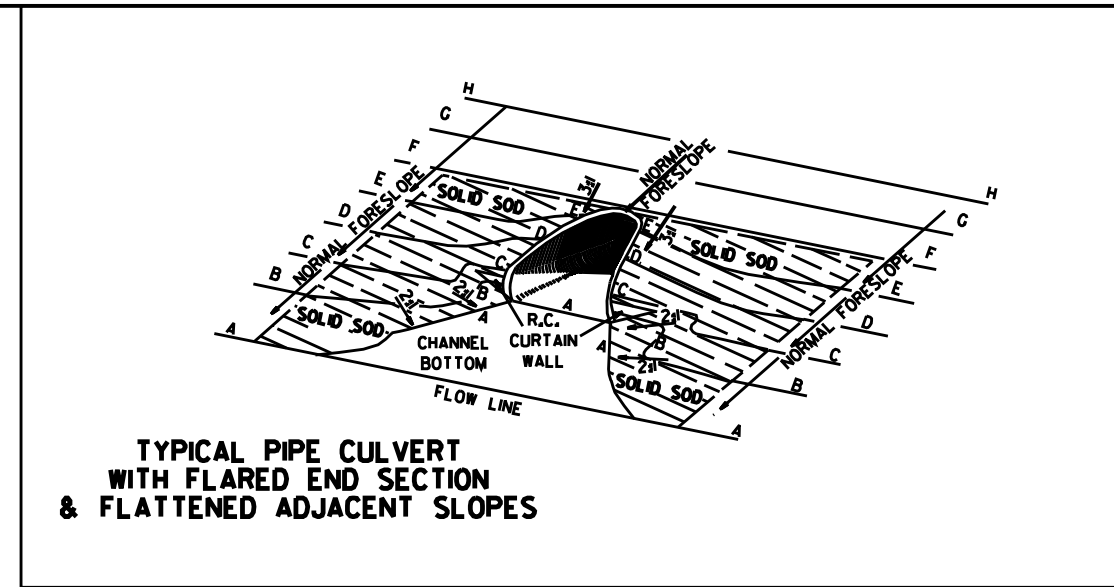
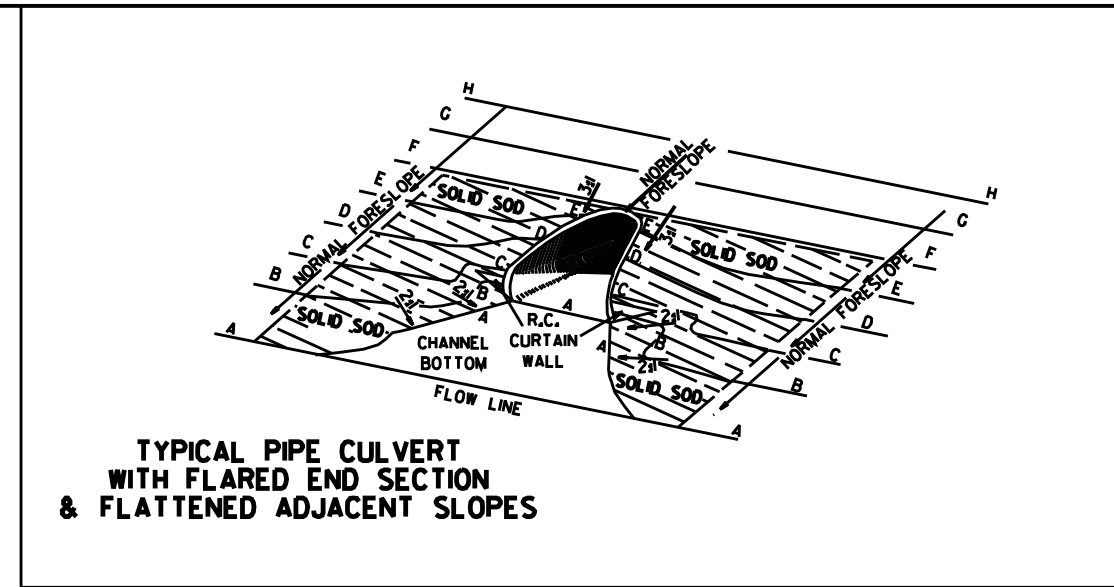
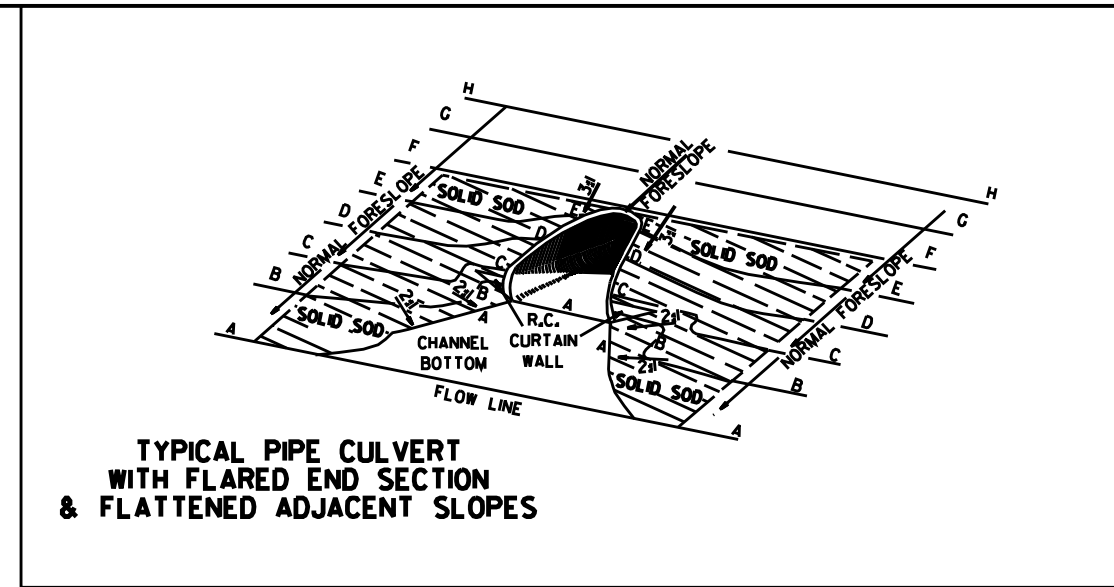
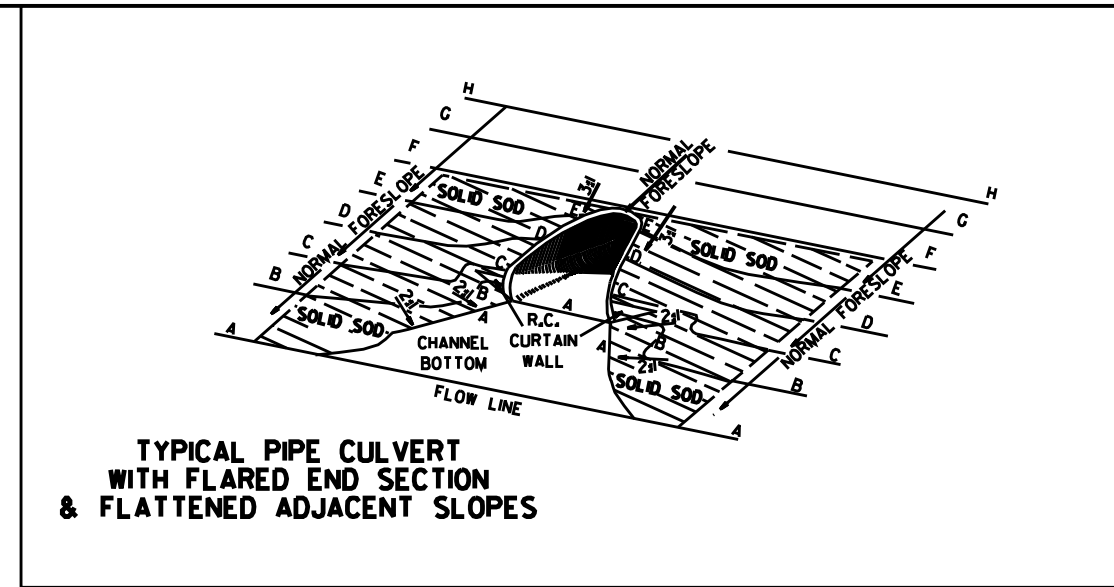
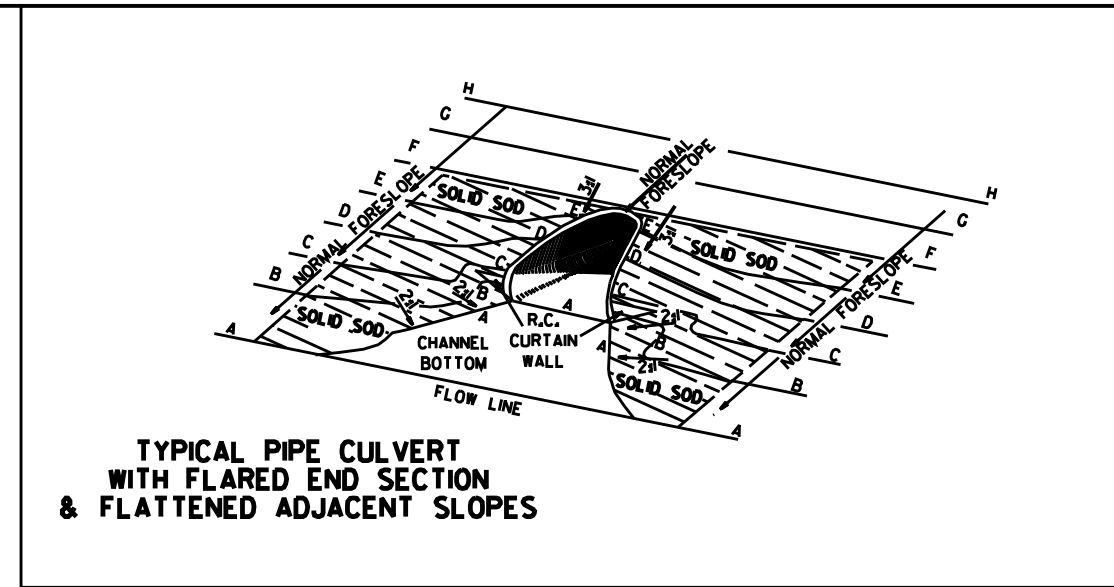
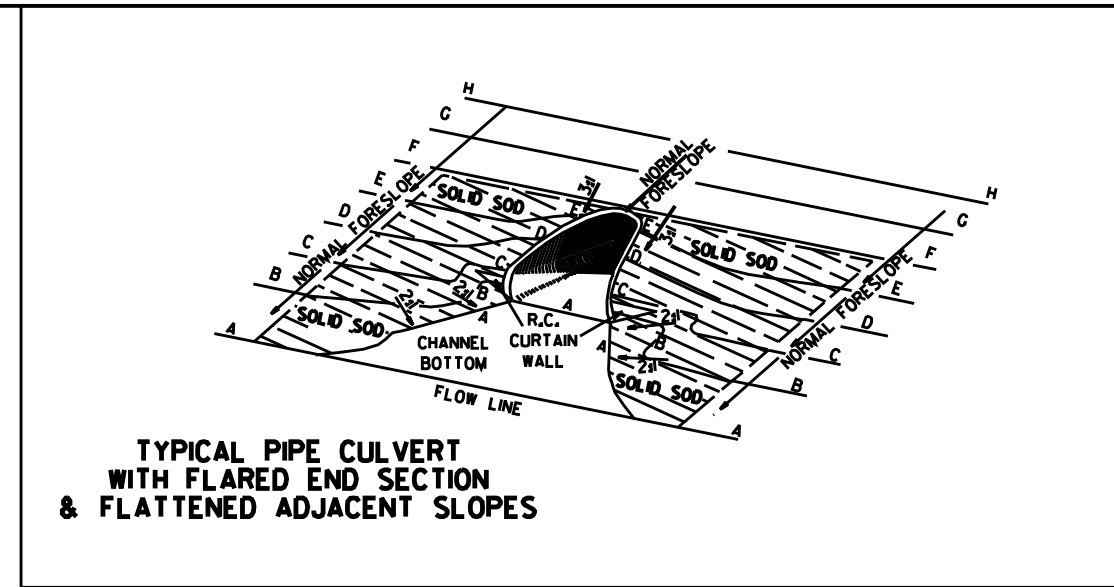
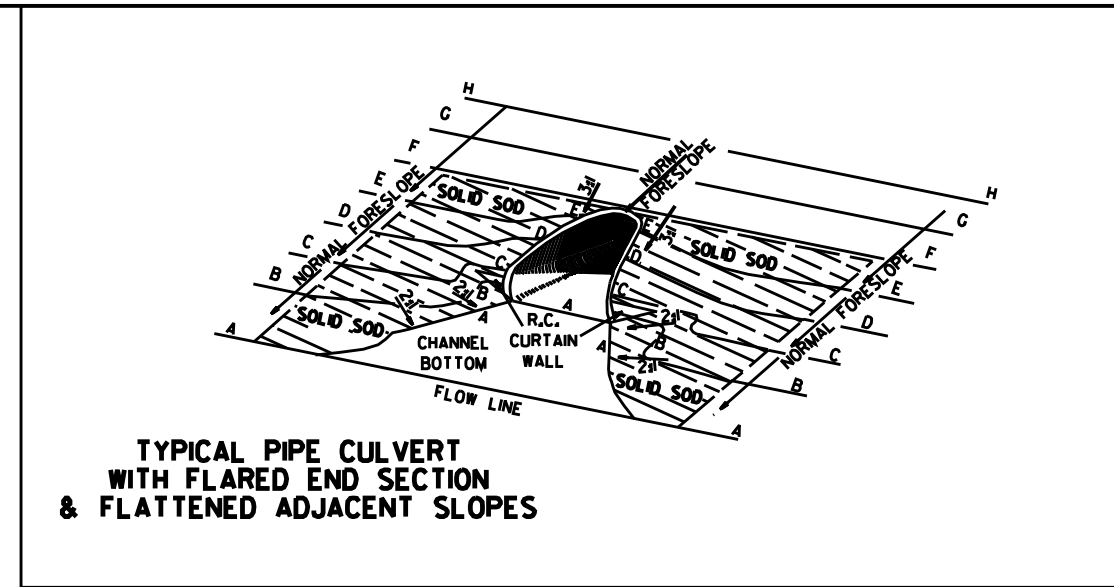
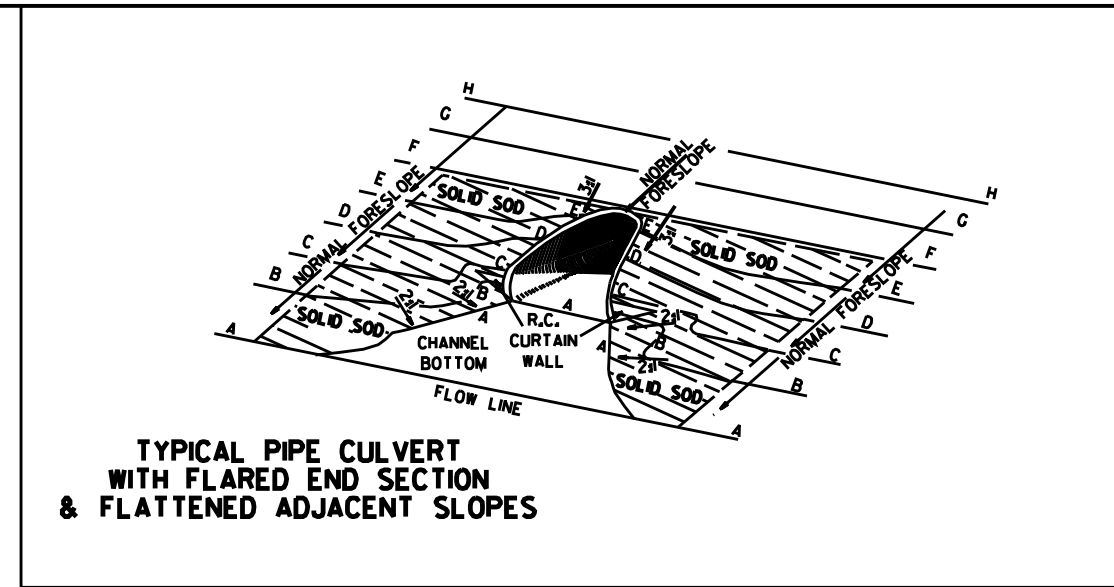
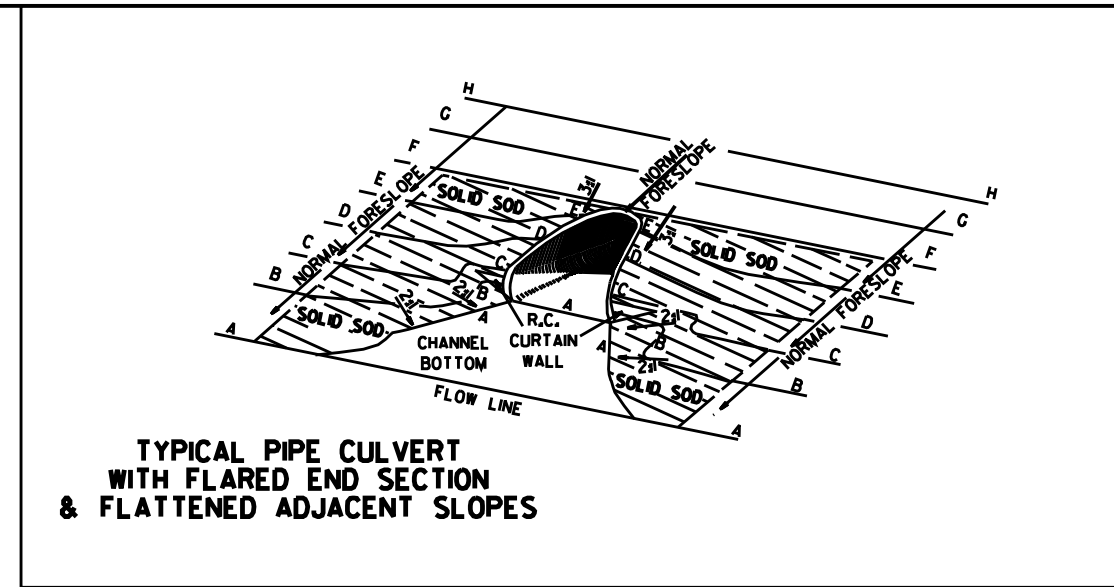
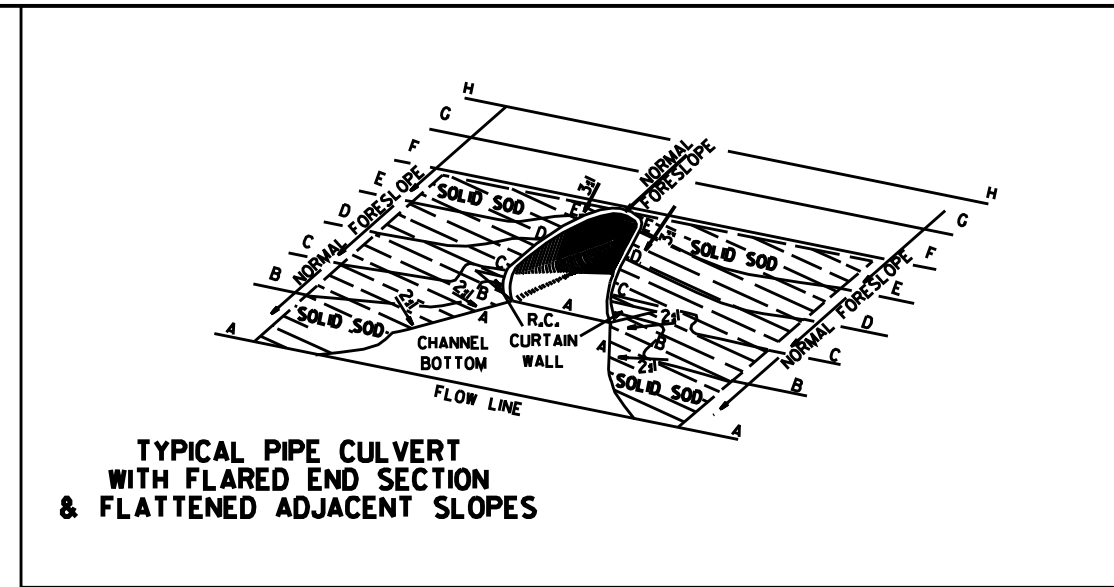
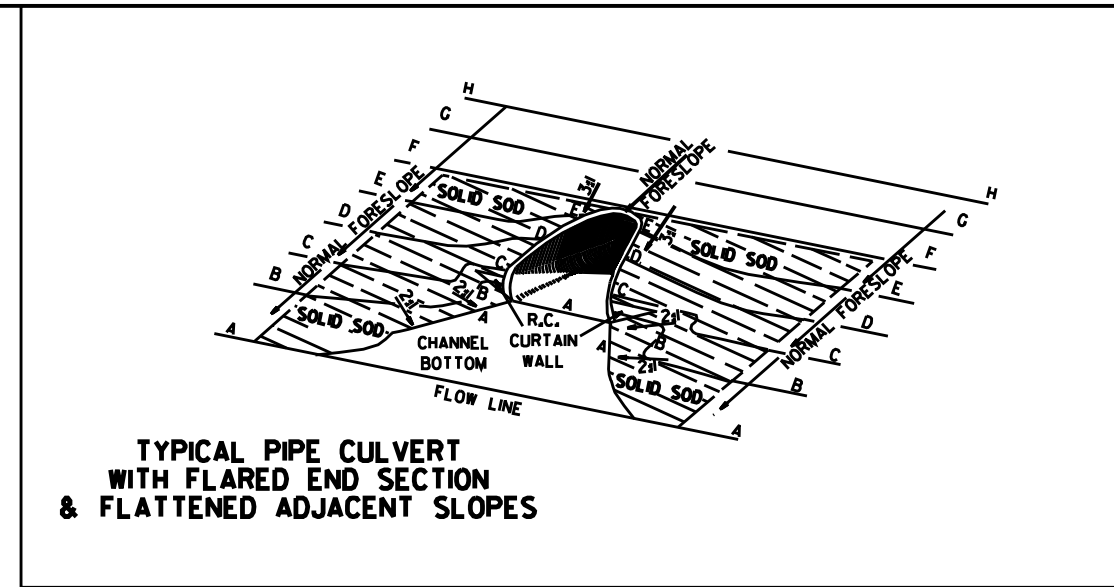
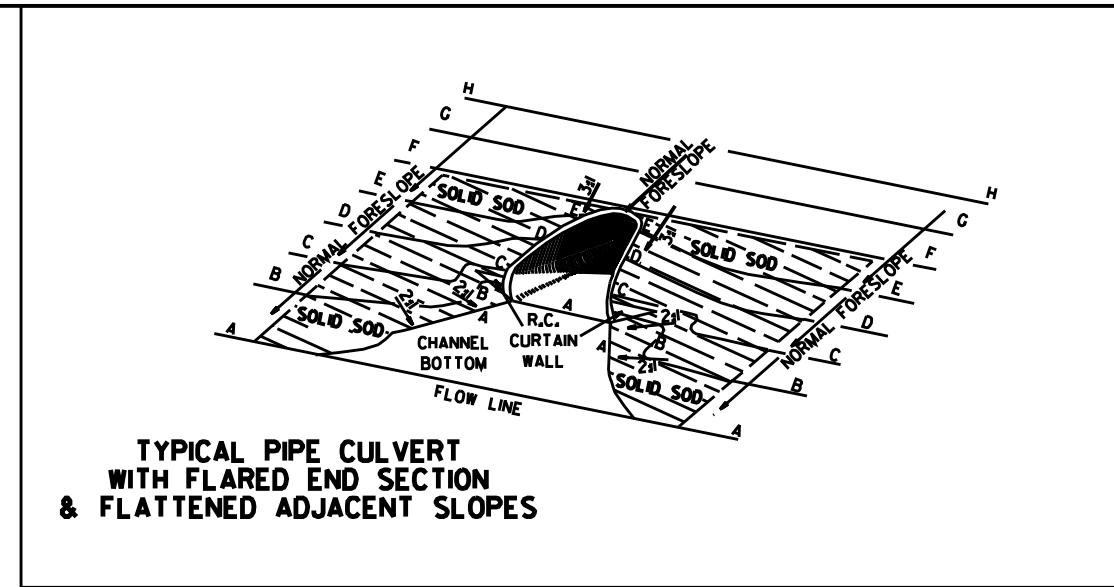
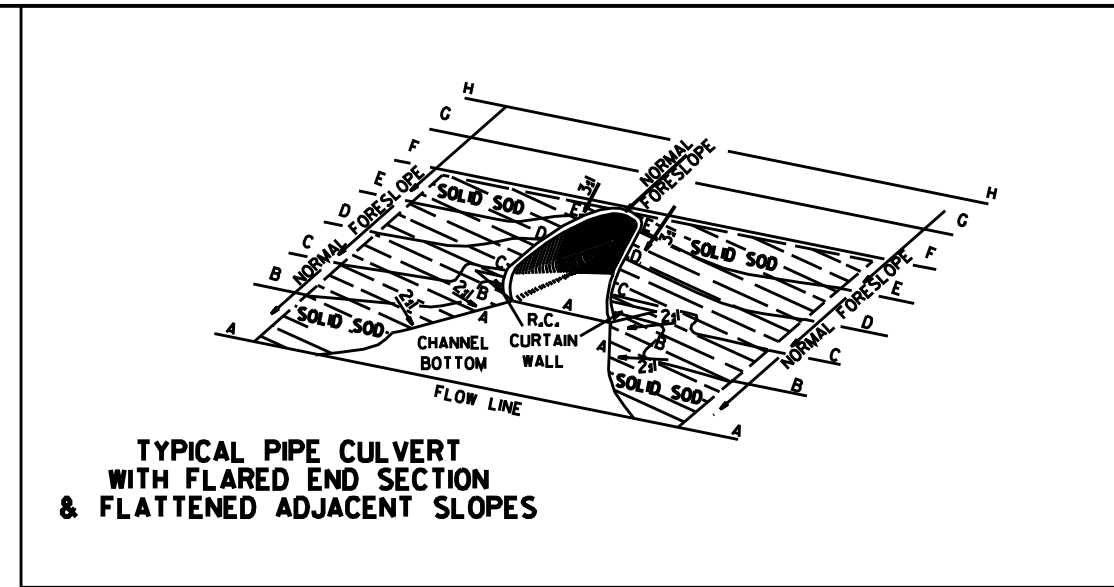
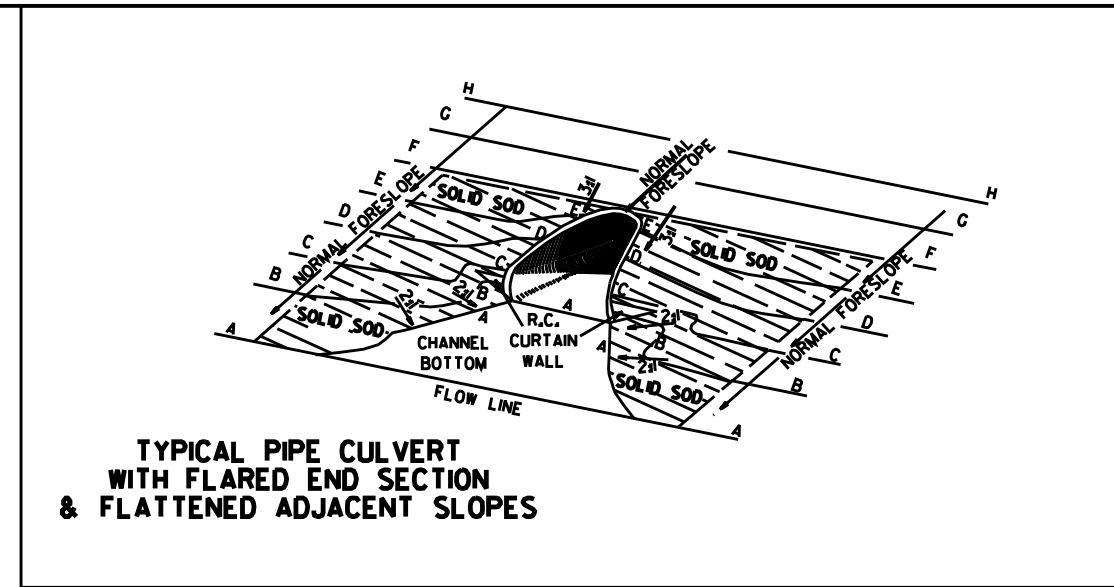
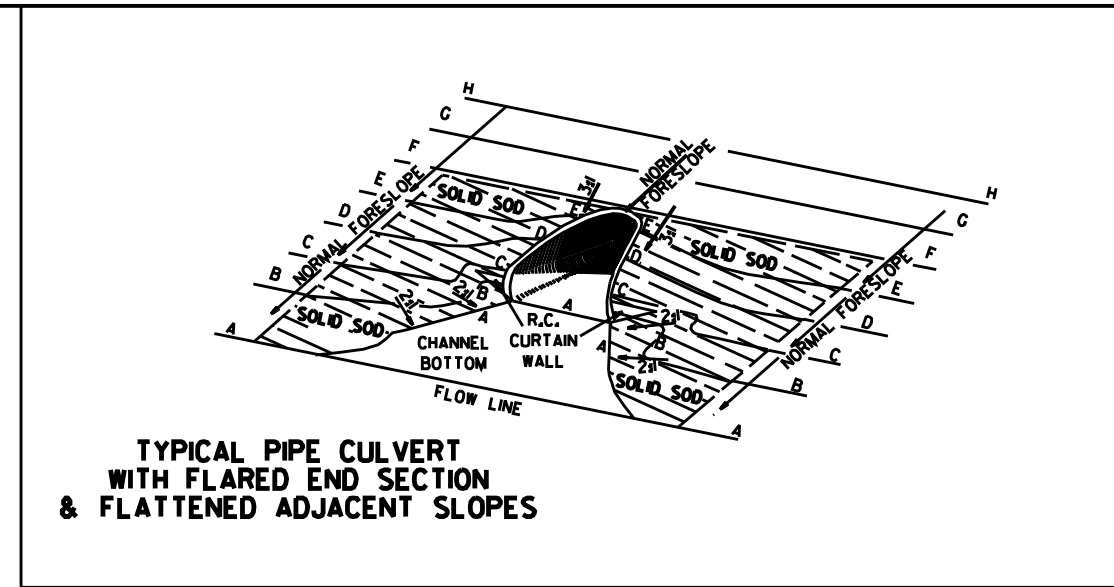
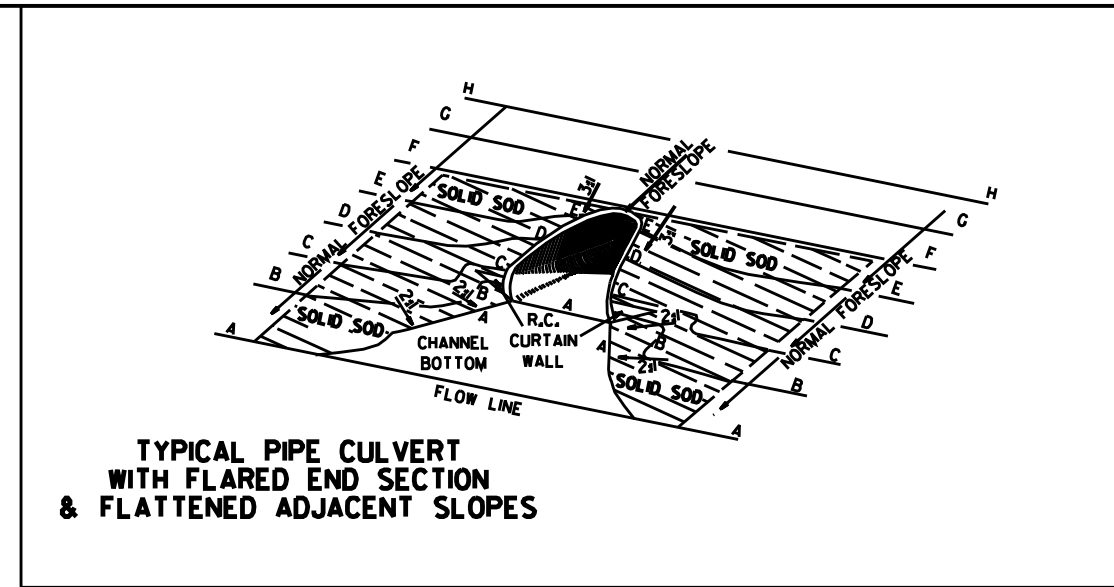
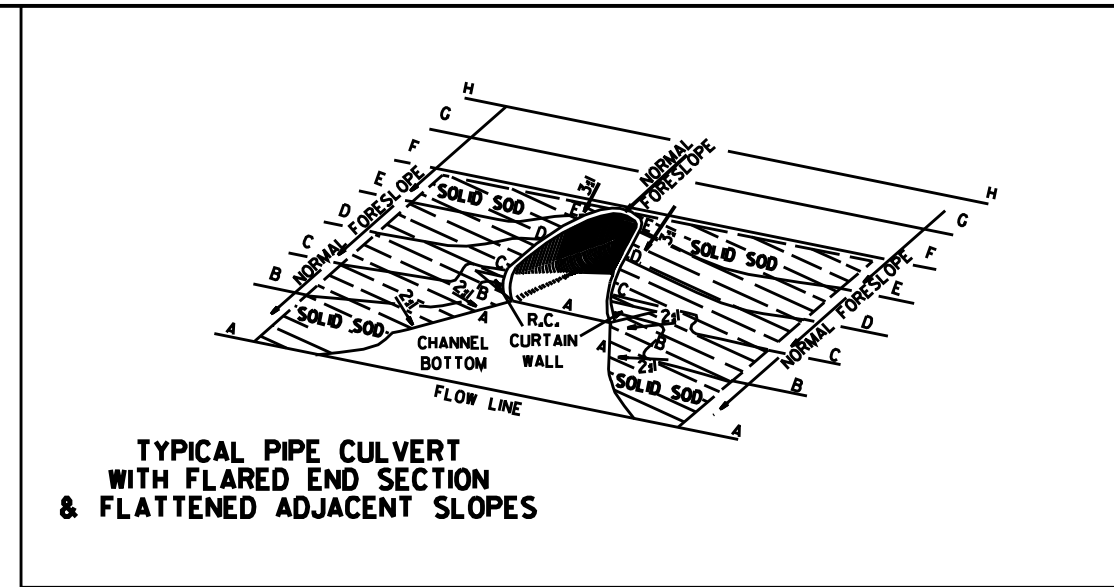
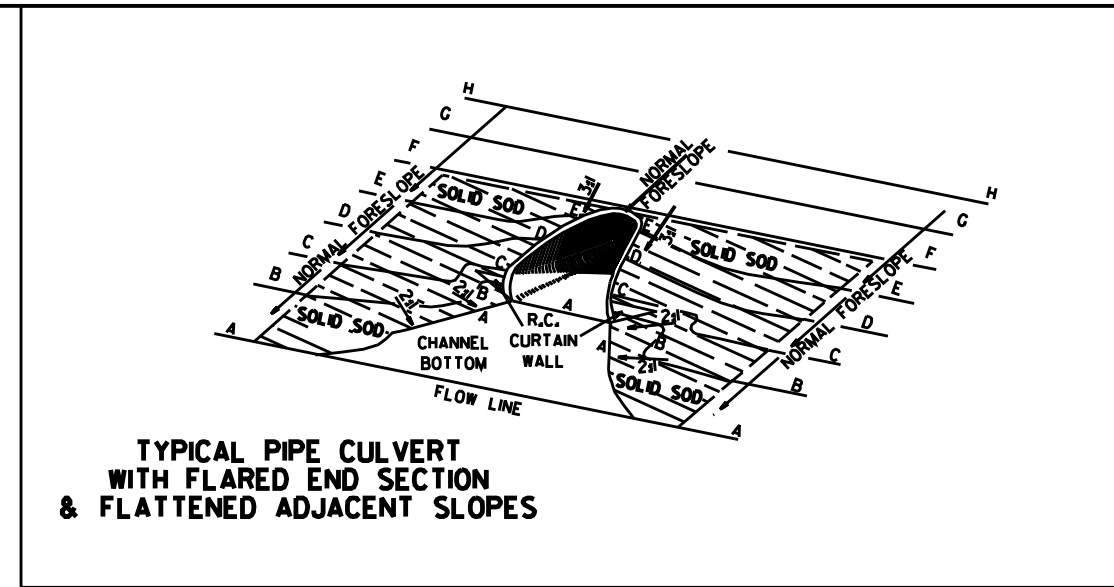
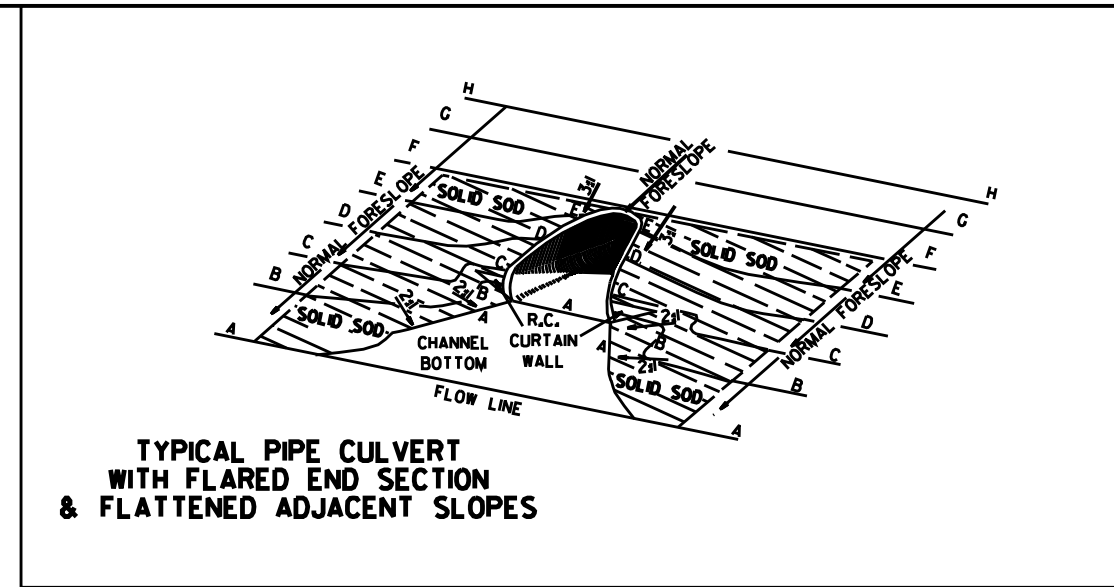
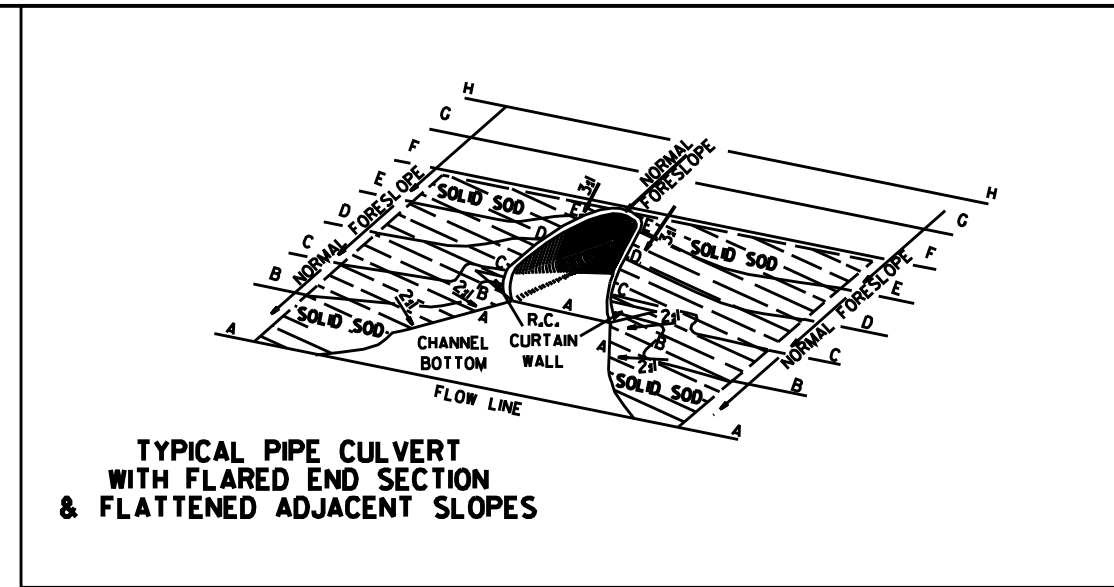
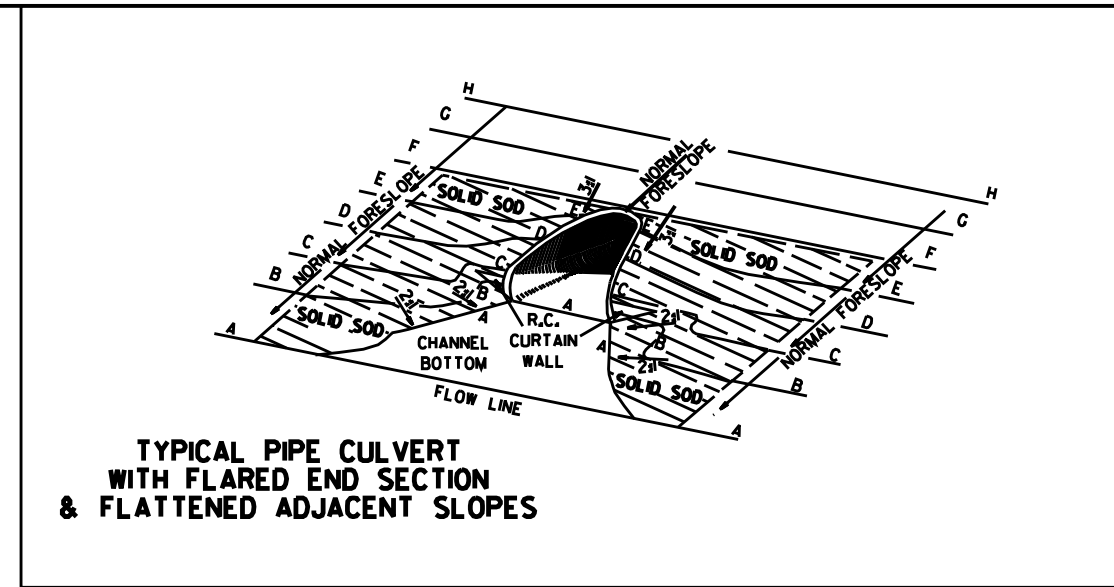
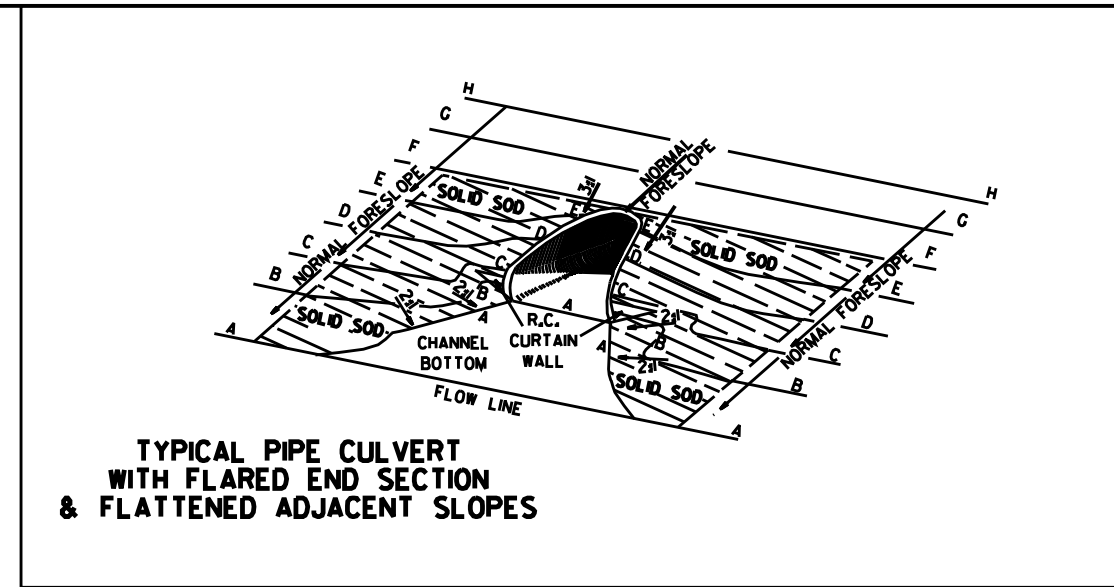
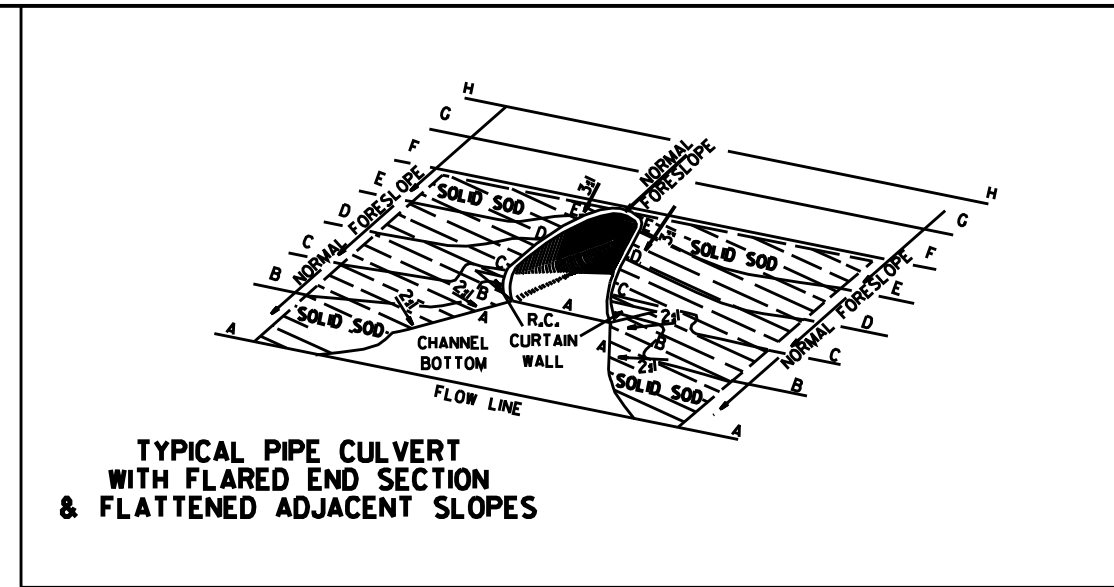
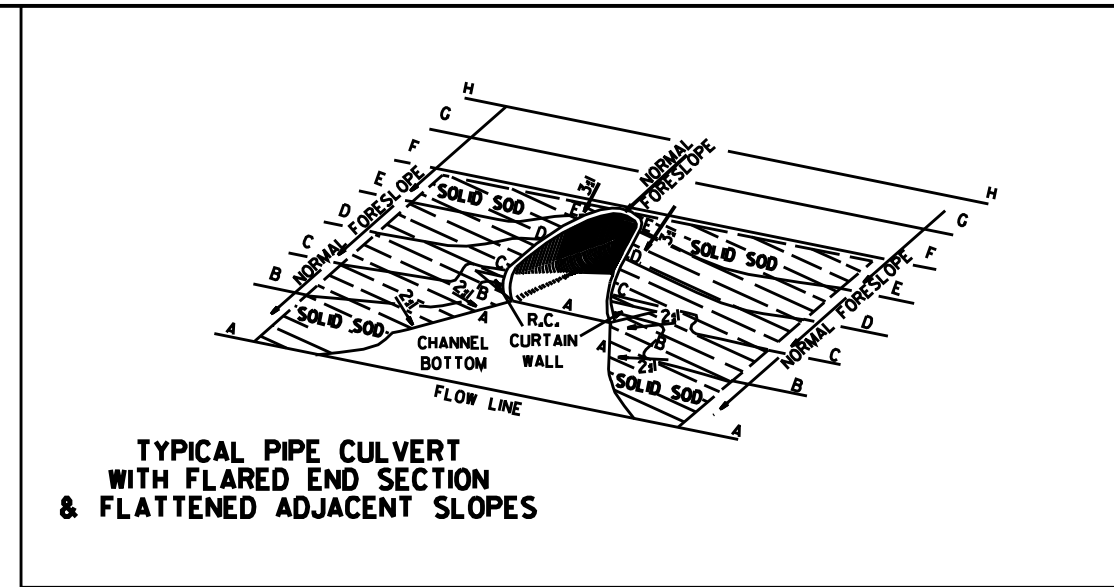
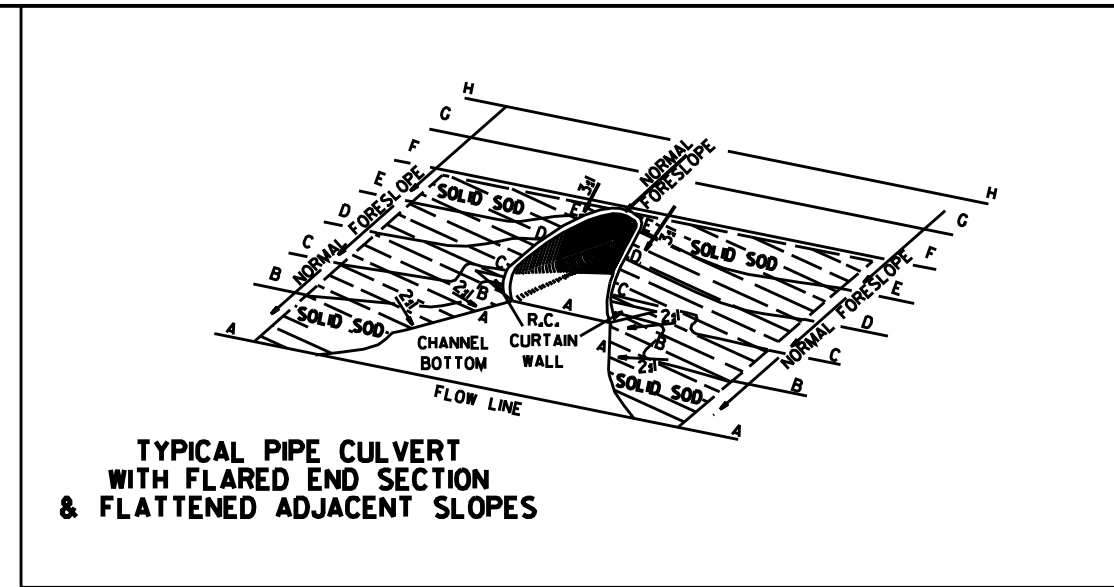
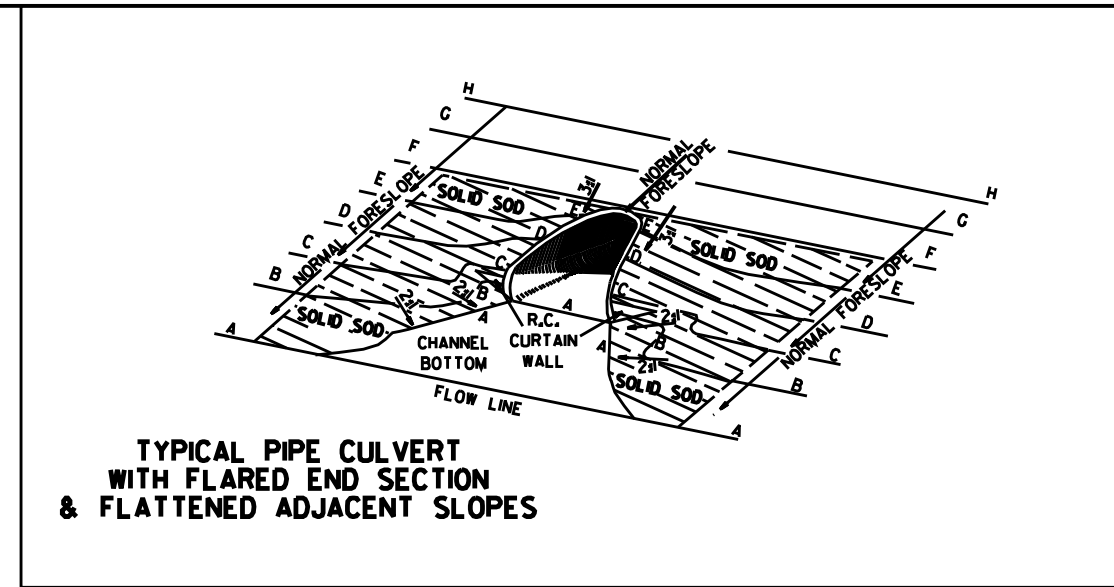
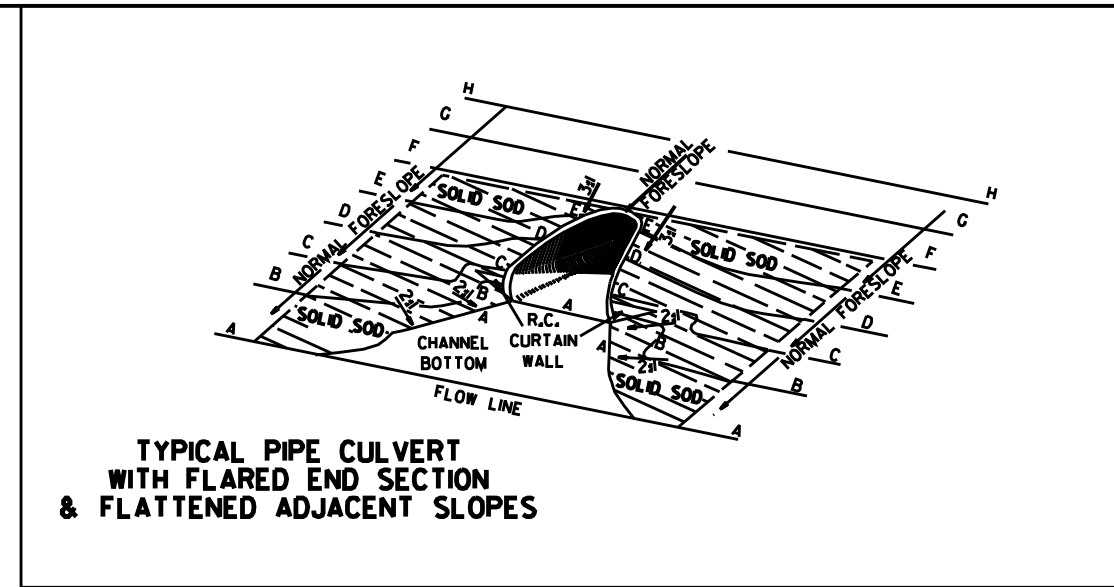
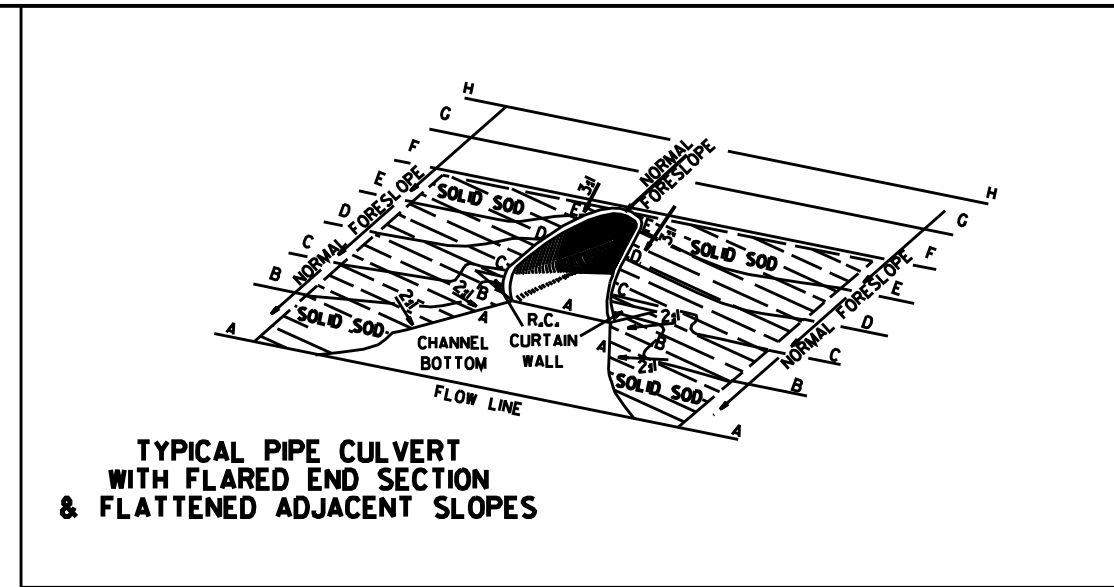
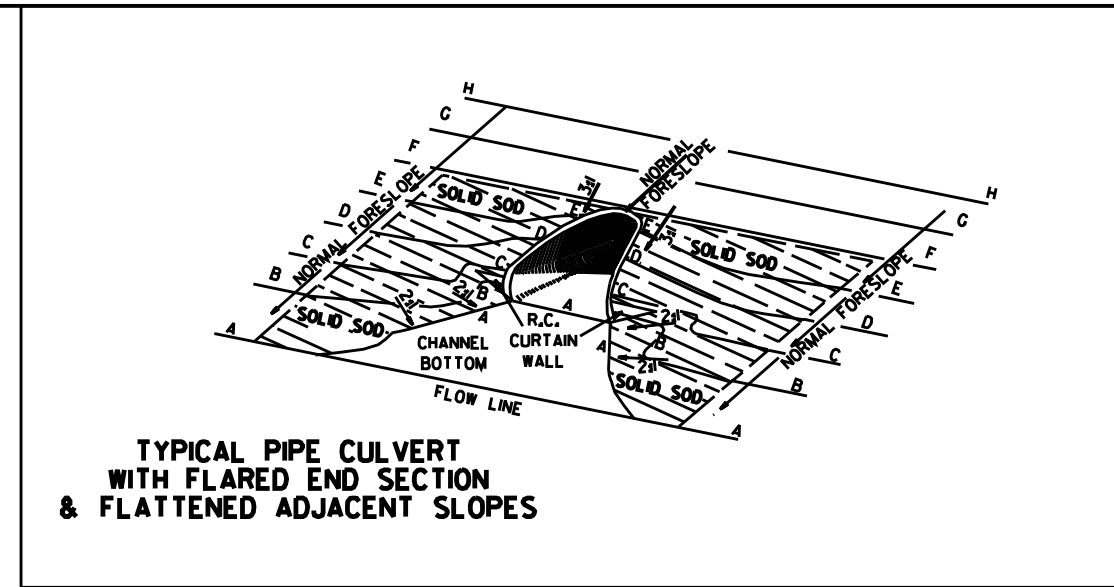
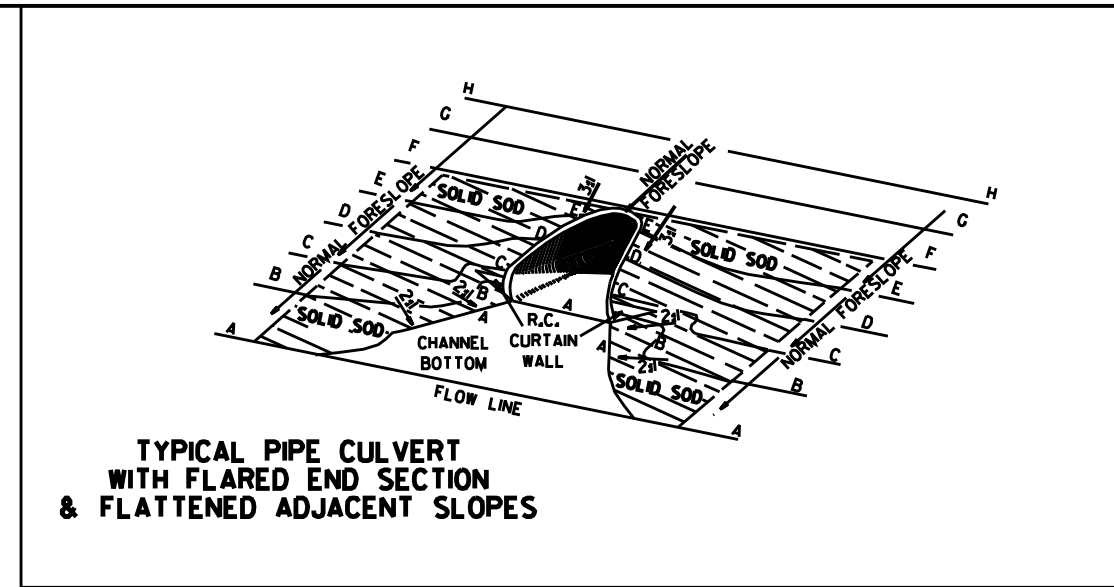
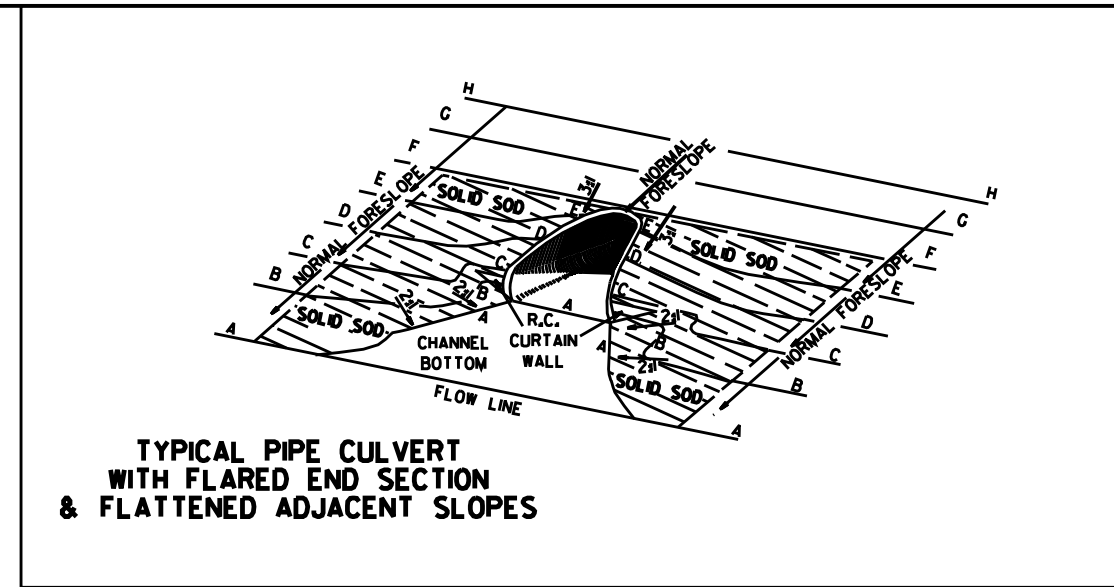
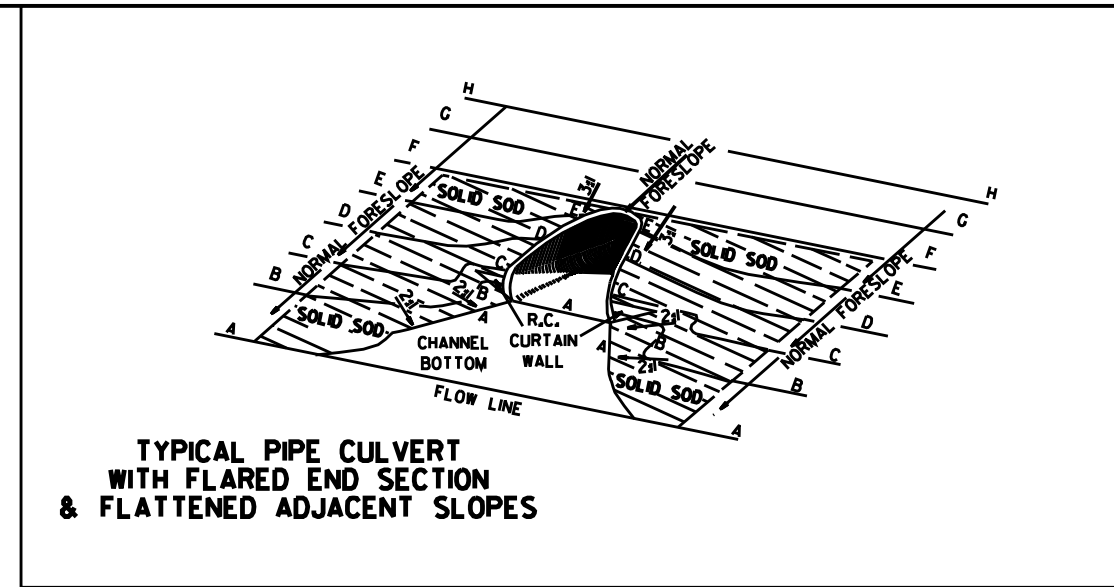
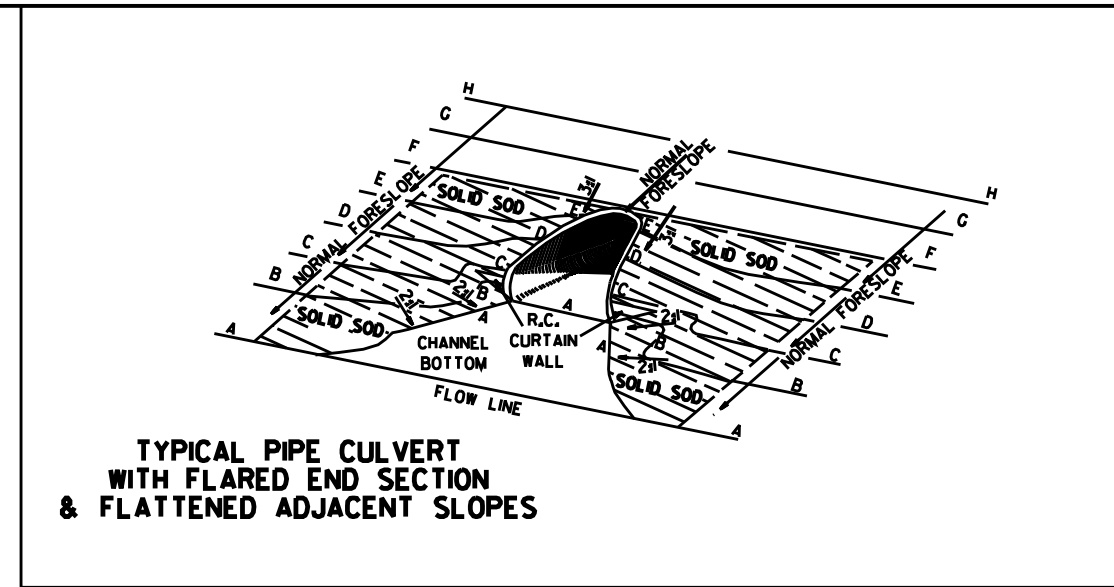
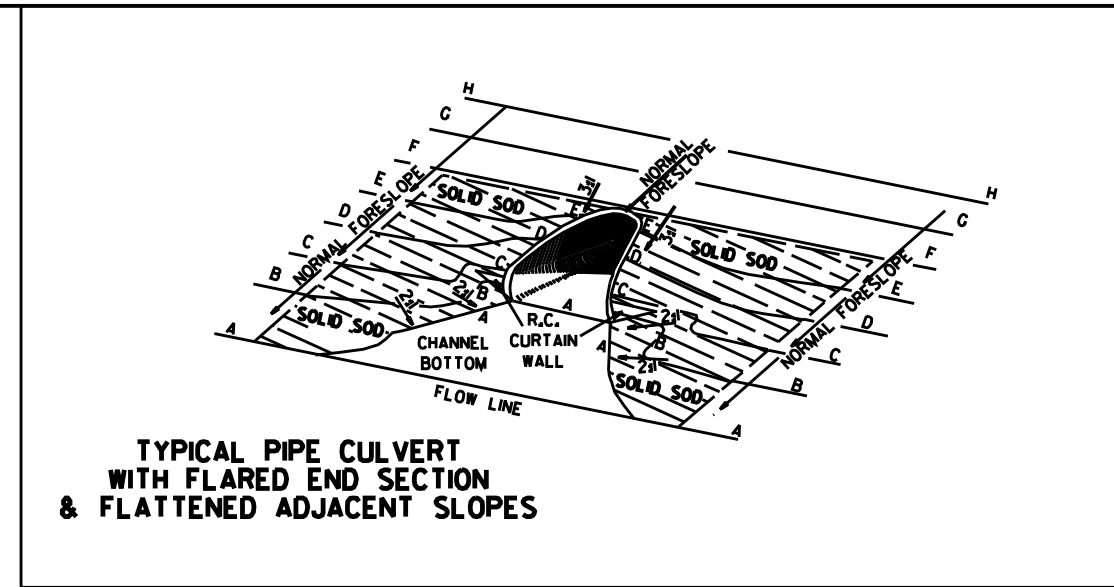
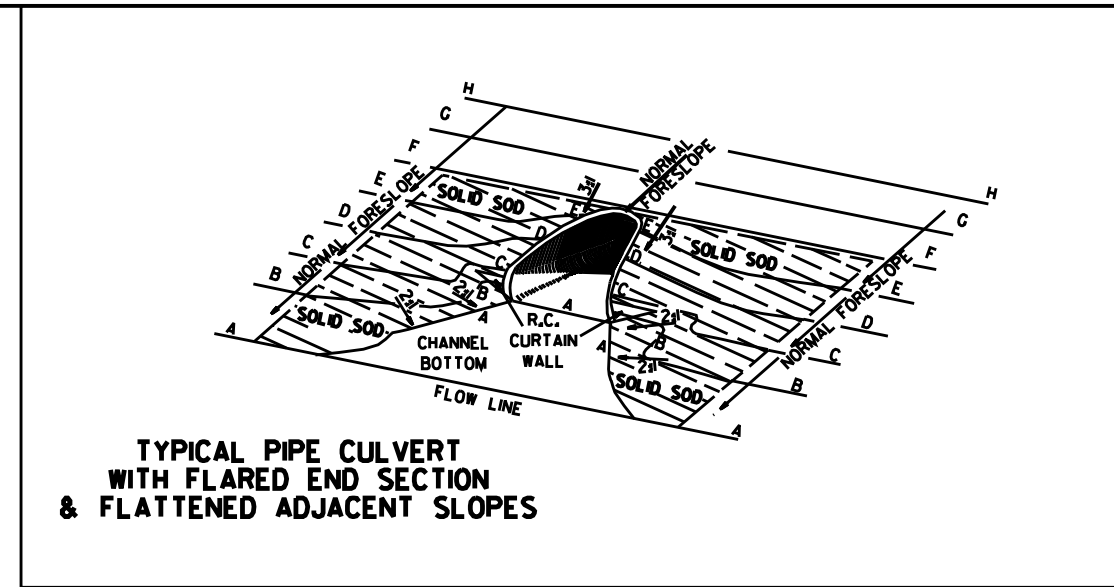
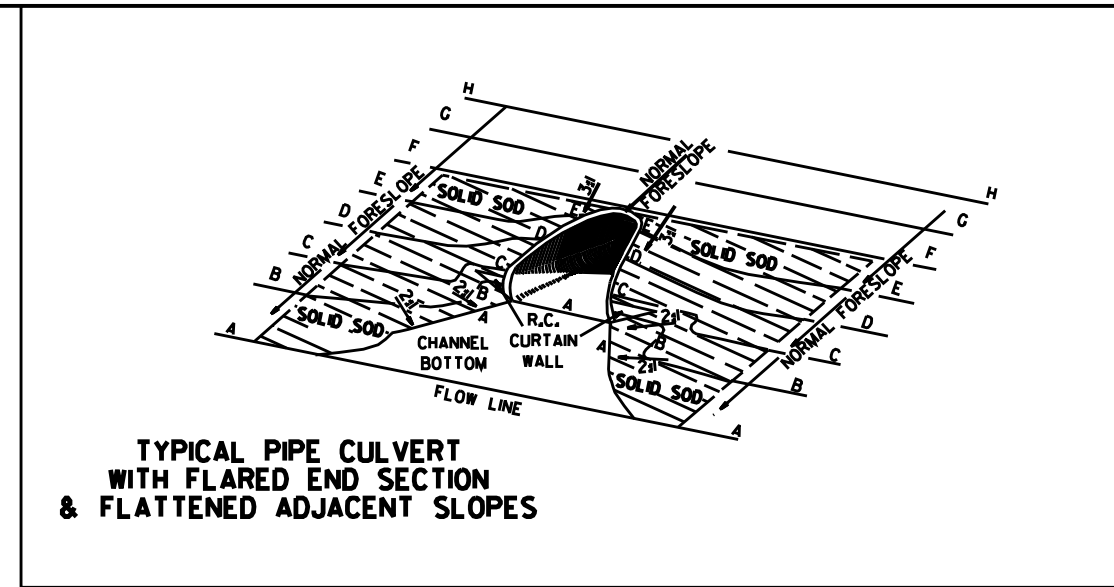
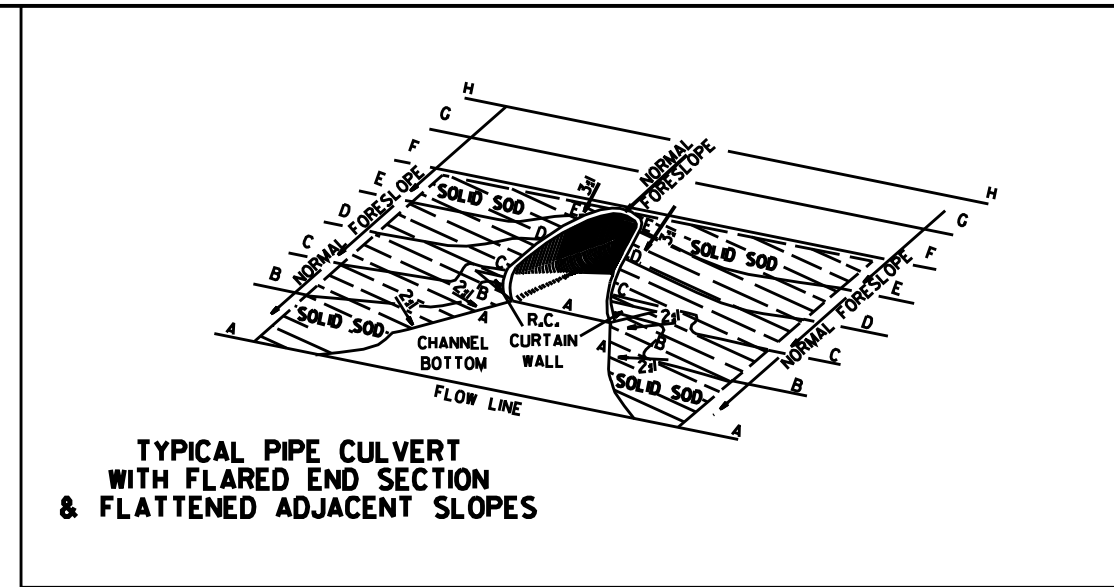
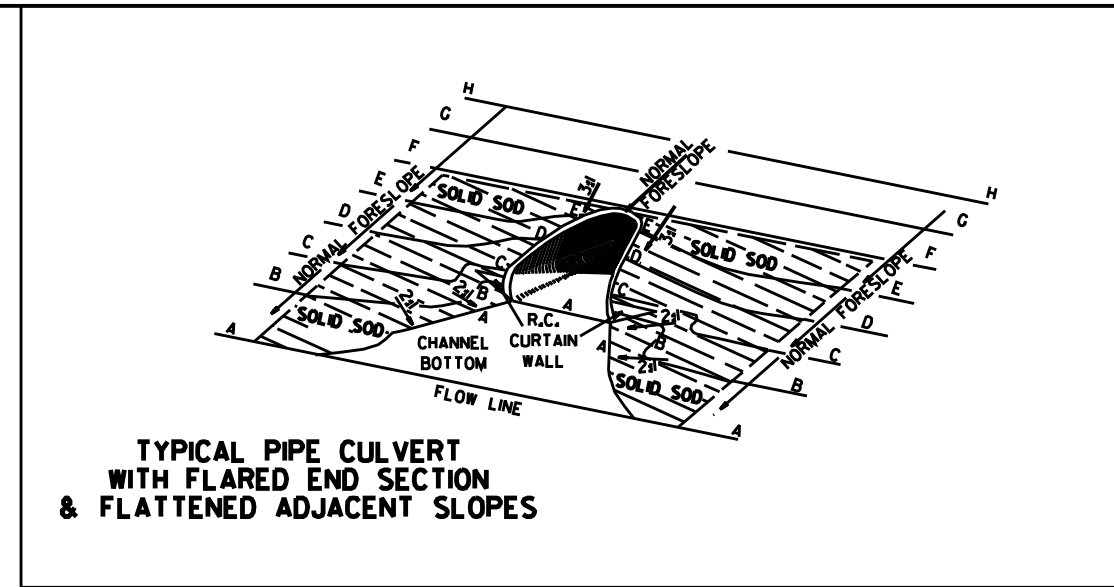
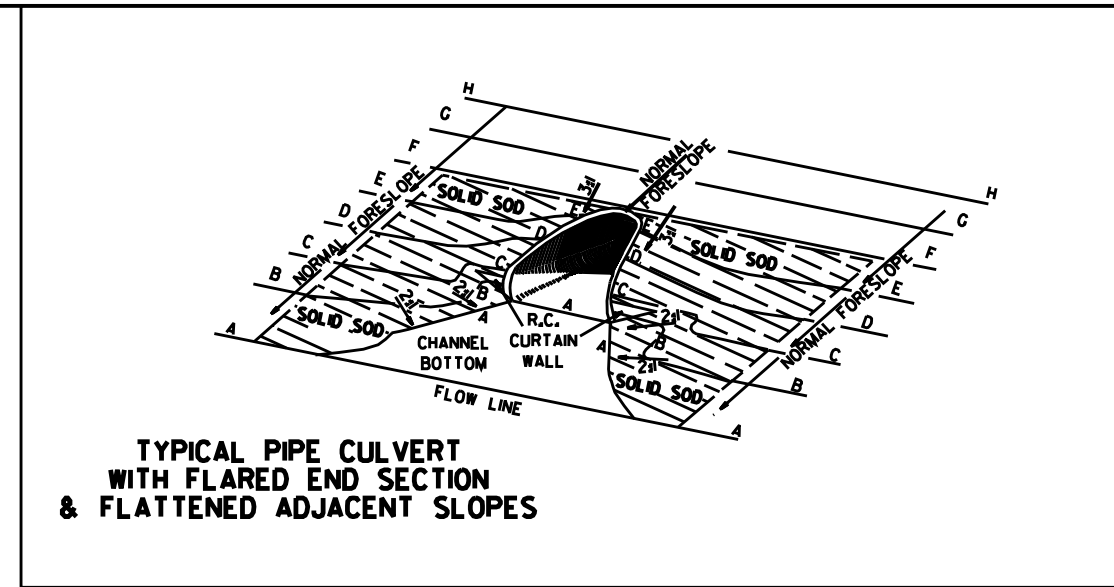
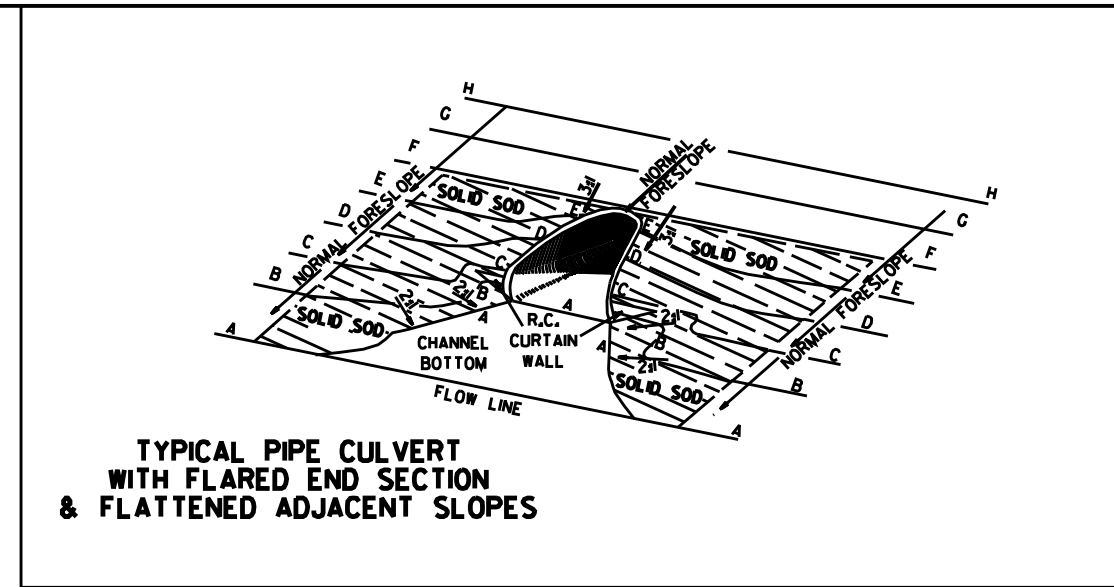
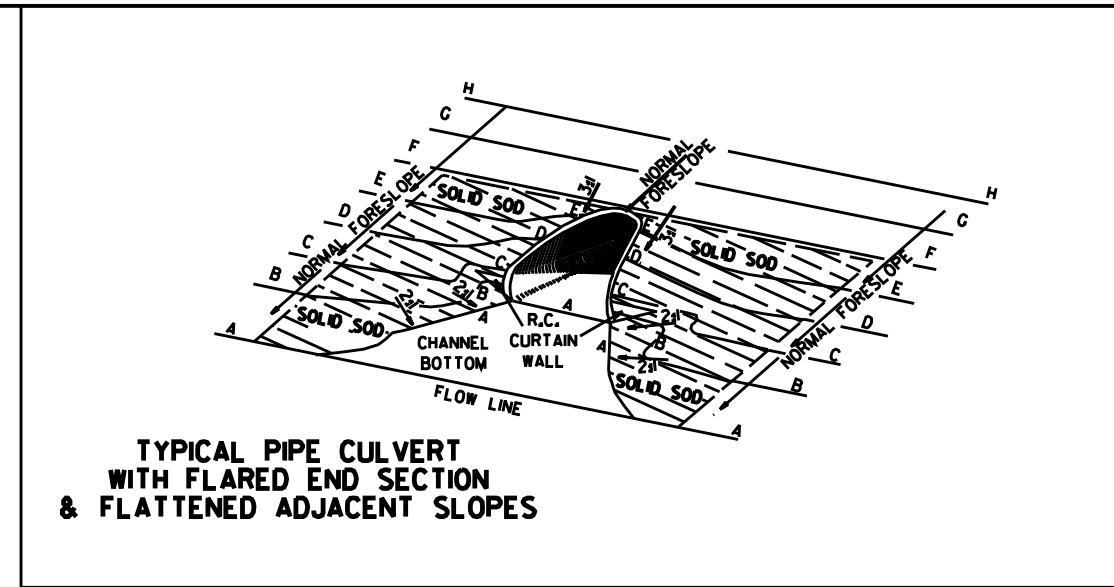
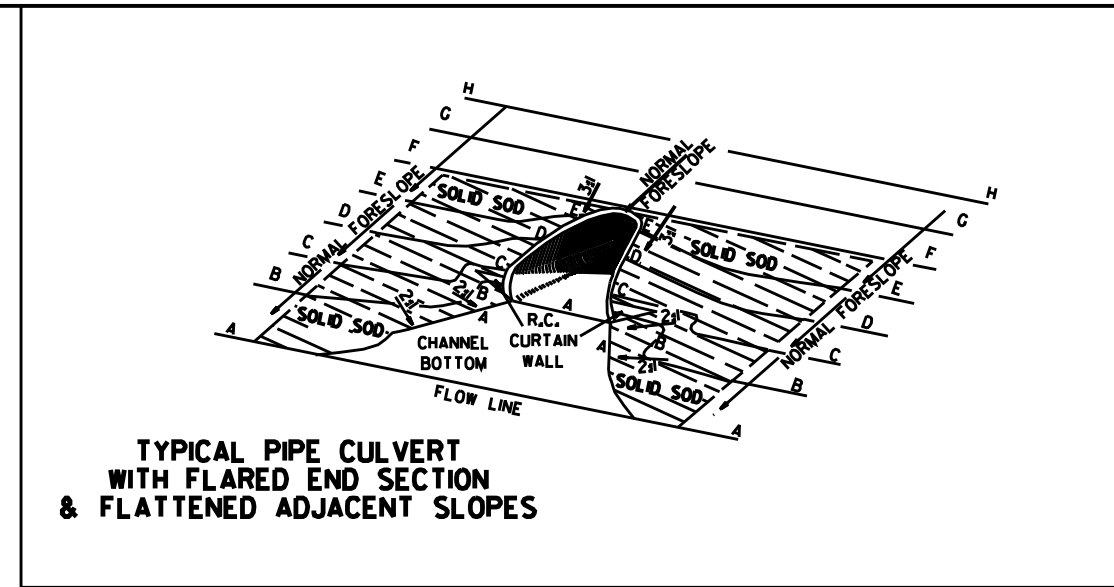
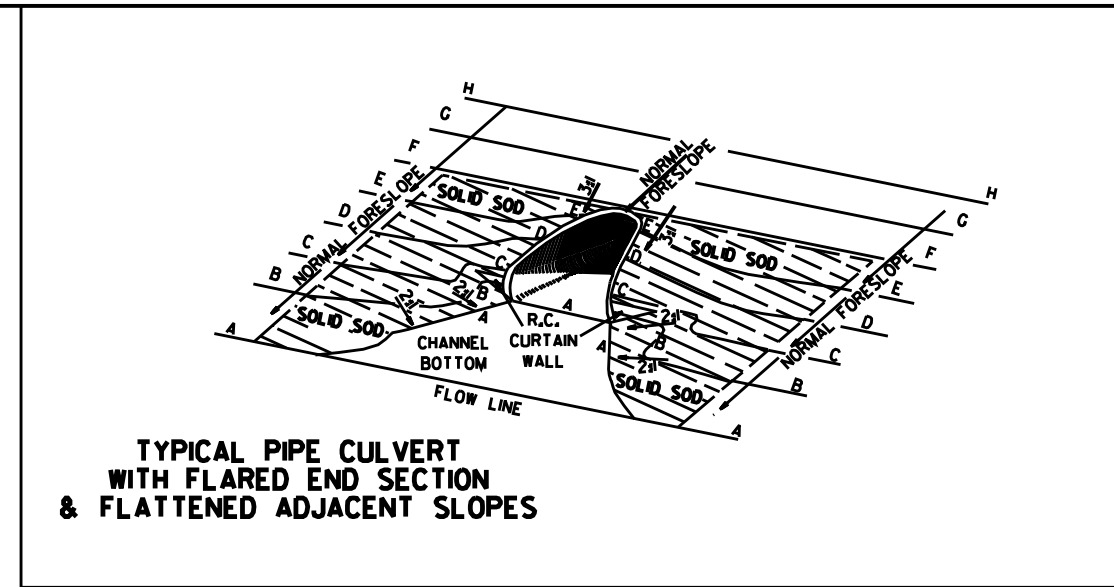
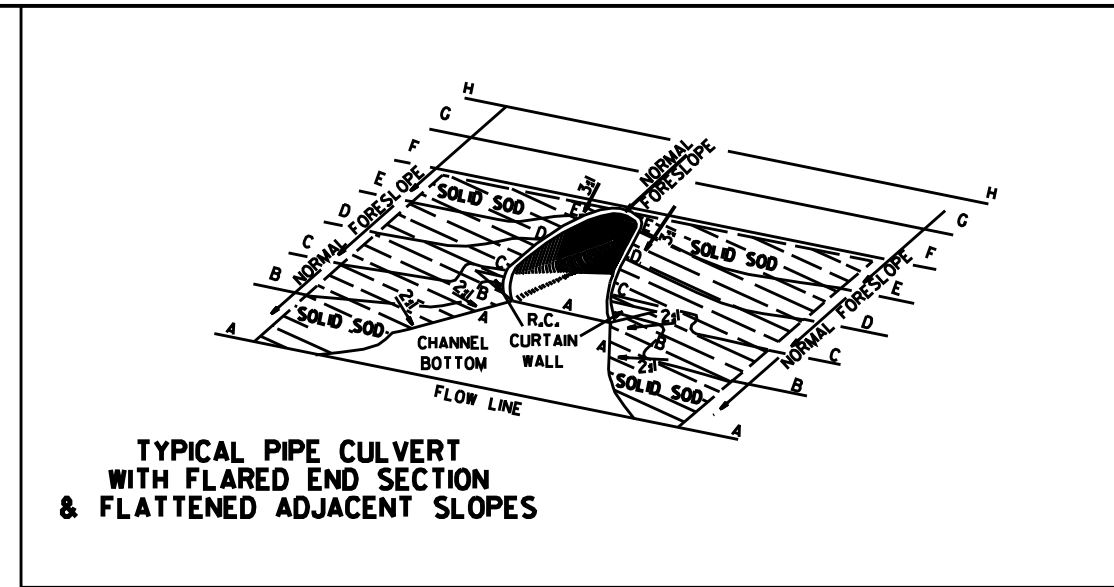
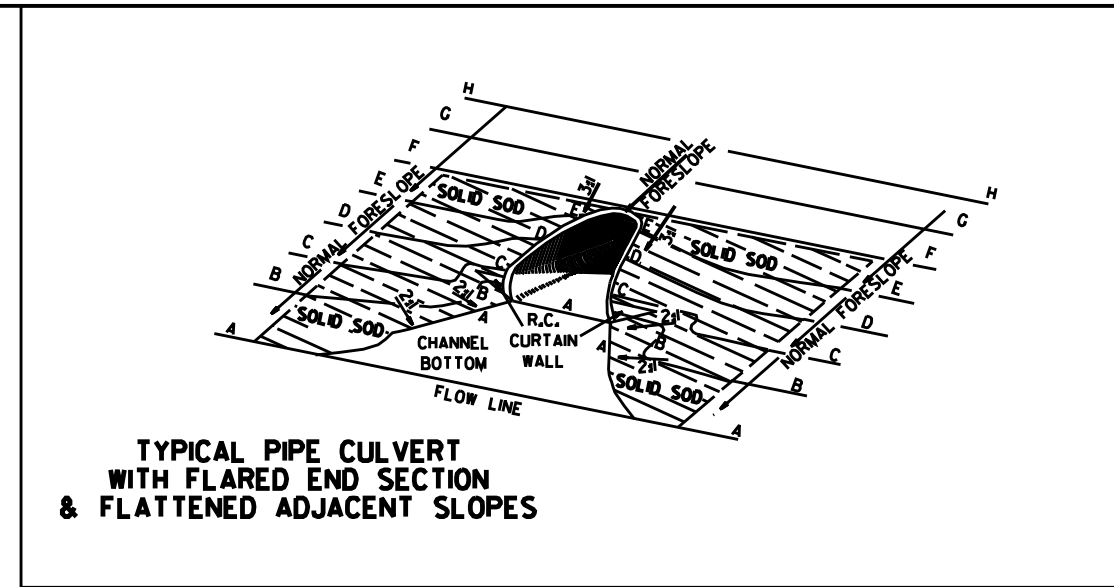
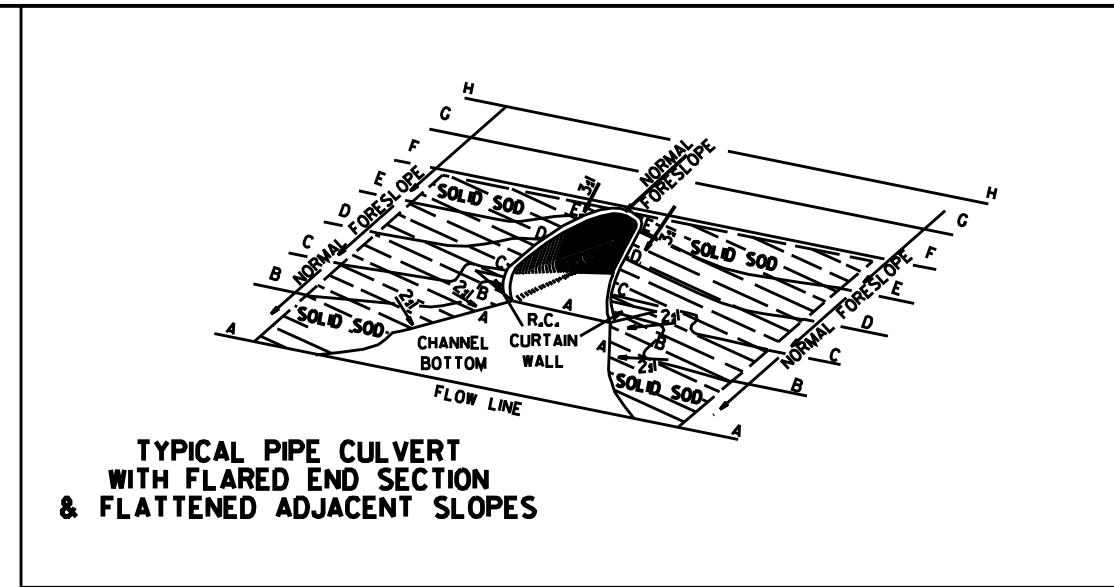
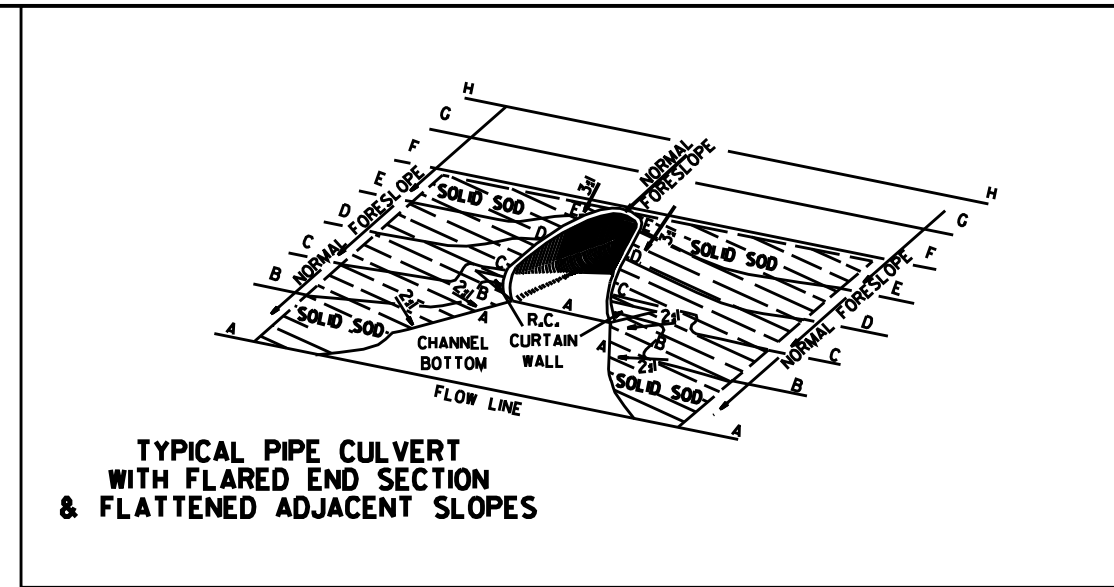
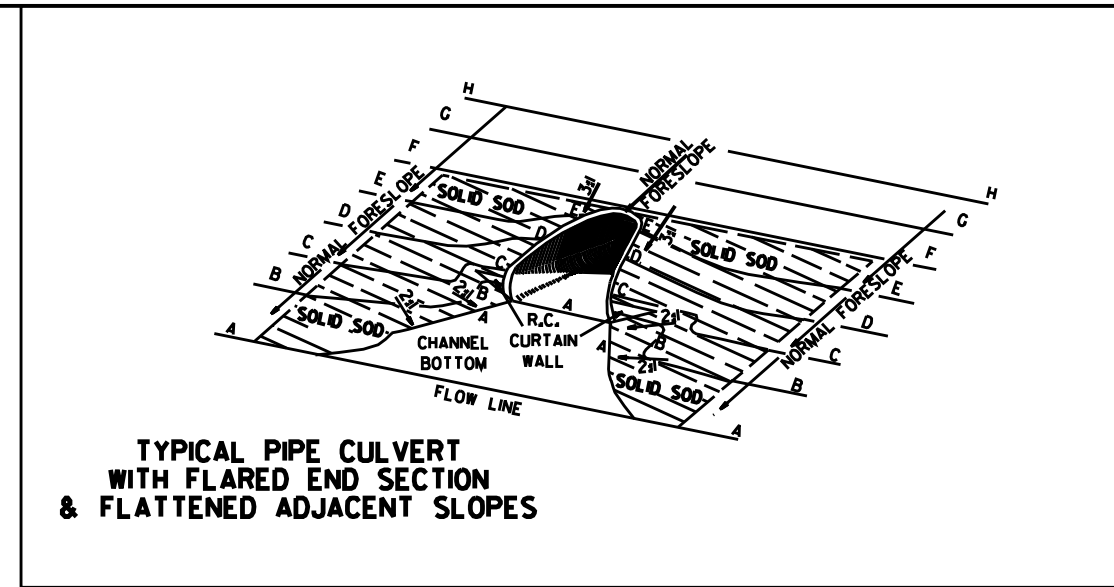
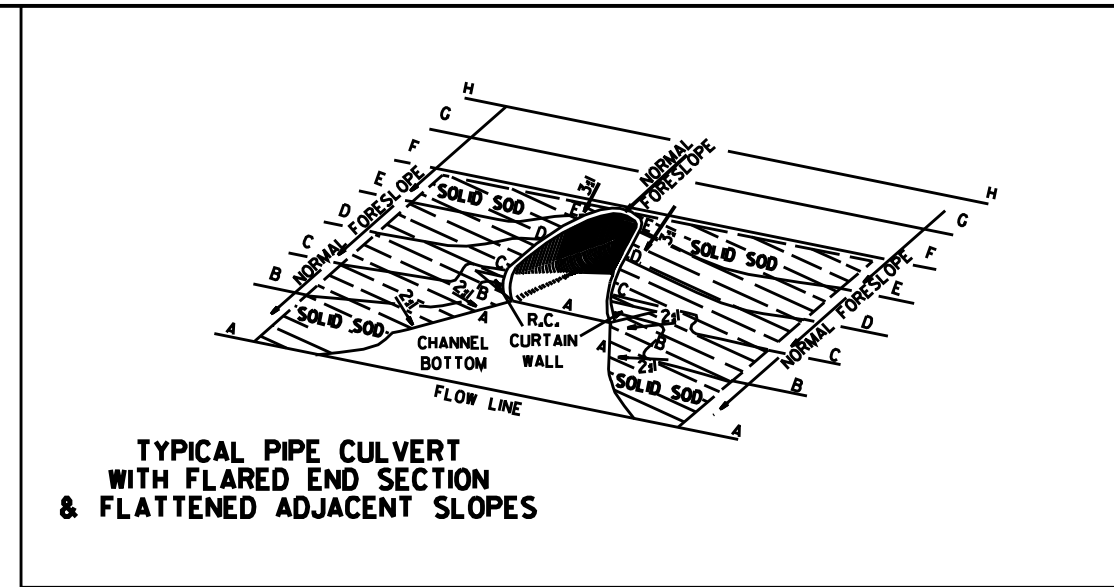
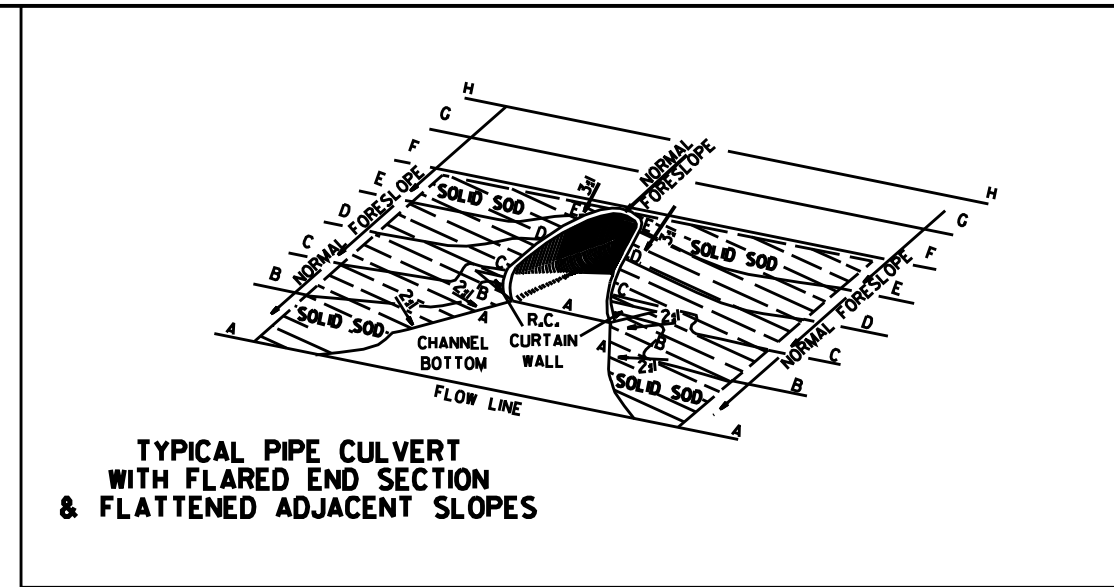
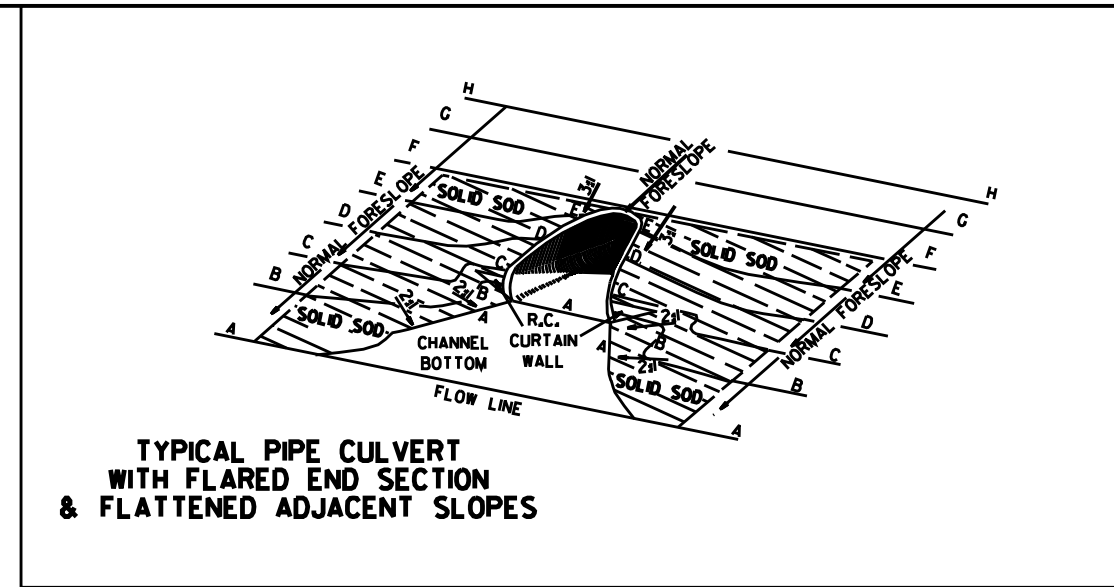
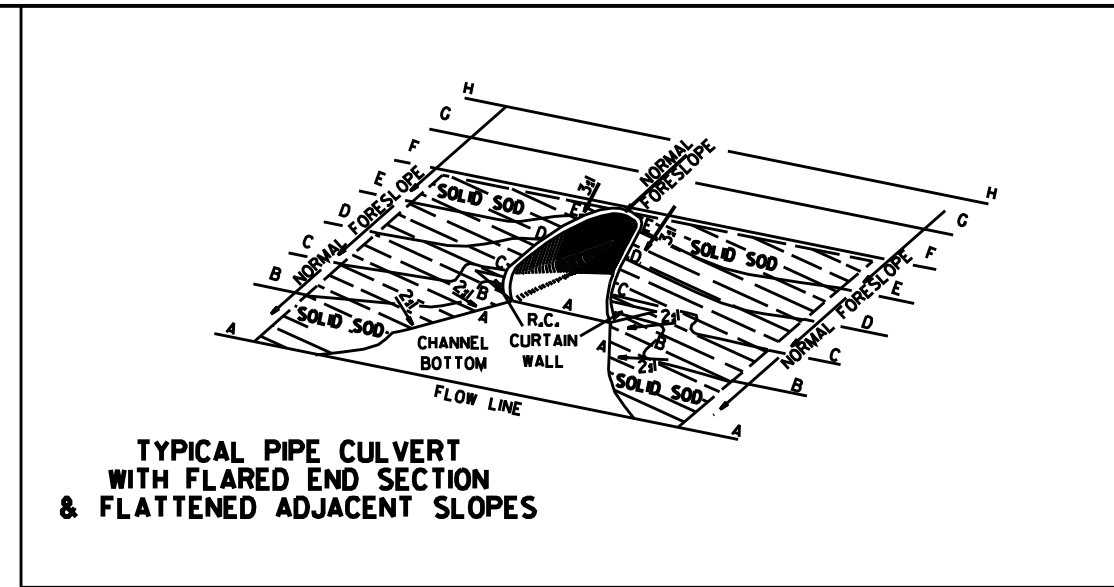
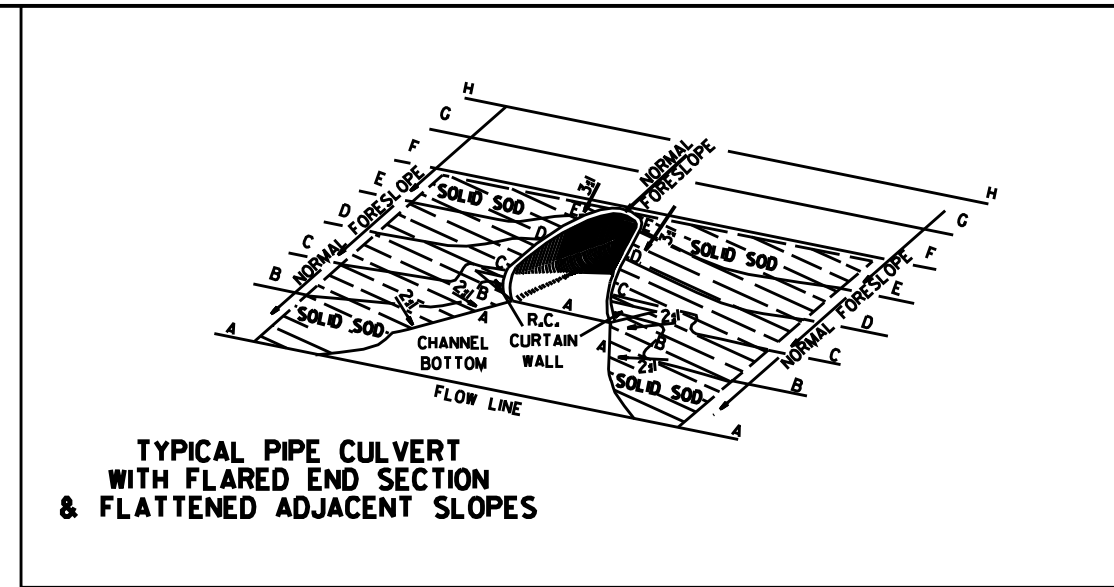
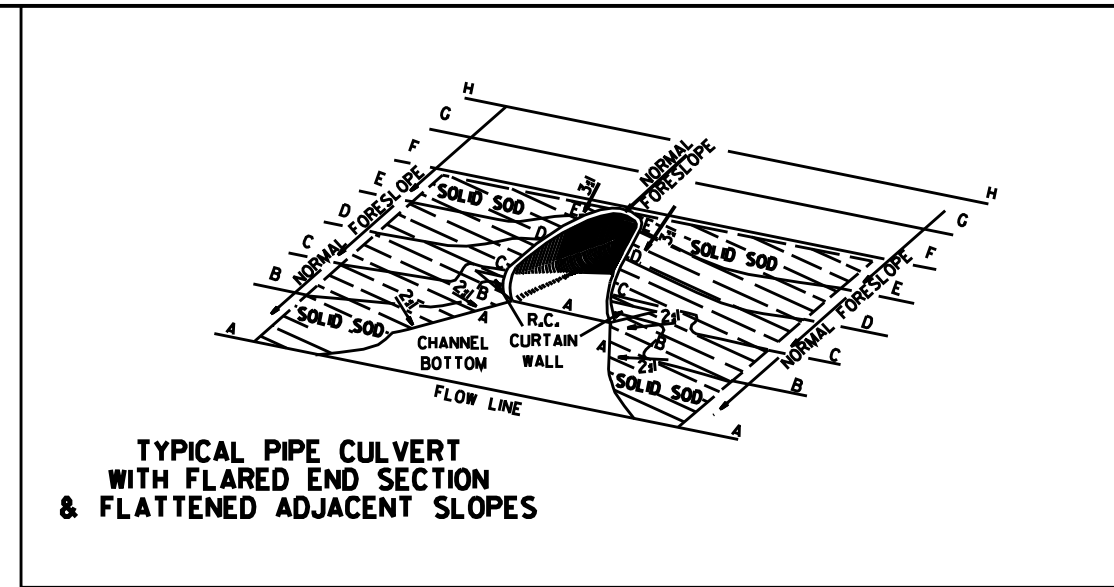
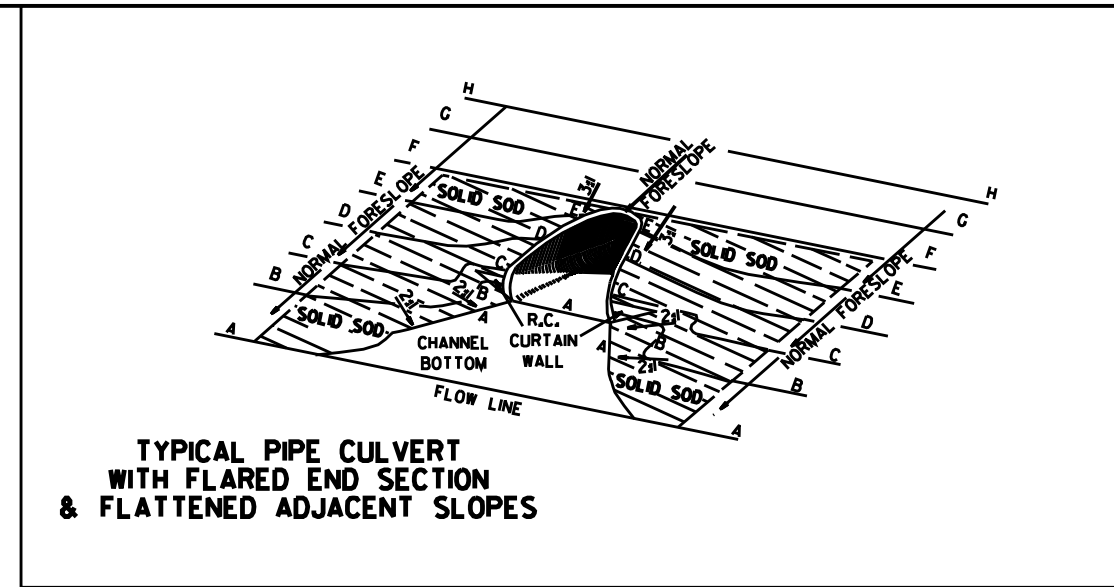
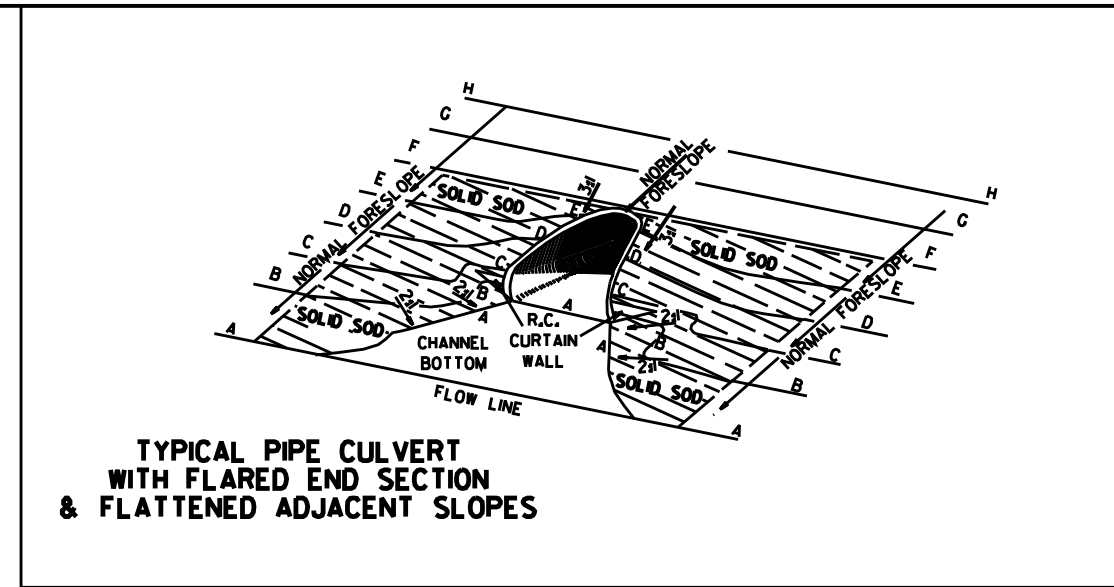
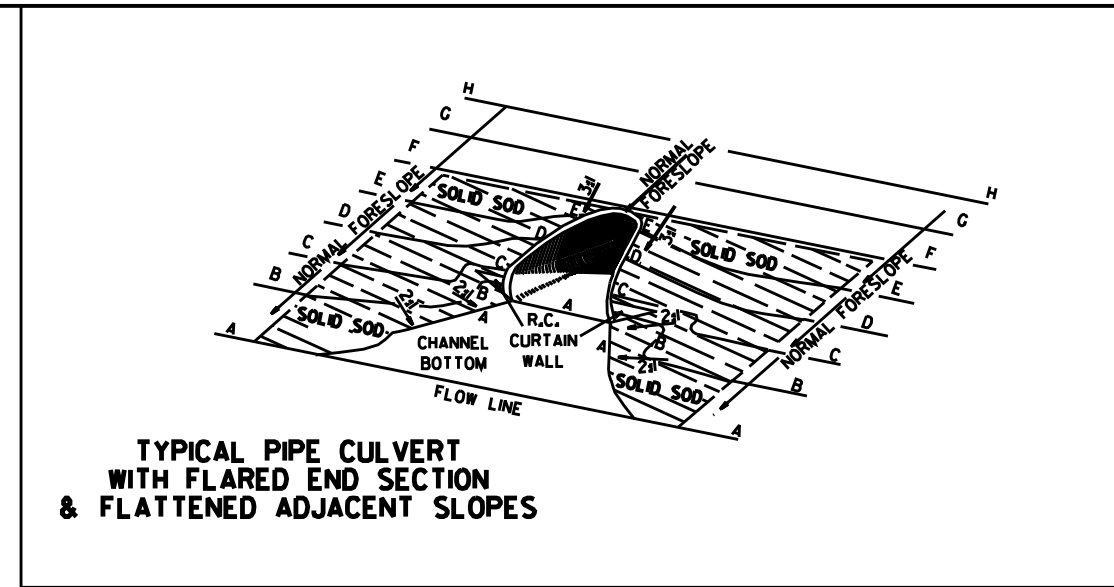
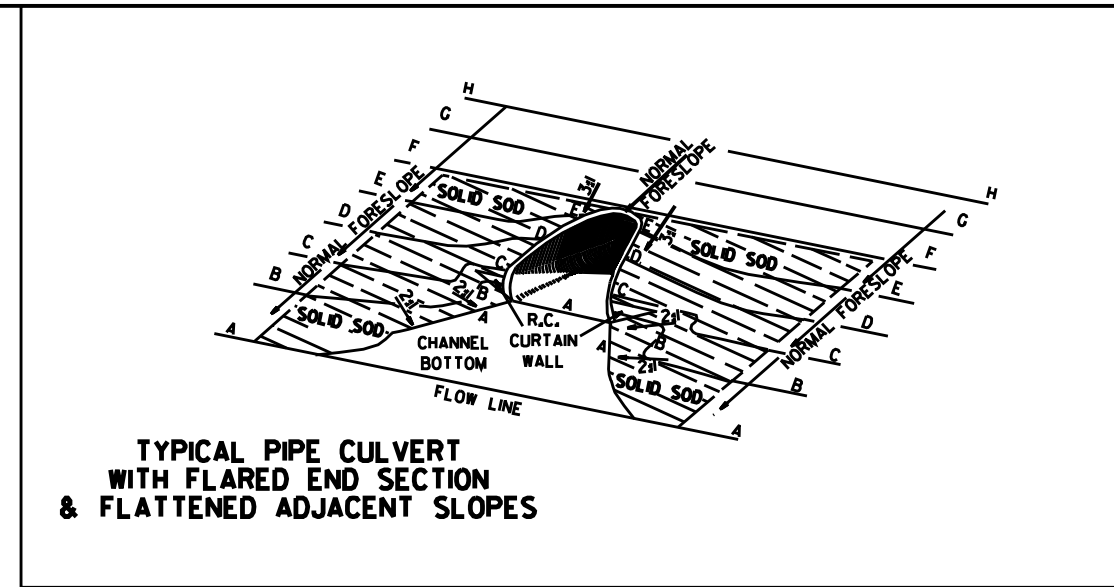
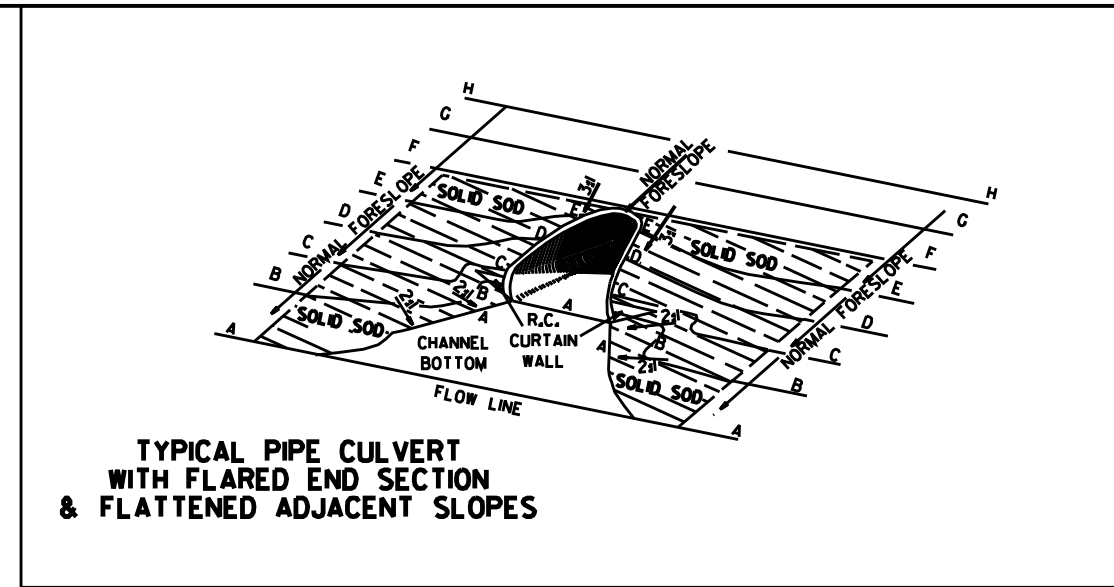
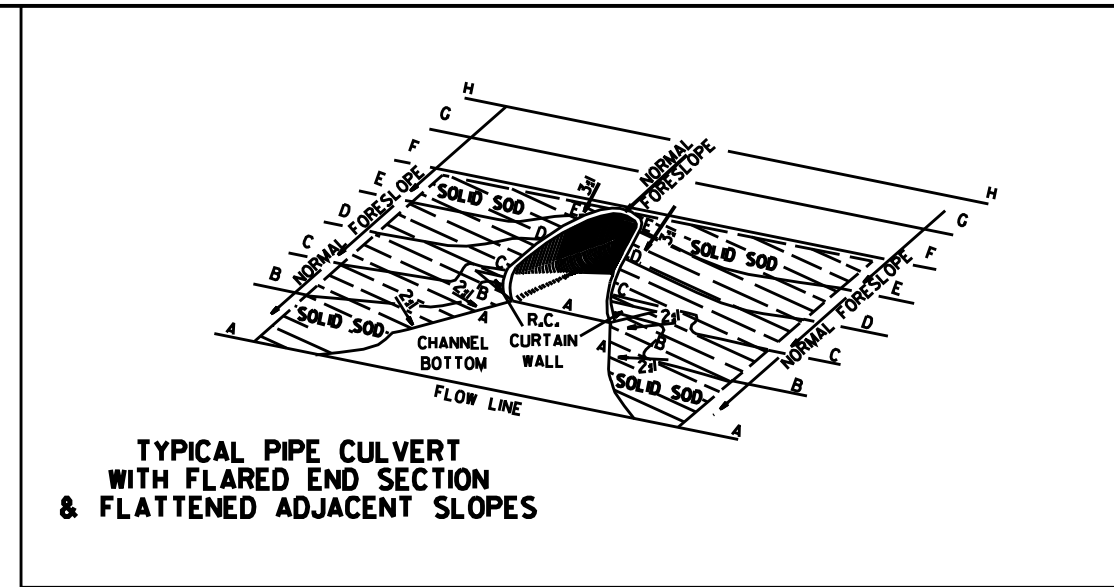
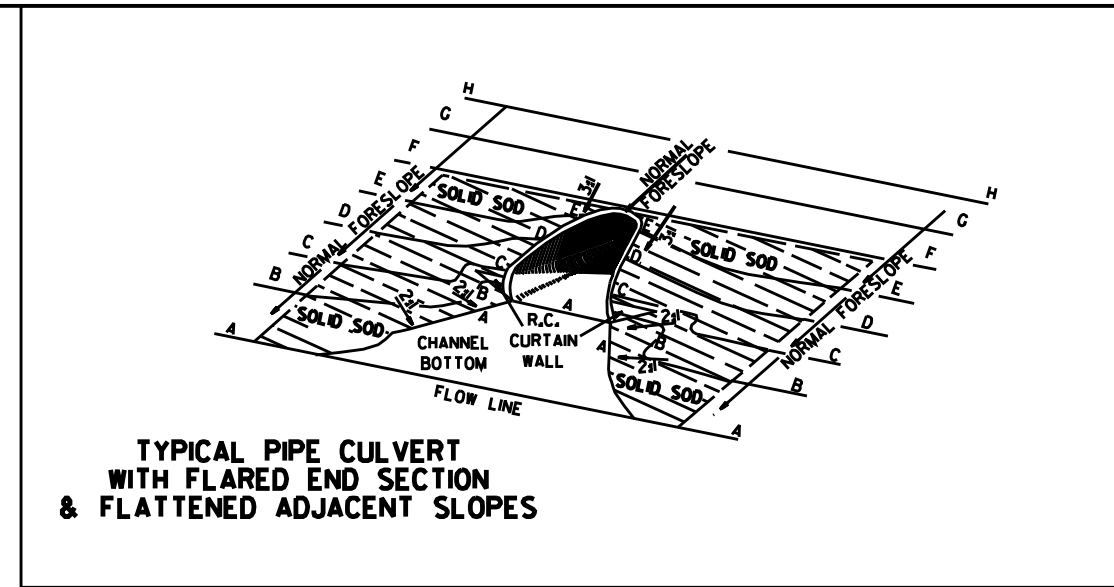
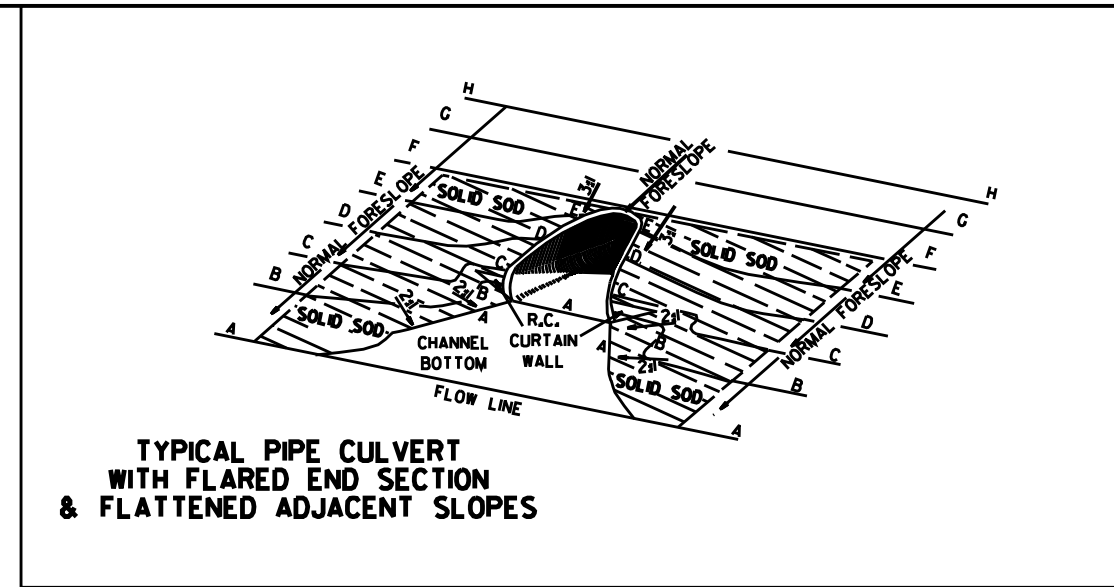
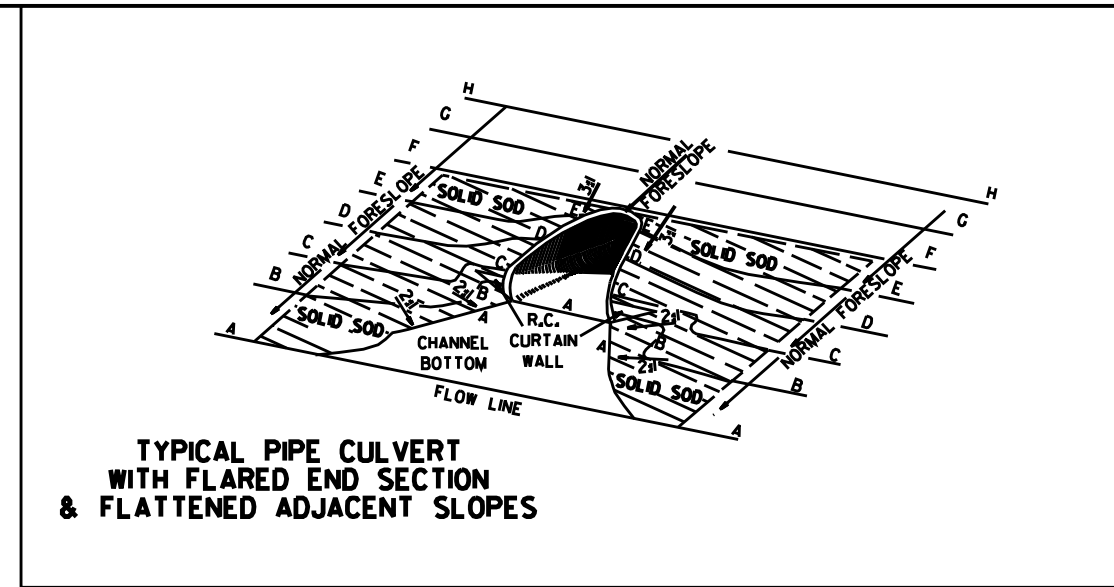
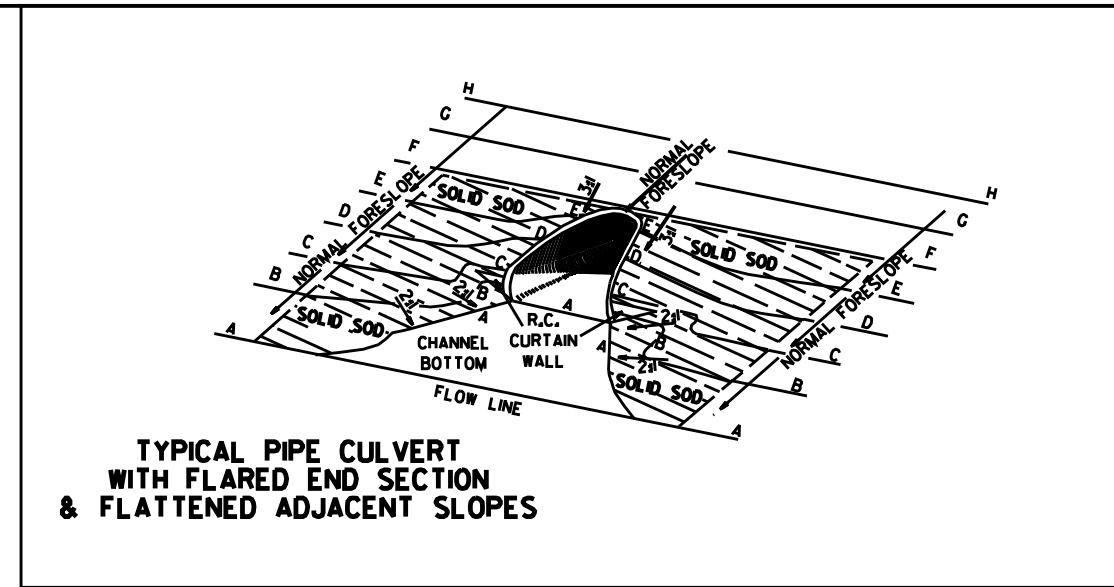
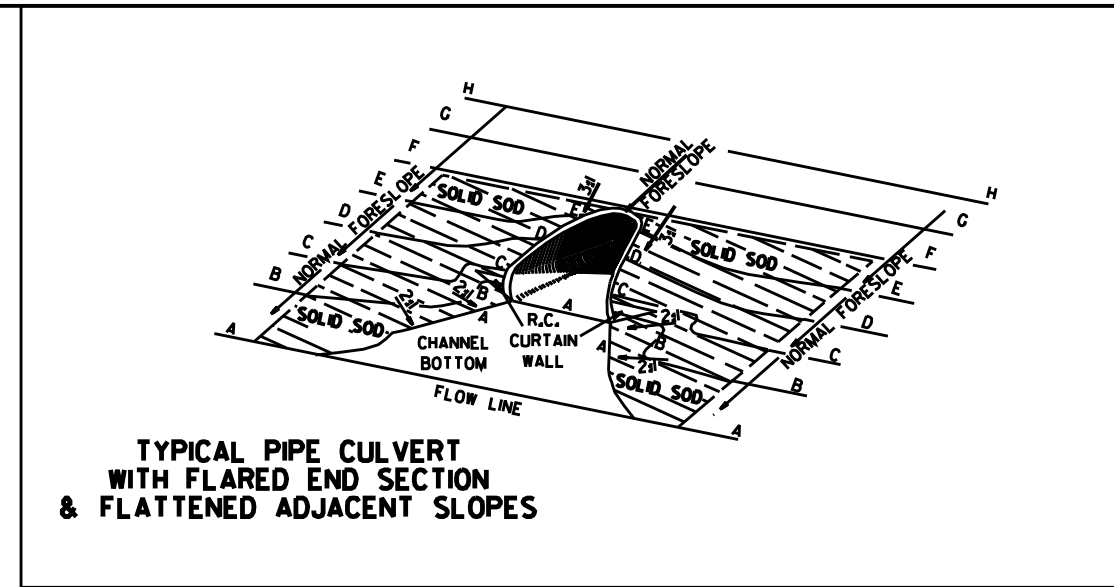
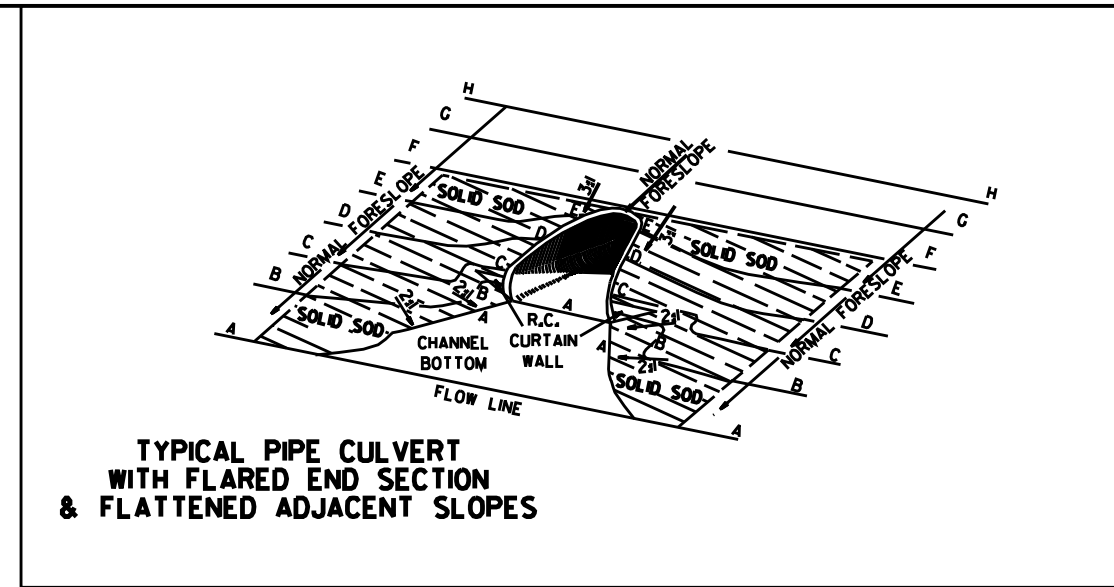
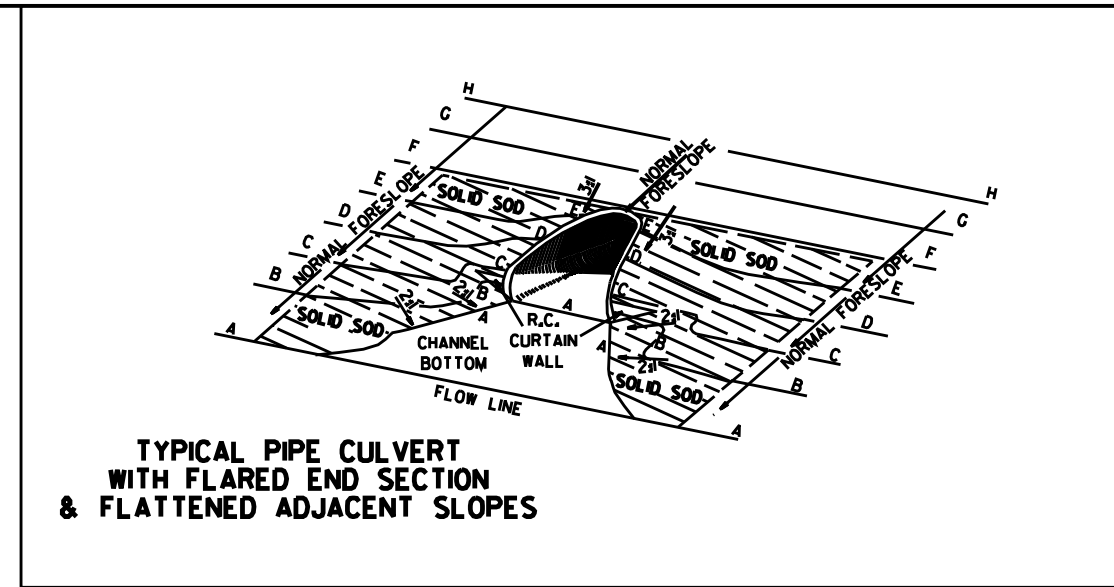
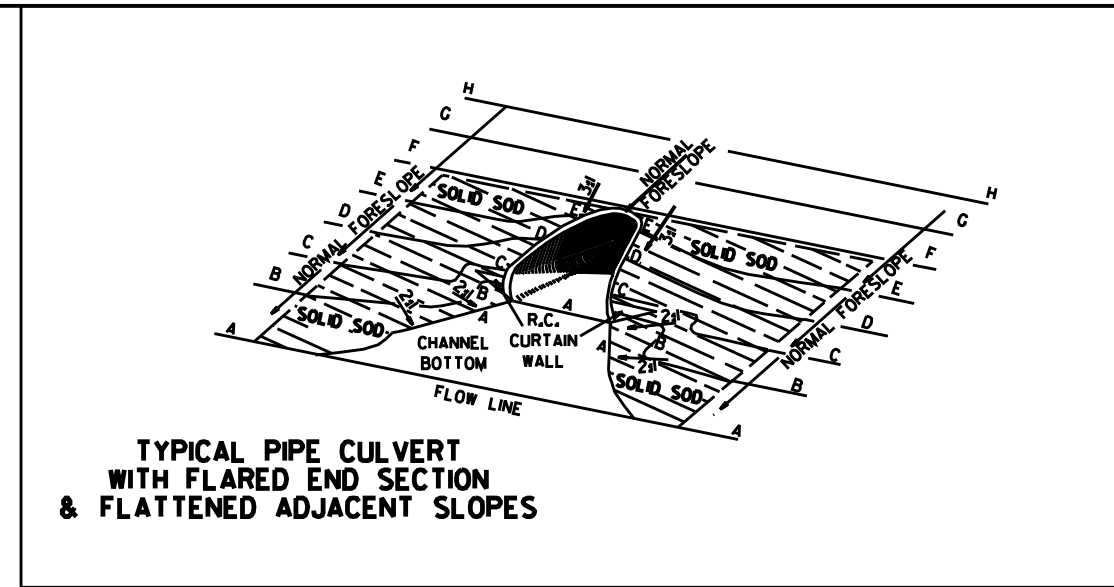
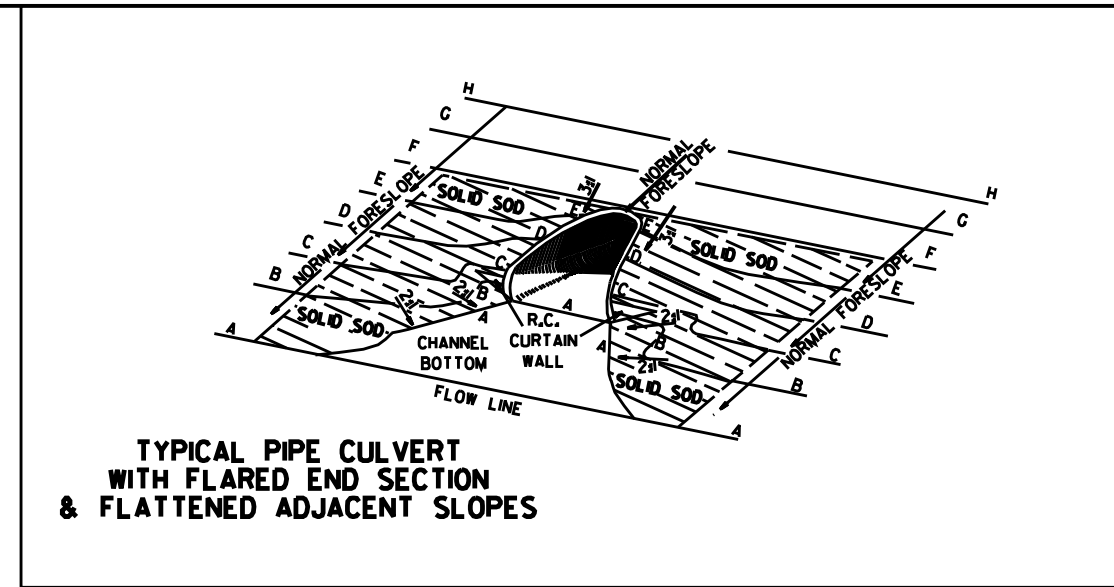
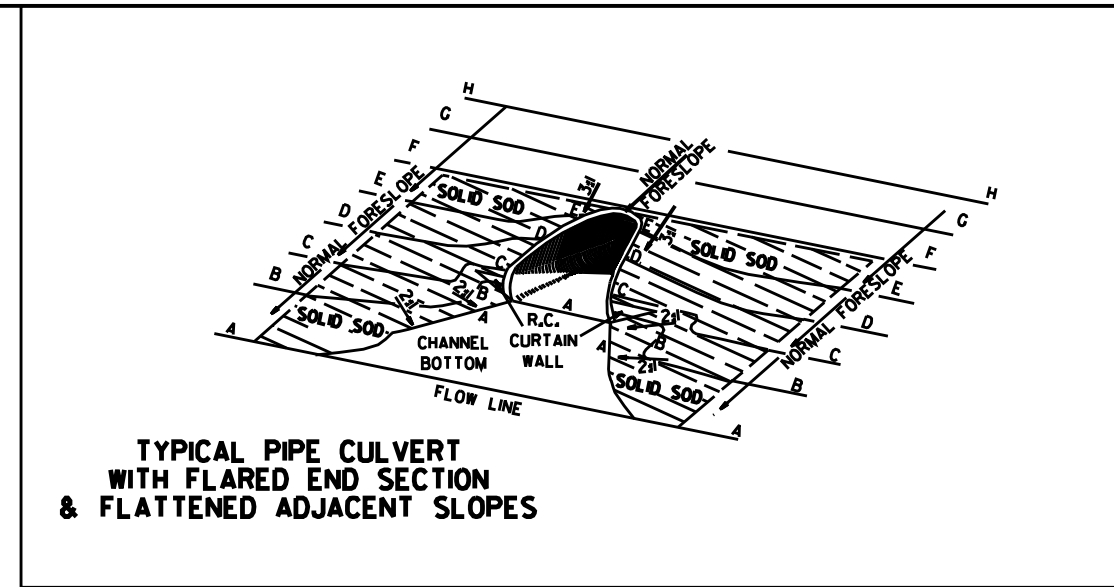
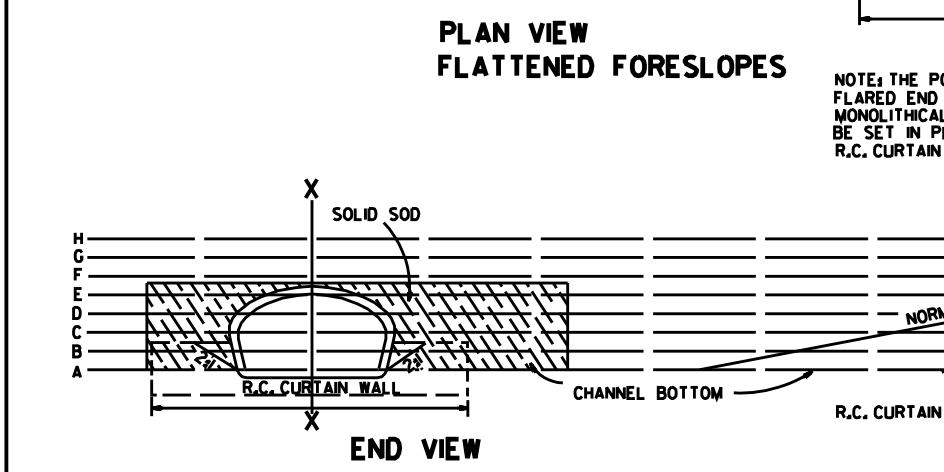
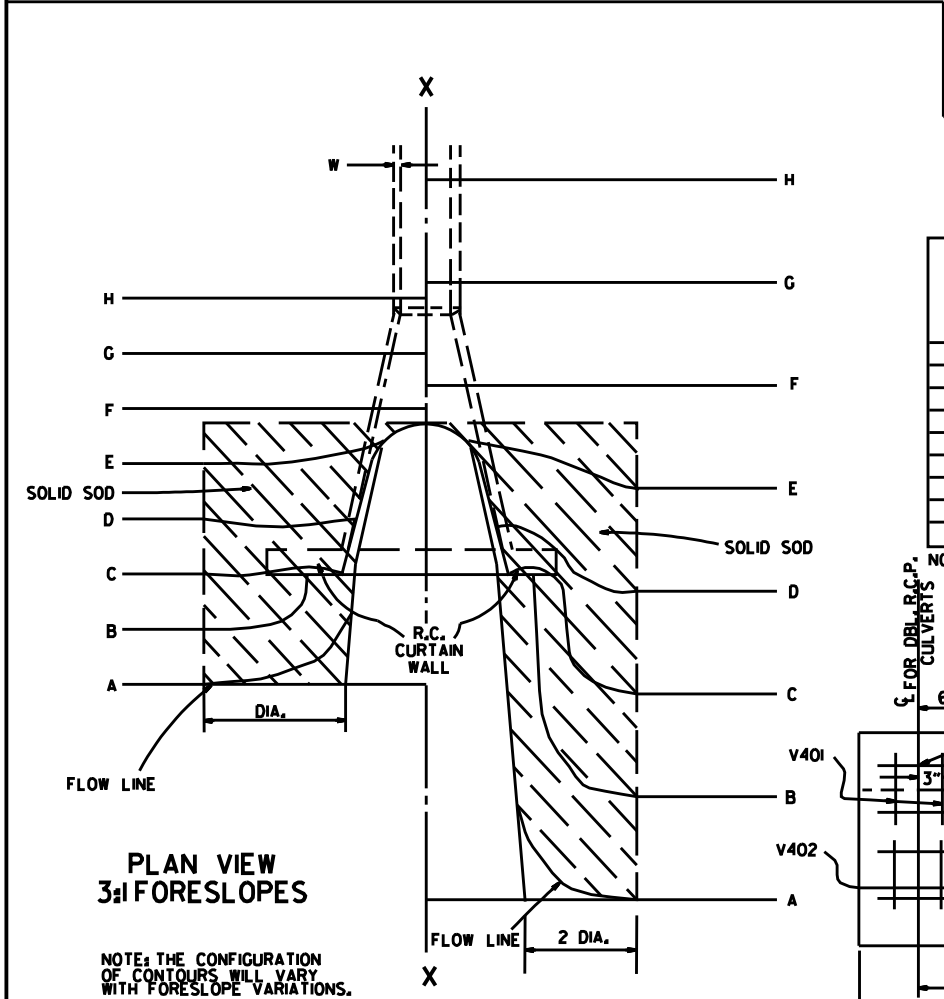
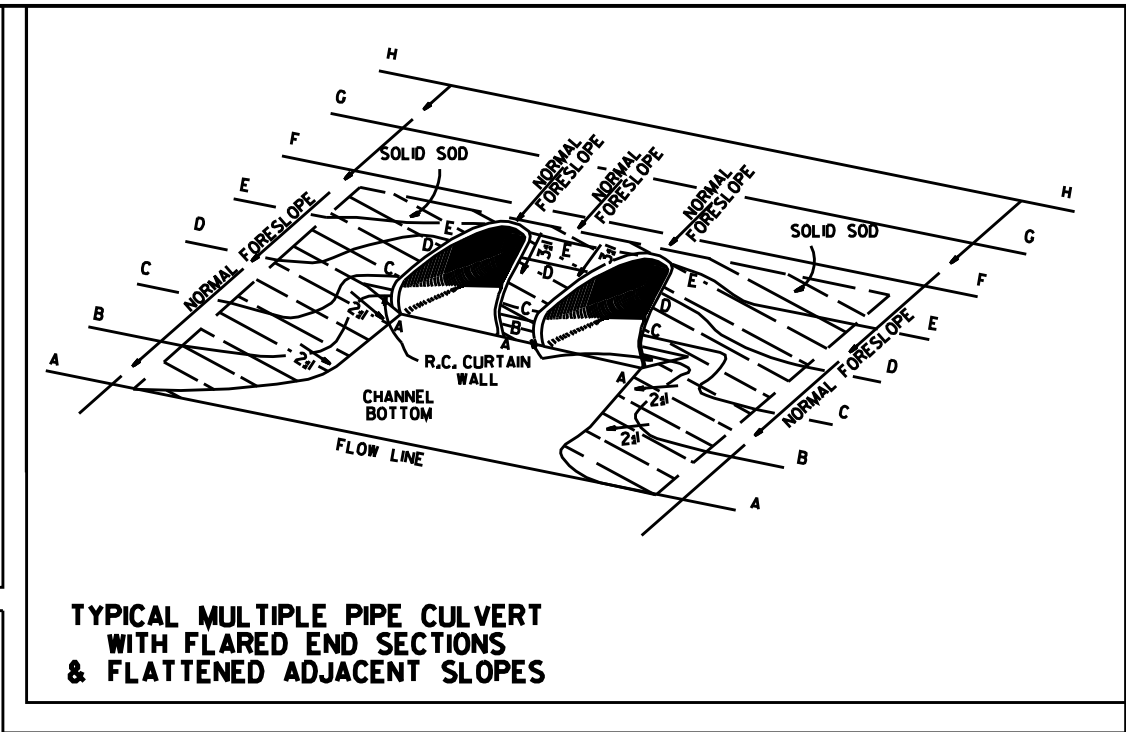
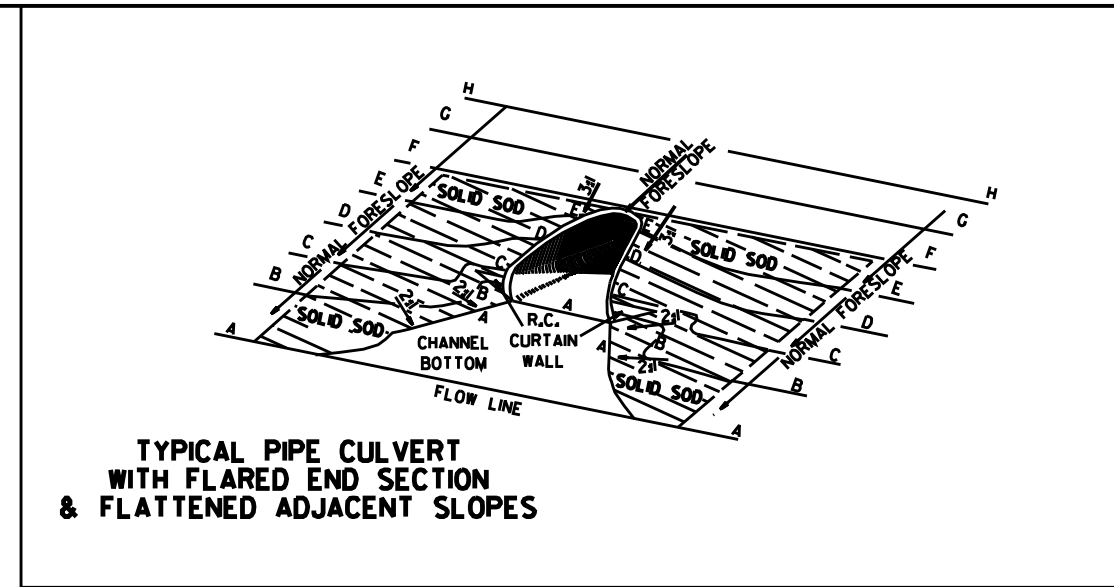
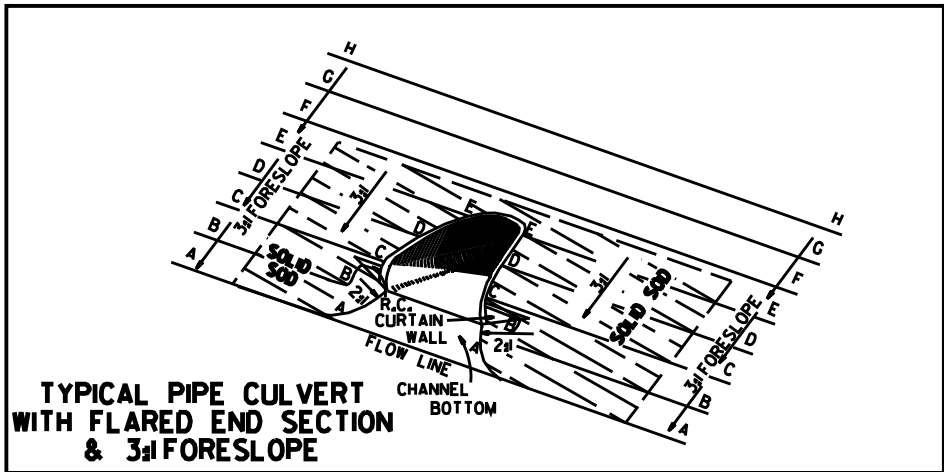
ASPHALT CONCRETE HOT MIX SURFACE COURSE (220 LBS. PER SQ. YD.) AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT DRIVE EXIST OR 6" CONCRETE IF CONCRETE DRIVE EXIST.

AGGREGATE BASE COURSE (CLASS 7) 9" COMP. DEPTH OR CONFORM TO EXISTING DRIVEWAY

DETAIL FOR DRIVEWAY TURNOUTS  
(COLLECTORS)

|          |             |             |
|----------|-------------|-------------|
|          |             |             |
|          |             |             |
|          |             |             |
|          |             |             |
|          |             |             |
| 5-19-22  |             | ISSUED      |
| DATE REV | DATE FILMED | DESCRIPTION |

ARKANSAS STATE HIGHWAY COMMISSION  
DETAILS OF DRIVEWAYS & STREET  
TURNOUTS  
STANDARD DRAWING DR-2





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

**END VIEW**  
**CONCRETE ARCH PIPE**

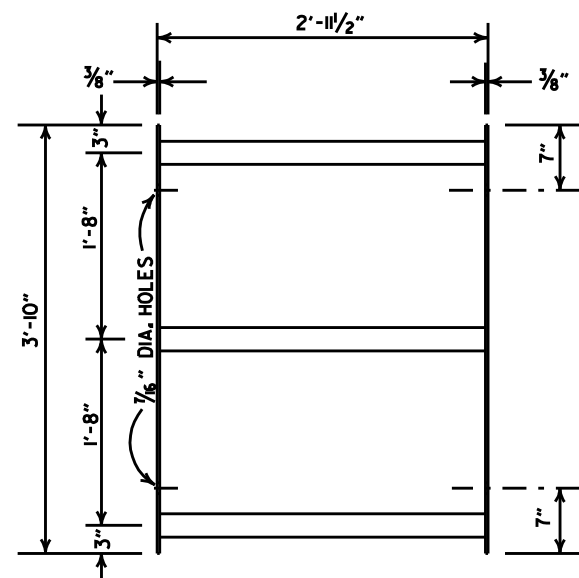
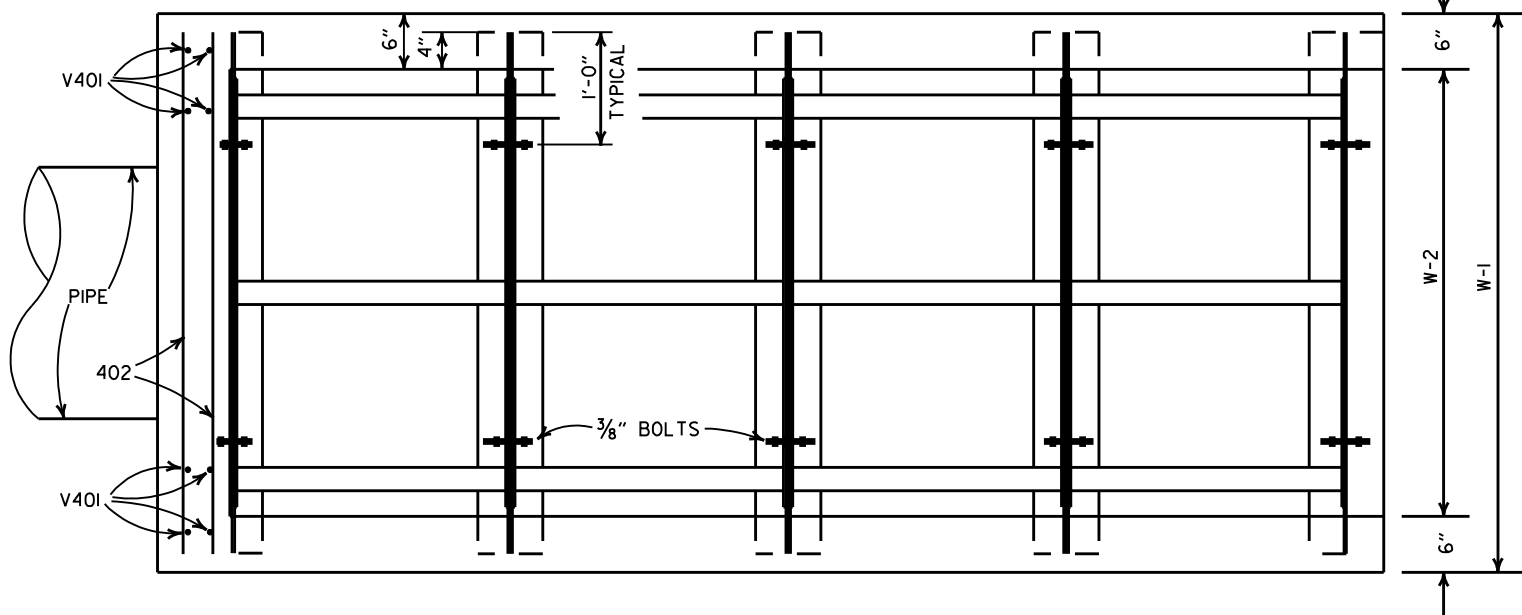
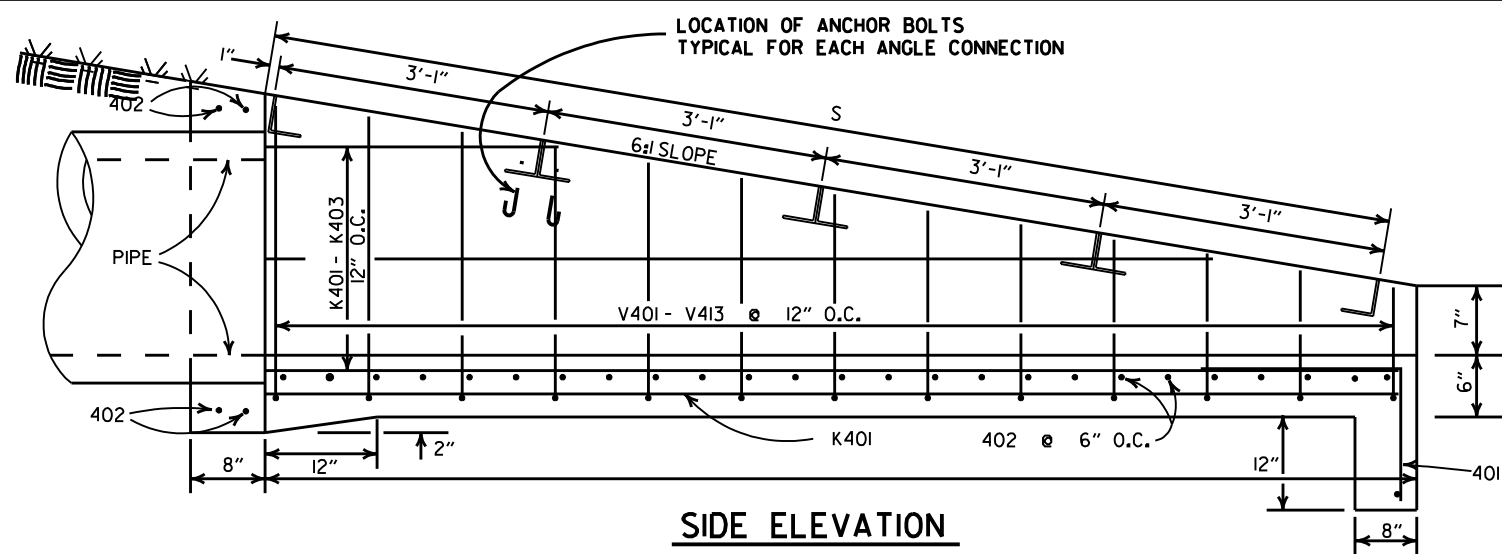
- THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN  $\pm 2$  PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.



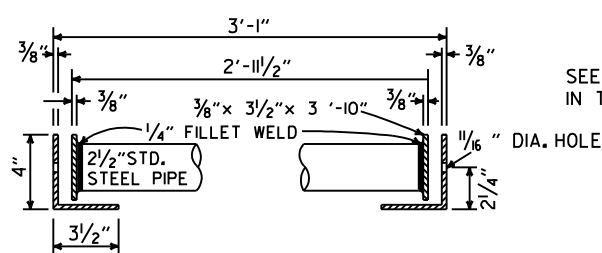
## END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

**CIRCULAR PIPE**

|          |                                                 |             |       |                                   |
|----------|-------------------------------------------------|-------------|-------|-----------------------------------|
| 10-18-96 | REVISED ASTM REF. TO AASHTO                     |             |       | ARKANSAS STATE HIGHWAY COMMISSION |
| 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 |       | FLARED END SECTION                |
| 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 |       | STANDARD DRAWING FES-2            |
| DATE     | REVISION                                        |             | FILED |                                   |

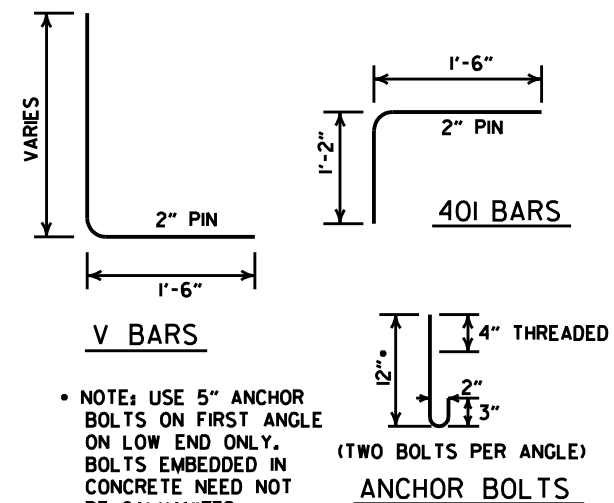
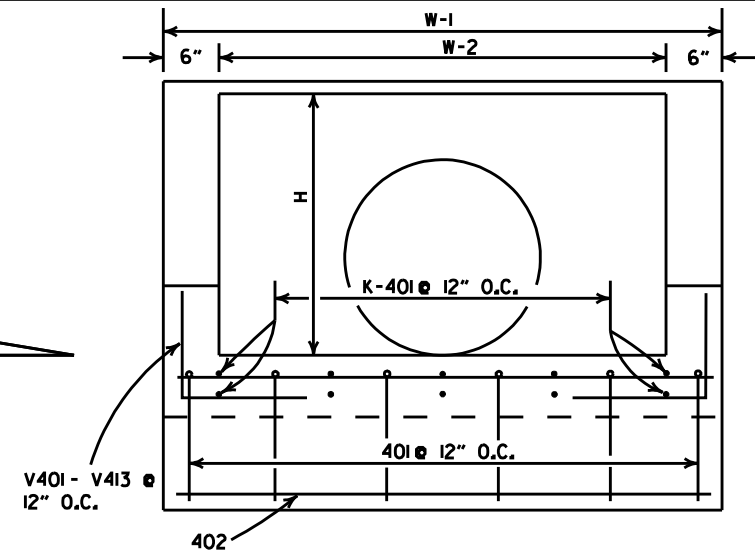
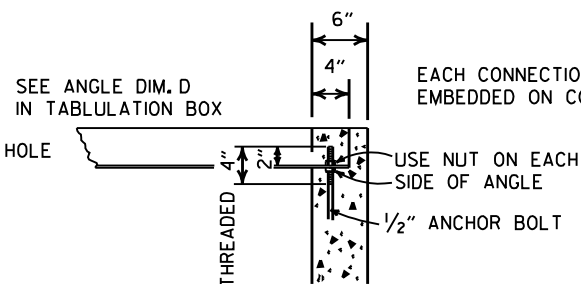


NOTE: 2 1/2" STANDARD STEEL PIPE  
TO BE VENTED FOR GALVANIZING.



## TYPICAL SECTION

FURNISH WASHERS WITH BOLTS



### BENDING DIAGRAM

(DIMENSIONS ARE OUTSIDE TO OUTSIDE)

## QUANTITIES & DIMENSIONS - ONE GRATE COMPLETE

| PIPE DIA. | W - 1 | W - 2 | L      | S         | H     | PANEL SIZE        | NUMBER OF PANELS | ANGLE DIMEN. D   | APPROX. CONC. QUANT. CU. YDS. |
|-----------|-------|-------|--------|-----------|-------|-------------------|------------------|------------------|-------------------------------|
| 24"       | 5'-0" | 4'-0" | 12'-6" | 12'-8"    | 2'-8" | 2'-11/2" x 3'-10" | 4                | 4" x 3/2" x 7/8" | 2.35                          |
| 30"       | 5'-0" | 4'-0" | 15'-6" | 15'-8"    | 3'-2" | 2'-11/2" x 3'-10" | 5                | 4" x 3/2" x 7/8" | 3.09                          |
| 18"       | 5'-0" | 4'-0" | 9'-6"  | 9'-7 1/2" | 2'-2" | 2'-11/2" x 3'-10" | 3                | 4" x 3/2" x 7/8" | 1.77                          |

## BAR LISTS - ONE HEADWALL

[illegible]

| 30" PIPE |        |     |
|----------|--------|-----|
| MRK      | LENGTH | NO. |
| 401      | 2'-8"  | 6   |
| 402      | 4'-8"  | 36  |
| K401     | 15'-2" | 10  |
| K402     | 13'-3" | 2   |
| K403     | 7'-3"  | 2   |
| K404     | 1'-3"  | 2   |
| V401     | 4'-11" | 10  |
| V402     | 4'-7"  | 2   |
| V403     | 4'-5"  | 2   |
| V404     | 4'-3"  | 2   |
| V405     | 4'-1"  | 2   |
| V406     | 3'-11" | 2   |
| V407     | 3'-9"  | 2   |
| V408     | 3'-7"  | 2   |
| V409     | 3'-5"  | 2   |
| V410     | 3'-3"  | 2   |
| V411     | 3'-1"  |     |
| V412     | 2'-11" |     |
| V413     | 2'-9"  |     |
| V414     | 2'-7"  |     |
| V415     | 2'-5"  |     |
| V416     | 2'-3"  |     |

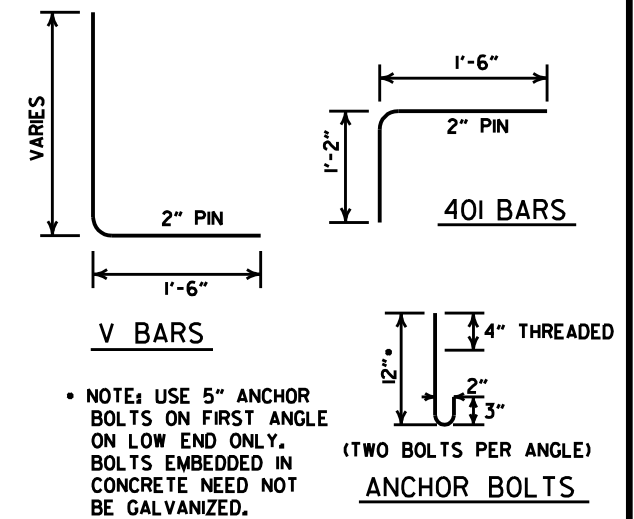
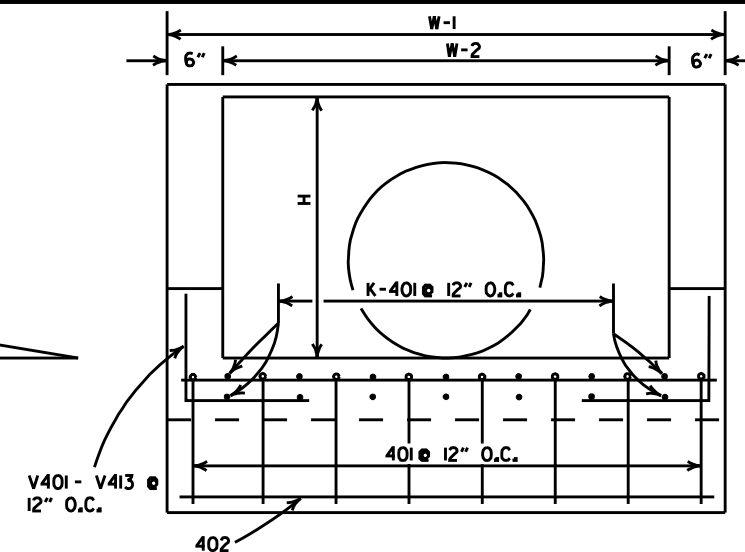
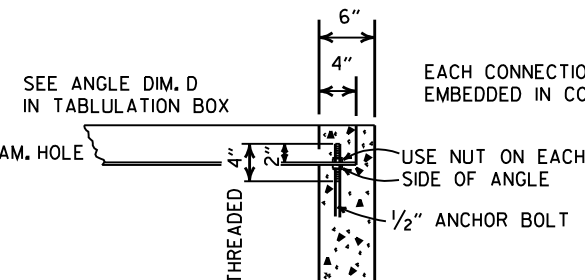
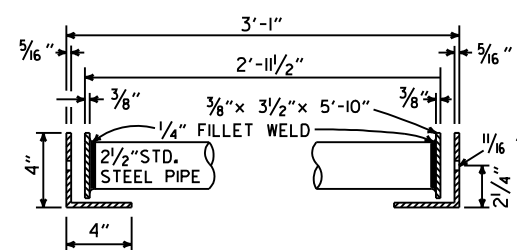
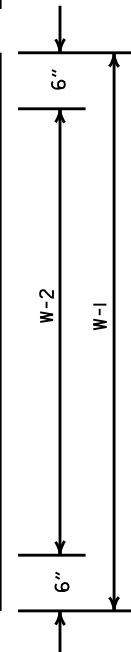
[illegible]

|         |                                       |             |
|---------|---------------------------------------|-------------|
|         |                                       |             |
|         |                                       |             |
|         |                                       |             |
| 8-15-91 | REVISED GRATE PANEL                   | 8-15-91     |
| 2-16-89 | ADDED (1TYPE D TO TITLE               | 581-2-16-89 |
| 7-15-88 | CHANGED TITLE                         | 641-7-15-88 |
| 2-18-75 | ADDED QTY'S & DIMENSIONS FOR 18" PIPE | 985-2-18-75 |
| 10-2-72 | REVISED & REDRAWN                     | 761-10-2-72 |
| DATE    | REVISION                              | DATE FILMED |

ARKANSAS STATE HIGHWAY COMMISSION

### STEEL GRATE ASSEMBLY (TYPE I)

STANDARD DRAWING G-1



### BENDING DIAGRAM

(DIMENSIONS ARE OUTSIDE TO OUTSIDE)

QUANTITIES & DIMENSIONS - ONE GRATE COMPLETE

| PIPE DIA. | W - 1 | W - 2 | L      | S           | H     | PANEL SIZE        | NUMBER OF PANELS | ANGLE DIMEN. D | APPROX. CONC. QUANT. CU. YDS. |
|-----------|-------|-------|--------|-------------|-------|-------------------|------------------|----------------|-------------------------------|
| 36"       | 7'-0" | 6'-0" | 18'-6" | 18'-9"      | 3'-8" | 2'-11/2" x 5'-10" | 6                | 4" x 4" x 3/8" | 4.55                          |
| 42"       | 7'-0" | 6'-0" | 21'-7" | 21'-10 1/2" | 4'-2" | 2'-11/2" x 5'-10" | 7                | 4" x 4" x 3/8" | 5.37                          |
| 48"       | 7'-0" | 6'-0" | 24'-8" | 25'-0"      | 4'-8" | 2'-11/2" x 5'-10" | 8                | 4" x 4" x 3/8" | 6.23                          |

## BAR LISTS - ONE HEADWALL

[illegible]

| MARK | LENGTH | NO. |
|------|--------|-----|
| 401  | 2'-8"  | 8   |
| 402  | 6'-8"  | 48  |
| K401 | 2'-3"  | 14  |
| K402 | 19'-3" | 2   |
| K403 | 13'-3" | 2   |
| K404 | 7'-3"  | 2   |
| K405 | 1'-3"  | 2   |
| V401 | 5'-11" | 10  |
| V402 | 5'-7"  | 2   |
| V403 | 5'-5"  | 2   |
| V404 | 5'-3"  | 2   |
| V405 | 5'-1"  | 2   |
| V406 | 4'-11" | 2   |
| V407 | 4'-9"  | 2   |
| V408 | 4'-7"  | 2   |
| V409 | 4'-5"  | 2   |
| V410 | 4'-3"  | 2   |
| V411 | 4'-1"  | 2   |
| V412 | 3'-11" | 2   |
| V413 | 3'-9"  | 2   |
| V414 | 3'-7"  | 2   |
| V415 | 3'-5"  | 2   |
| V416 | 3'-3"  | 2   |
| V417 | 3'-1"  | 2   |
| V418 | 2'-11" | 2   |
| V419 | 2'-9"  | 2   |
| V420 | 2'-7"  | 2   |
| V421 | 2'-5"  | 2   |
| V422 | 2'-3"  | 2   |

| MARK | LENGTH | NO. |
|------|--------|-----|
| 401  | 2'-8"  | 8   |
| 402  | 6'-8"  | 54  |
| K401 | 24'-4" | 14  |
| K402 | 22'-3" | 2   |
| K403 | 16'-3" | 2   |
| K404 | 10'-3" | 2   |
| K405 | 4'-3"  | 2   |
| V401 | 6'-5"  | 10  |
| V402 | 6'-1"  | 2   |
| V403 | 5'-11" | 2   |
| V404 | 5'-9"  | 2   |
| V405 | 5'-7"  | 2   |
| V406 | 5'-5"  | 2   |
| V407 | 5'-3"  | 2   |
| V408 | 5'-1"  | 2   |
| V409 | 4'-11" | 2   |
| V410 | 4'-9"  | 2   |
| V411 | 4'-7"  | 2   |
| V412 | 4'-5"  | 2   |
| V413 | 4'-3"  | 2   |
| V414 | 4'-1"  | 2   |
| V415 | 3'-11" | 2   |
| V416 | 3'-9"  | 2   |
| V417 | 3'-7"  | 2   |
| V418 | 3'-5"  | 2   |
| V419 | 3'-3"  | 2   |
| V420 | 3'-1"  | 2   |
| V421 | 2'-11" | 2   |
| V422 | 2'-9"  | 2   |
| V423 | 2'-7"  | 2   |
| V424 | 2'-5"  | 2   |
| V425 | 2'-3"  | 2   |

## STANDARD GRATE PANEL

NOTE: 2½" STANDARD STEEL PIPE  
TO BE VENTED FOR GALVANIZING.

### TYPICAL SECTION

**FURNISH WASHERS WITH BOLTS**

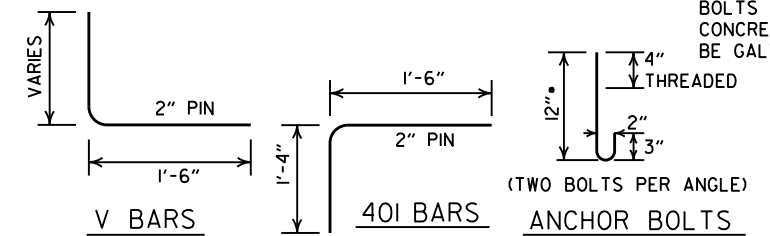
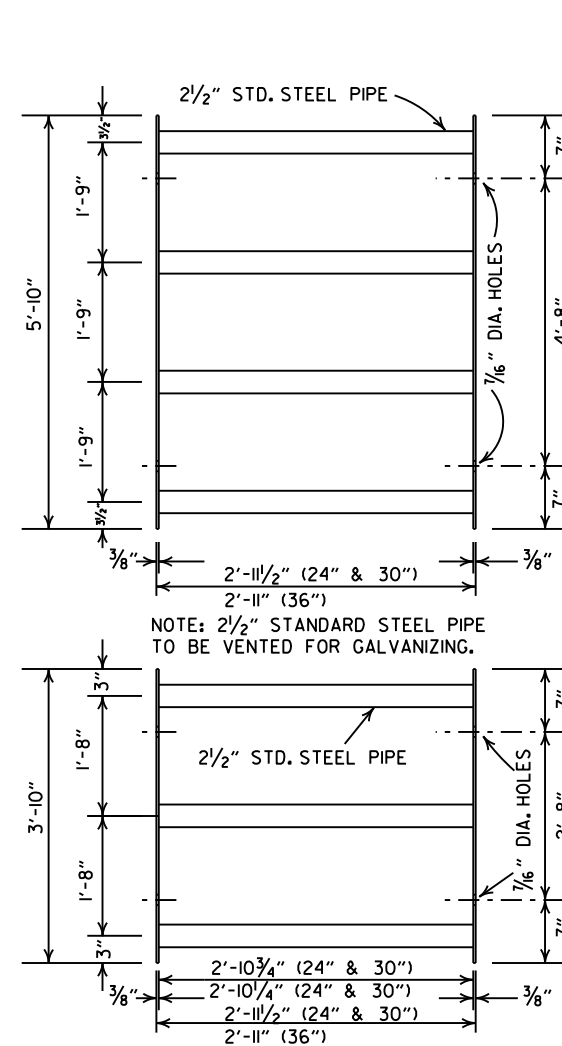
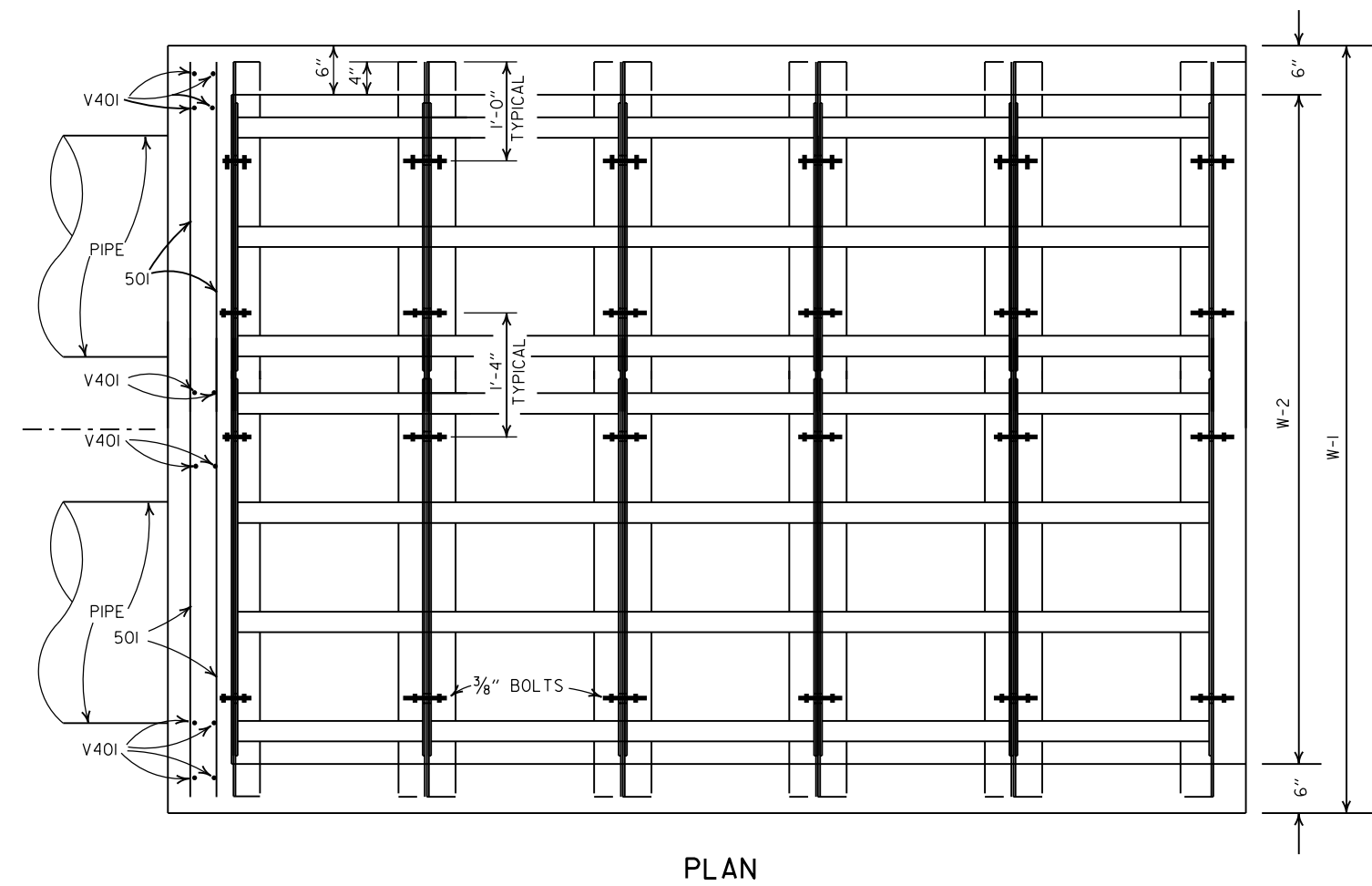
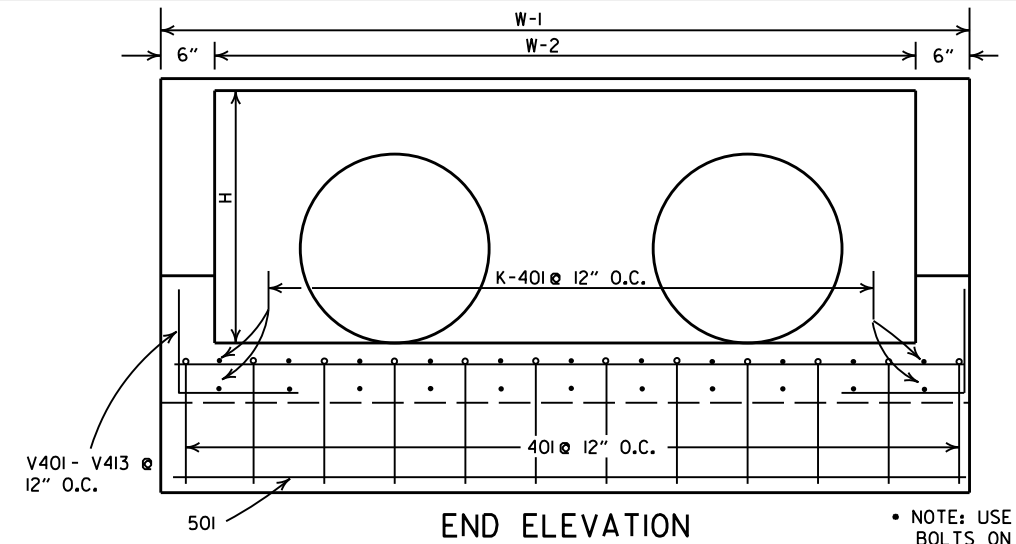
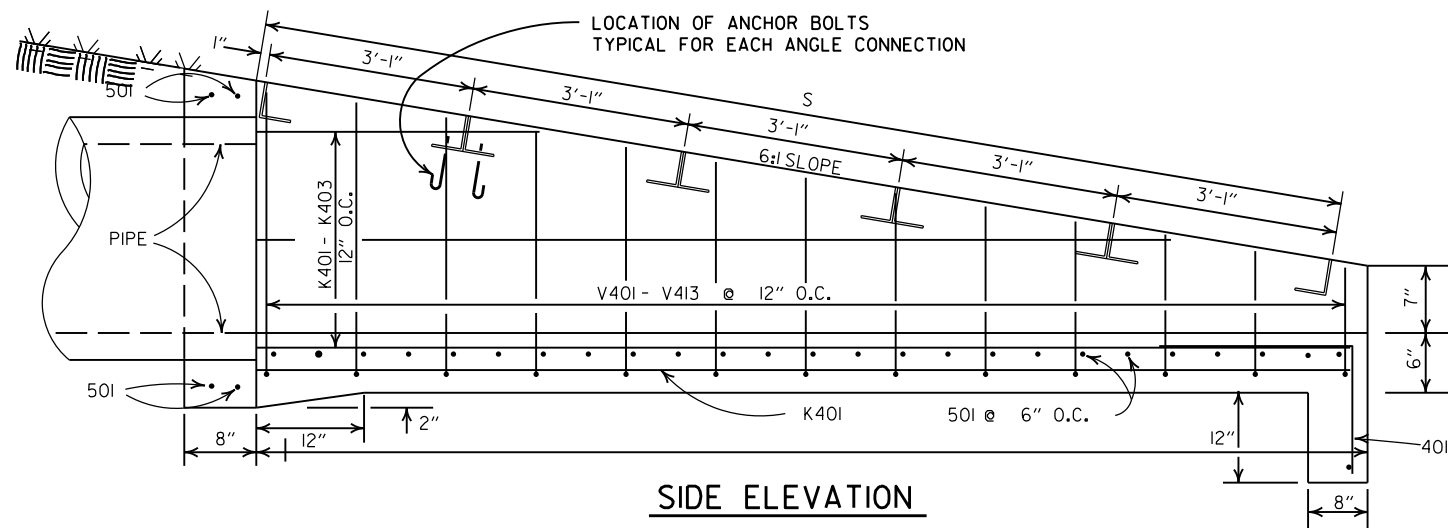
### DETAIL OF ANGLE CONNECTION

|         |                                     |             |
|---------|-------------------------------------|-------------|
| 8-15-91 | REVISED GATE PANEL                  | 8-15-91     |
| 2-16-89 | ADDED (TYPE II) TO TITLE            | 582-2-16-89 |
| 7-15-88 | CHANGED TITLE                       | 642-7-15-88 |
| 5-22-74 | W-1& W-2 CORRECTED ON PLAN VIEW     | 568-5-22-74 |
| 11-1-73 | ADDED NOTE RE: WASHER AT TYP. SECT. | 504-11-1-73 |
| 10-2-72 | REVISED & REDRAWN                   | 761-10-2-72 |
| DATE    | REVISION                            | DATE FILED  |

ARKANSAS STATE HIGHWAY COMMISSION

### STEEL GRATE ASSEMBLY (TYPE I)

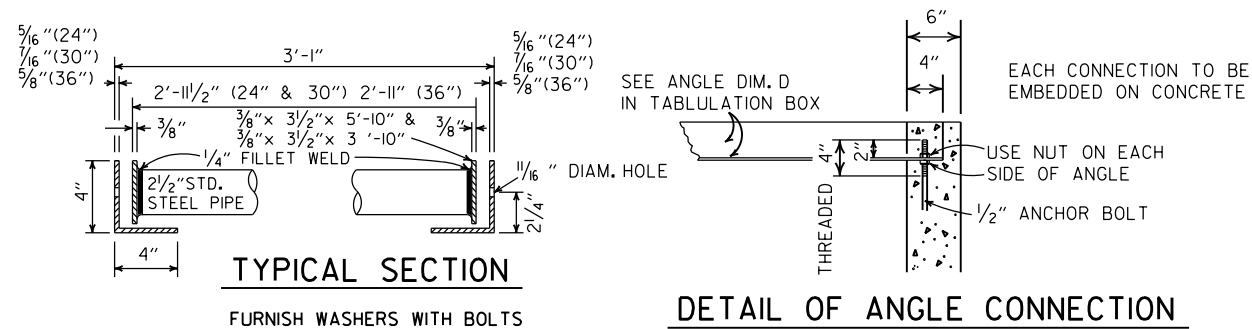
STANDARD DRAWING G-2



| QUANTITIES & DIMENSIONS - ONE GRATE COMPLETE |        |        |        |            |       |                     |                  |                |                               |
|----------------------------------------------|--------|--------|--------|------------|-------|---------------------|------------------|----------------|-------------------------------|
| PIPE DIA.                                    | W - 1  | W - 2  | L      | S          | H     | PANEL SIZE          | NUMBER OF PANELS | ANGLE DIMEN. D | APPROX. CONC. QUANT. CU. YDS. |
| DBL. 24"                                     | 9'-0"  | 8'-0"  | 12'-6" | 12'-8"     | 2'-8" | 2'-11 1/2" x 3'-10" | 8                | 4" x 4" x 3/8" | 4.30                          |
| DBL. 30"                                     | 11'-0" | 10'-0" | 15'-6" | 15'-8 1/2" | 3'-2" | 2'-11 1/2" x 3'-10" | 5                | 4" x 4" x 3/8" | 6.29                          |
| DBL. 36"                                     | 13'-0" | 12'-0" | 18'-6" | 18'-9"     | 3'-8" | 2'-11 1/2" x 3'-10" | 12               | 4" x 4" x 3/8" | 8.70                          |

#### BAR LISTS - ONE HEADWALL

| DBL. 24" PIPE |        |     | DBL. 30" PIPE |        |     | DBL. 36" PIPE |        |     |
|---------------|--------|-----|---------------|--------|-----|---------------|--------|-----|
| MARK          | LENGTH | NO. | MARK          | LENGTH | NO. | MARK          | LENGTH | NO. |
| 401           | 2'-10" | 10  | 401           | 2'-10" | 12  | 401           | 2'-10" | 12  |
| 501           | 8'-8"  | 30  | 501           | 10'-8" | 36  | 601           | 12'-8" | 42  |
| K401          | 12'-2" | 18  |               |        |     |               |        |     |
| K402          | 10'-3" | 2   | K401          | 15'-2" | 22  | K401          | 18'-2" | 26  |
| K403          | 4'-3"  | 2   | K402          | 13'-3" | 2   | K402          | 16'-3" | 2   |
| V401          | 5'-1"  | 14  | K403          | 7'-3"  | 2   | K403          | 10'-3" | 2   |
| V402          | 4'-9"  | 2   | K404          | 1'-3"  | 2   | K404          | 4'-3"  | 2   |
| V403          | 4'-7"  | 2   | V401          | 5'-7"  | 14  | V401          | 6'-1"  | 14  |
| V404          | 4'-5"  | 2   | V402          | 5'-3"  | 2   | V402          | 5'-9"  | 2   |
| V405          | 4'-3"  | 2   | V403          | 5'-1"  | 2   | V403          | 5'-7"  | 2   |
| V406          | 4'-1"  | 2   | V404          | 4'-11" | 2   | V404          | 5'-5"  | 2   |
| V407          | 3'-11" | 2   | V405          | 4'-9"  | 2   | V405          | 5'-3"  | 2   |
| V408          | 3'-9"  | 2   | V406          | 4'-7"  | 2   | V406          | 5'-1"  | 2   |
| V409          | 3'-7"  | 2   | V407          | 4'-5"  | 2   | V407          | 4'-11" | 2   |
| V410          | 3'-5"  | 2   | V408          | 4'-3"  | 2   | V408          | 4'-9"  | 2   |
| V411          | 3'-3"  | 2   | V409          | 4'-1"  | 2   | V409          | 4'-7"  | 2   |
| V412          | 3'-1"  | 2   | V410          | 3'-11" | 2   | V410          | 4'-5"  | 2   |
| V413          | 2'-11" | 2   | V411          | 3'-9"  | 2   | V411          | 4'-3"  | 2   |
|               |        |     | V412          | 3'-7"  | 2   | V412          | 4'-1"  | 2   |
|               |        |     | V413          | 3'-5"  | 2   | V413          | 3'-11" | 2   |
|               |        |     | V414          | 3'-3"  | 2   | V414          | 3'-9"  | 2   |
|               |        |     | V415          | 3'-1"  | 2   | V415          | 3'-7"  | 2   |
|               |        |     | V416          | 2'-11" | 2   | V416          | 3'-5"  | 2   |
|               |        |     |               |        |     | V417          | 3'-3"  | 2   |
|               |        |     |               |        |     | V418          | 3'-1"  | 2   |
|               |        |     |               |        |     | V419          | 2'-11" | 2   |

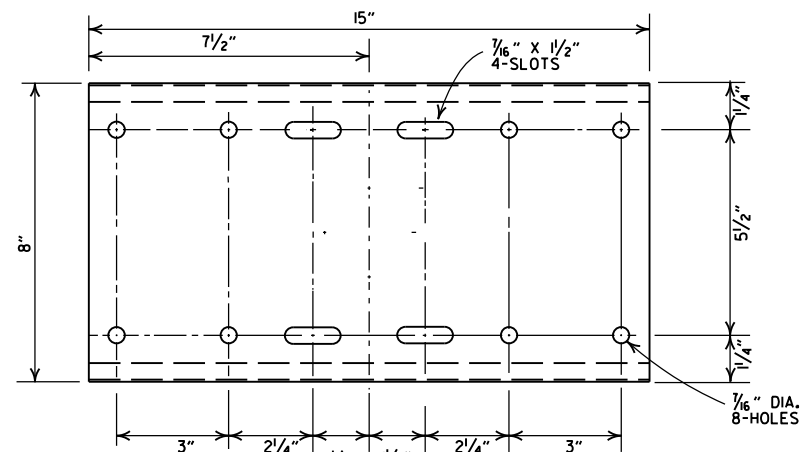


| DATE    | REVISION                | DATE FILMED |
|---------|-------------------------|-------------|
| 8-15-91 | REVISED GRATE PANEL     | 8-15-91     |
| 2-16-89 | ADDED (TYPE I) TO TITLE | 583-2-16-89 |
| 7-15-88 | CHANGED TITLE           | 643-7-15-88 |
| 10-2-72 | REVISED & REDRAWN       | 761-10-2-72 |

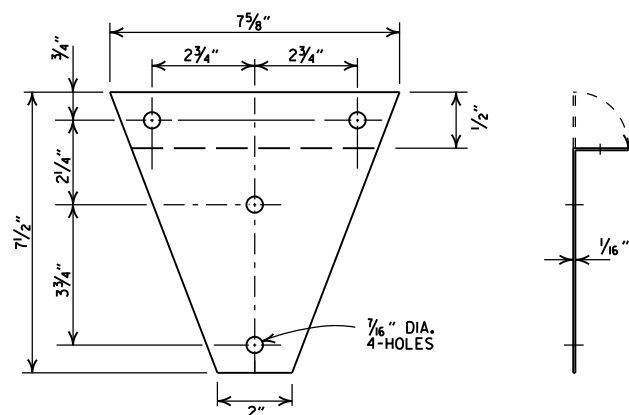
ARKANSAS STATE HIGHWAY COMMISSION

STEEL GRATE ASSEMBLY  
(TYPE I)

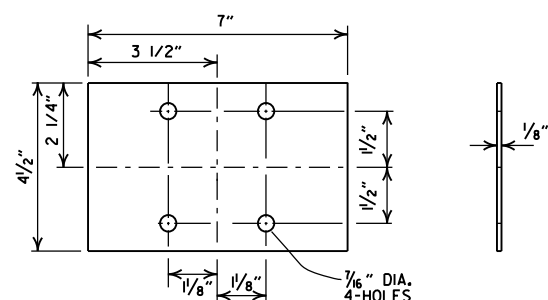
STANDARD DRAWING G-3



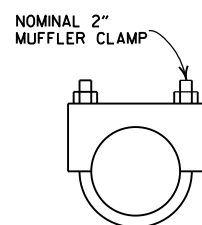
SHELF



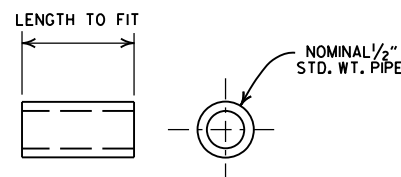
BRACKET



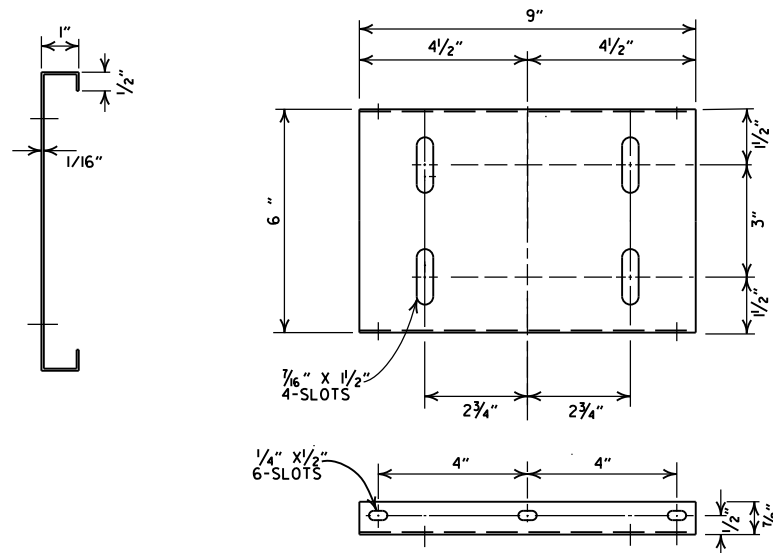
ANTI-TWIST PLATE



CLAMP



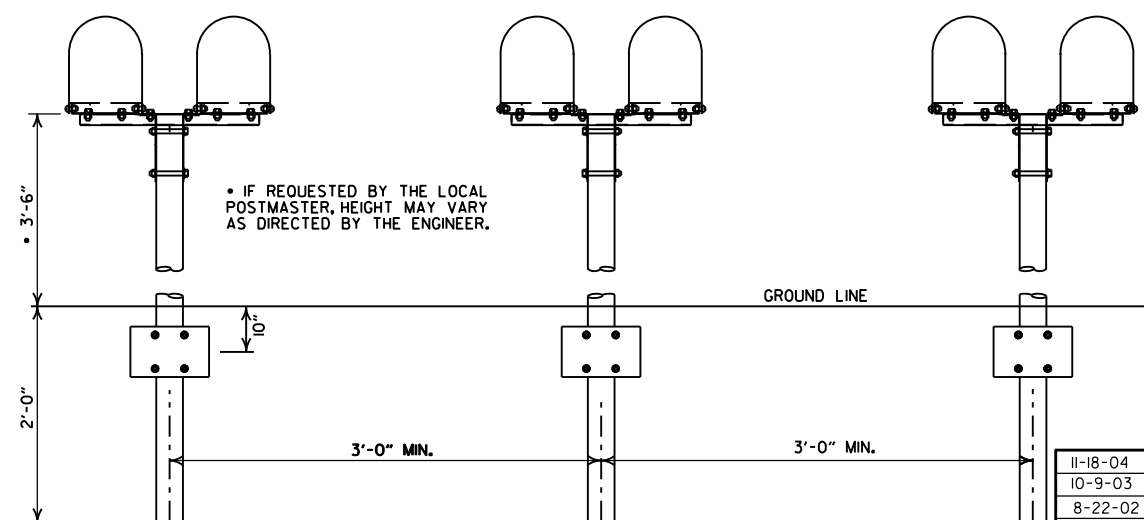
SPACER



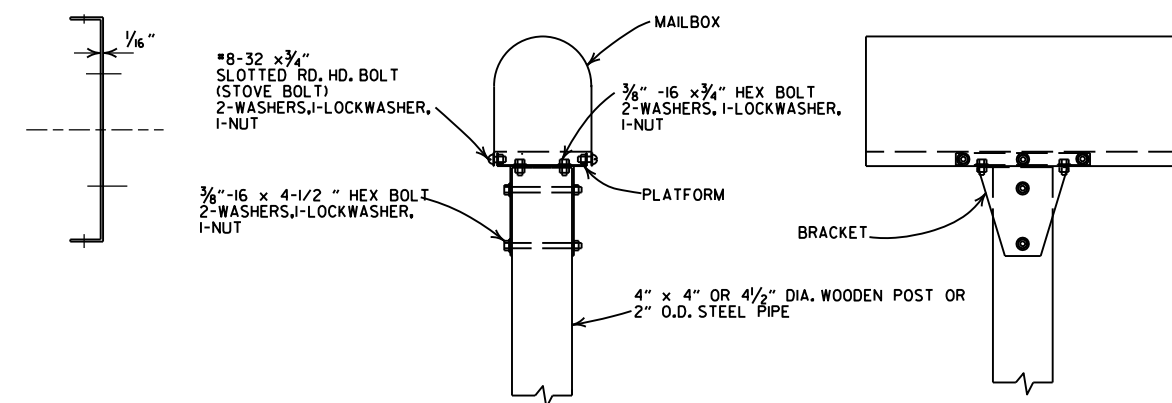
PLATFORM

# GENERAL NOTES

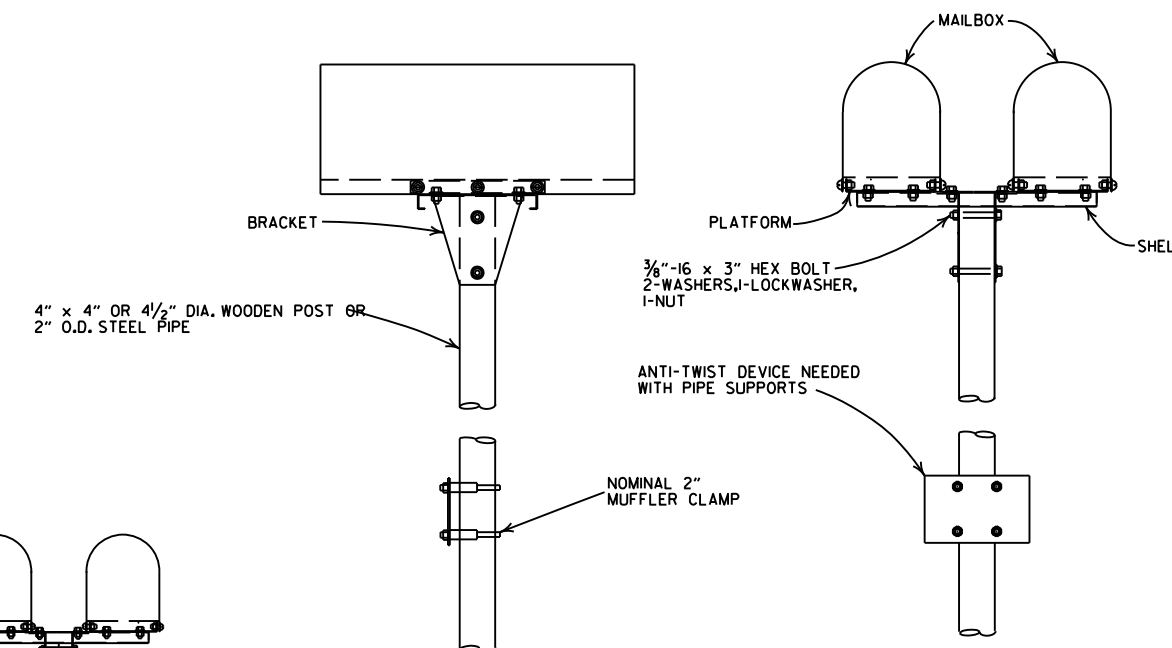
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED 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.



SPACING FOR MULTIPLE POST INSTALLATION



SINGLE INSTALLATION



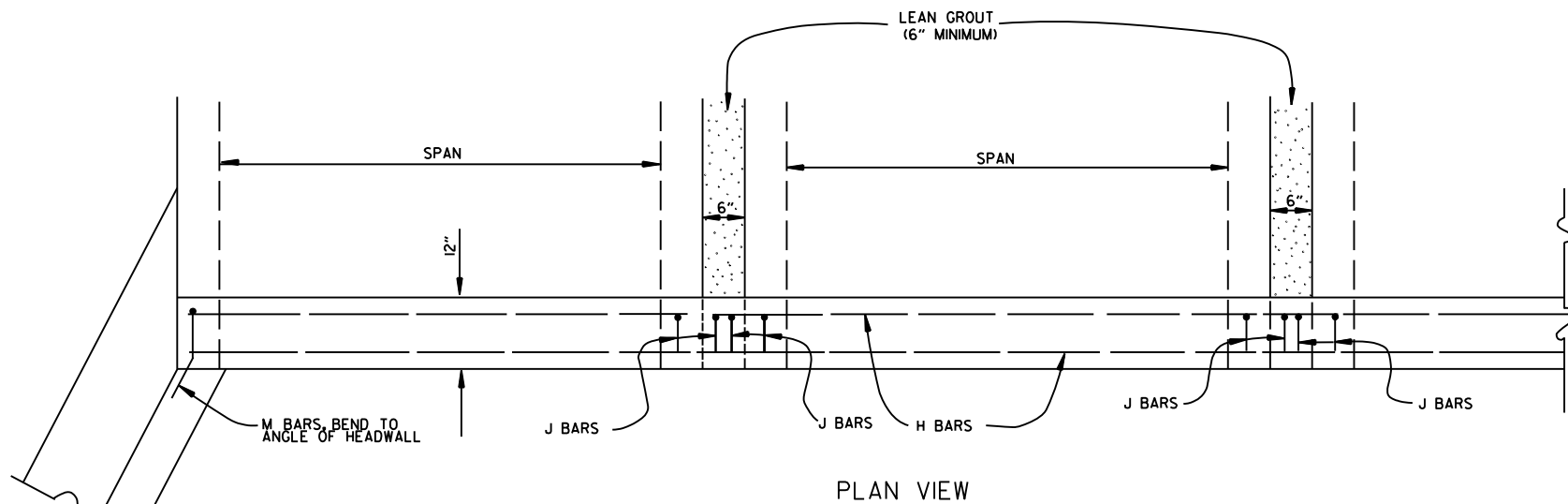
DOUBLE INSTALLATION

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

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1



| BAR LIST |     |      |        |                     |
|----------|-----|------|--------|---------------------|
| BAR      | NO. | SIZE | LENGTH | BAR BENDING DIAGRAM |
| H        | 2   | #4   | •      |                     |
| I        | •   | #4   | •      |                     |
| J        | •   | #4   | 1'-5"  |                     |
| L        | •   | #4   | 3'-2"  |                     |
| M        | •   | #4   | 1'-8"  |                     |

• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

#### GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING. STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE  $\frac{3}{4}$ " CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS: PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85. SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS. THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE. THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

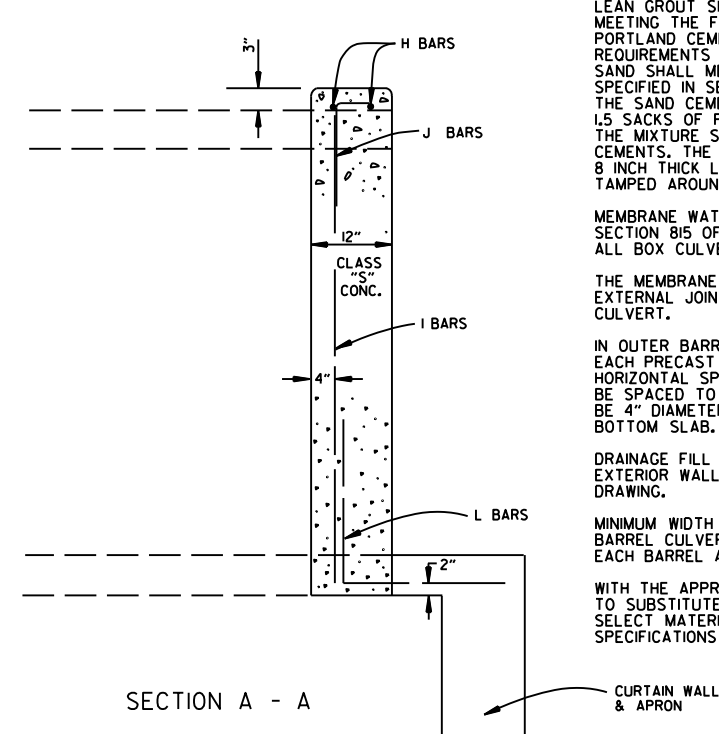
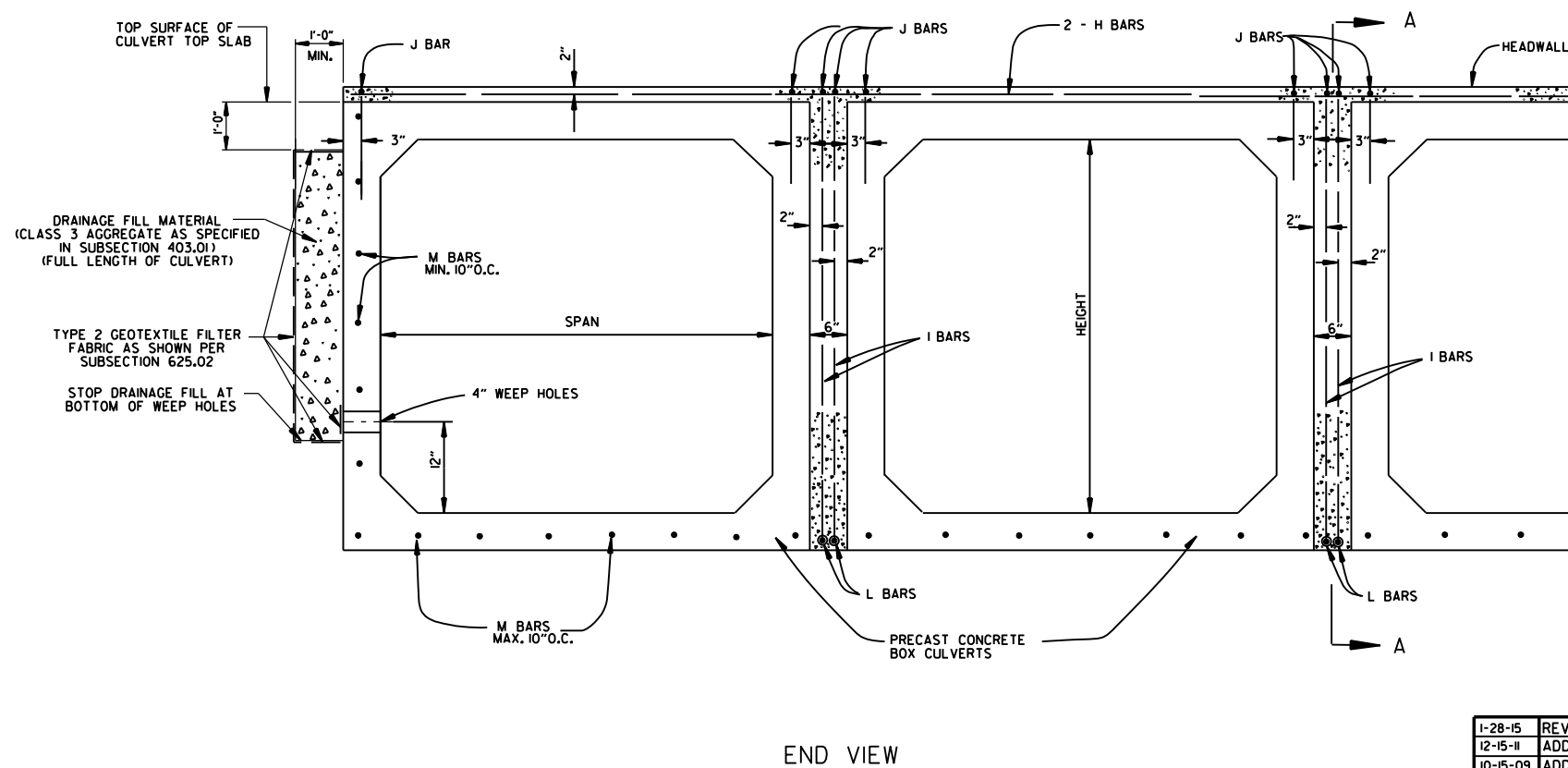
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.



|          |                                                   |             |
|----------|---------------------------------------------------|-------------|
| 1-28-15  | REVISED GEOTEXTILE FABRIC PLACEMENT               |             |
| 12-15-11 | ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL |             |
| 10-15-09 | ADDED GENERAL NOTE                                |             |
| 11-10-05 | REVISED SPACING OF "M" BARS                       |             |
| 4-10-03  | REVISED GENERAL NOTES                             |             |
| 10-18-96 | CORRECTED AASHTO REF.                             |             |
| 10-1-92  | ADDED NOTE FOR MEMBRANE WATERPROOFING             |             |
| 8-15-91  | ADDED NOTE FOR LEAN GROUT                         |             |
| 11- 8-90 | REVISED FOR 1991 SPECS                            |             |
| 11-30-89 | ISSUED: JABE                                      |             |
| DATE     | REVISION                                          | DATE FILMED |

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

REINFORCED CONCRETE  
ARCH PIPE DIMENSIONS

| EQUIV.<br>DIA. | SPAN            |                  | RISE            |                  |
|----------------|-----------------|------------------|-----------------|------------------|
|                | AASHTO<br>M 206 | ARDOT<br>NOMINAL | AASHTO<br>M 206 | ARDOT<br>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             | 43¾             | 44               | 26¾             | 27               |
| 42             | 51½             | 51               | 31¾             | 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              | 87½             | 87               |
| 120            | 154             | 154              | 96¾             | 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.<br>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.

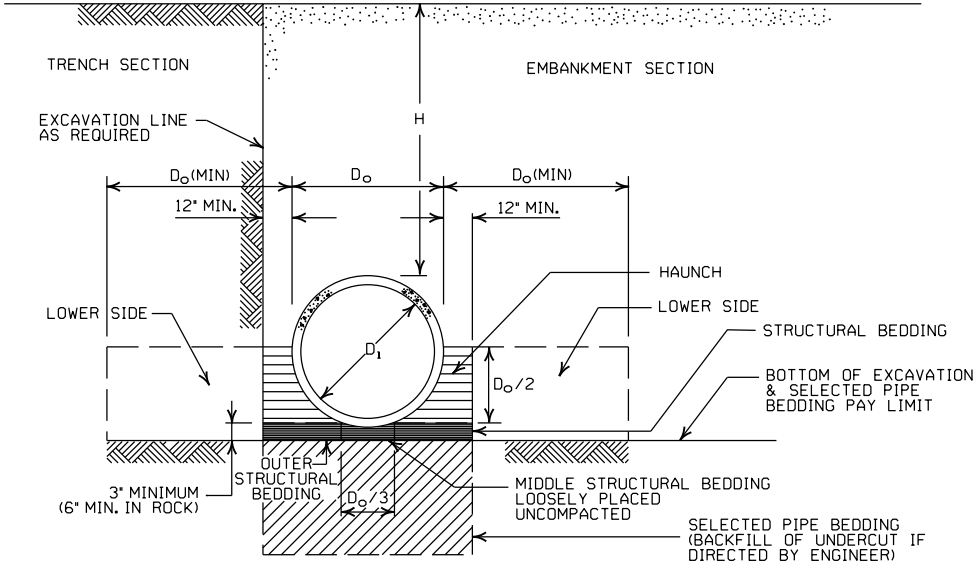
- LEGEND -

D<sub>i</sub> = NORMAL INSIDE DIAMETER OF PIPE  
D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE  
H = FILL COVER HEIGHT OVER PIPE (FEET)  
MIN. = MINIMUM  
= UNDISTURBED SOIL

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

\* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS 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 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.

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 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.

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.

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT  
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1



CORRUGATED STEEL PIPE (ROUND)

| PIPE<br>DIAMETER<br>(INCHES)                                                                        | ① MINIMUM<br>COVER TOP OF<br>PIPE TO TOP<br>OF GROUND<br>"H" (FEET) | MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET) |       |       |       |       |
|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------|-------|-------|-------|-------|
|                                                                                                     |                                                                     | METAL THICKNESS (INCHES)                      |       |       |       |       |
|                                                                                                     |                                                                     | 0.064                                         | 0.079 | 0.109 | 0.138 | 0.168 |
| 2 3/4 INCH BY 1/2 INCH CORRUGATION<br>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<br>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<br>DIAMETER<br>(INCHES) | ① MINIMUM<br>COVER TOP OF<br>PIPE TO TOP<br>OF GROUND<br>"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 3/4 INCH BY 1/2 INCH CORRUGATION<br>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.<br>DIA.<br>(INCHES) | PIPE<br>DIMENSION<br>SPAN X RISE<br>(INCHES) | MINIMUM<br>CORNER<br>RADIUS<br>(INCHES) | STEEL                                                                                       |                                                                             |                                   |                                                                                                                                                              | ALUMINUM                            |                                                                    |        |    |
|----------------------------|----------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------|--------|----|
|                            |                                              |                                         | MIN.<br>THICKNESS<br>REQUIRED<br>INCHES                                                     | ① MIN. HEIGHT OF<br>FILL, "H" (FT.)                                         | MAX. HEIGHT OF<br>FILL, "H" (FT.) | MIN.<br>THICKNESS<br>REQUIRED<br>INCHES                                                                                                                      | ① MIN. HEIGHT OF<br>FILL, "H" (FT.) | MAX. HEIGHT OF<br>FILL, "H" (FT.)                                  |        |    |
|                            |                                              |                                         |                                                                                             | INSTALLATION                                                                | INSTALLATION                      |                                                                                                                                                              | INSTALLATION                        | INSTALLATION                                                       |        |    |
|                            |                                              |                                         |                                                                                             | TYPE 1                                                                      | TYPE 1                            |                                                                                                                                                              | TYPE 1                              | TYPE 1                                                             |        |    |
|                            |                                              |                                         |                                                                                             | 2 3/4 INCH BY 1/2 INCH CORRUGATION<br>RIVETED, WELDED, OR HELICAL LOCK-SEAM |                                   |                                                                                                                                                              |                                     | 2 3/4 INCH BY 1/2 INCH CORRUGATION<br>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                                        | 3 1/2                                   | 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                                | 0.135                                                                                                                                                        | 3                                   | 15                                                                 |        |    |
| 66                         | 77x52                                        | 8                                       | 0.168                                                                                       | 3                                                                           | 15                                | ① FOR MINIMUM COVER VALUES, "H" SHALL<br>② WHERE THE STANDARD 2 2/3" x 1/2" COR<br>WITH A 3' x 1' OR 5' x 1' CORRUGATION<br>OR GREATER THAN THE MAXIMUM FILL |                                     |                                                                    |        |    |
| 72                         | 83x57                                        | 9                                       | 0.168                                                                                       | 3                                                                           | 15                                |                                                                                                                                                              |                                     |                                                                    |        |    |
|                            |                                              |                                         | ② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION<br>RIVETED, WELDED, OR HELICAL LOCK-SEAM |                                                                             |                                   |                                                                                                                                                              |                                     |                                                                    |        |    |
|                            |                                              |                                         | INSTALLATION                                                                                |                                                                             | INSTALLATION                      |                                                                                                                                                              |                                     |                                                                    |        |    |
|                            |                                              |                                         | TYPE 2                                                                                      | TYPE 1                                                                      | TYPE 2                            |                                                                                                                                                              |                                     |                                                                    | TYPE 1 |    |
| 36                         | 40x31                                        | 5                                       | 0.079                                                                                       | 3                                                                           | 2                                 |                                                                                                                                                              |                                     |                                                                    | 12     | 15 |
| 42                         | 46x36                                        | 6                                       | 0.079                                                                                       | 3                                                                           | 2                                 |                                                                                                                                                              |                                     |                                                                    | 13     | 15 |
| 48                         | 53x41                                        | 7                                       | 0.079                                                                                       | 3                                                                           | 2                                 |                                                                                                                                                              |                                     |                                                                    | 13     | 15 |
| 54                         | 60x46                                        | 8                                       | 0.079                                                                                       | 3                                                                           | 2                                 |                                                                                                                                                              |                                     |                                                                    | 13     | 15 |
| 60                         | 66x51                                        | 9                                       | 0.079                                                                                       | 3                                                                           | 2                                 |                                                                                                                                                              |                                     |                                                                    | 13     | 15 |
| 66                         | 73x55                                        | 12                                      | 0.079                                                                                       | 3                                                                           | 2                                 | 15                                                                                                                                                           | 15                                  |                                                                    |        |    |
| 72                         | 81x59                                        | 14                                      | 0.079                                                                                       | 3                                                                           | 2                                 | 15                                                                                                                                                           | 15                                  |                                                                    |        |    |
| 78                         | 87x63                                        | 14                                      | 0.079                                                                                       | 3                                                                           | 2                                 | 15                                                                                                                                                           | 15                                  |                                                                    |        |    |
| 84                         | 95x67                                        | 16                                      | 0.109                                                                                       | 3                                                                           | 2                                 | 15                                                                                                                                                           | 15                                  |                                                                    |        |    |
| 90                         | 103x71                                       | 16                                      | 0.109                                                                                       | 3                                                                           | 2                                 | 15                                                                                                                                                           | 15                                  |                                                                    |        |    |
| 96                         | 112x75                                       | 18                                      | 0.109                                                                                       | 3                                                                           | 2                                 | 15                                                                                                                                                           | 15                                  |                                                                    |        |    |
| 102                        | 117x79                                       | 18                                      | 0.109                                                                                       | 3                                                                           | 2                                 | 15                                                                                                                                                           | 15                                  |                                                                    |        |    |
| 108                        | 128x83                                       | 18                                      | 0.138                                                                                       | 3                                                                           | 2                                 | 15                                                                                                                                                           | 15                                  |                                                                    |        |    |

CONSTRUCTION SEQUENCE

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

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

| INSTALLATION<br>TYPE | MATERIAL REQUIREMENTS FOR<br>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)<br>OR TYPE 1 INSTALLATION MATERIAL ③ |

③ SM-3 WILL NOT BE ALLOWED.

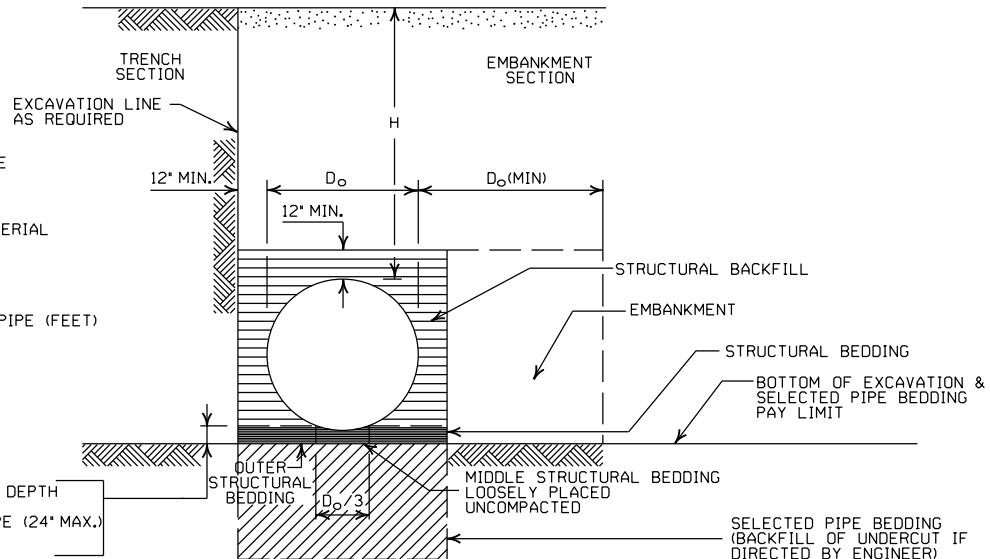
EQUIVALENT METAL THICKNESSES AND GAUGES

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

- LEGEND -

- D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE  
MAX. = MAXIMUM  
MIN. = MINIMUM  
===== = STRUCTURAL BACKFILL MATERIAL  
||||||| = UNDISTURBED SOIL  
EQUIV. DIA. = EQUIVALENT DIAMETER  
H = FILL COVER HEIGHT OVER PIPE (FEET)

IN SOIL-MIN. EQUALS TWICE CORRUGATION DEPTH  
IN ROCK-MIN. EQUALS GREATER OF:  
1/2" PER FOOT OF FILL OVER PIPE (24" MAX.)  
TWICE CORRUGATION DEPTH



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. INSTALLATION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2 3/4" X 1/2" 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 1/2" 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.

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

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 1/2 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<br>DIAMETER | TRENCH WIDTH<br>(FEET) |              |
|------------------|------------------------|--------------|
|                  | "H" < 10'-0"           | "H" ≥ 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"       |

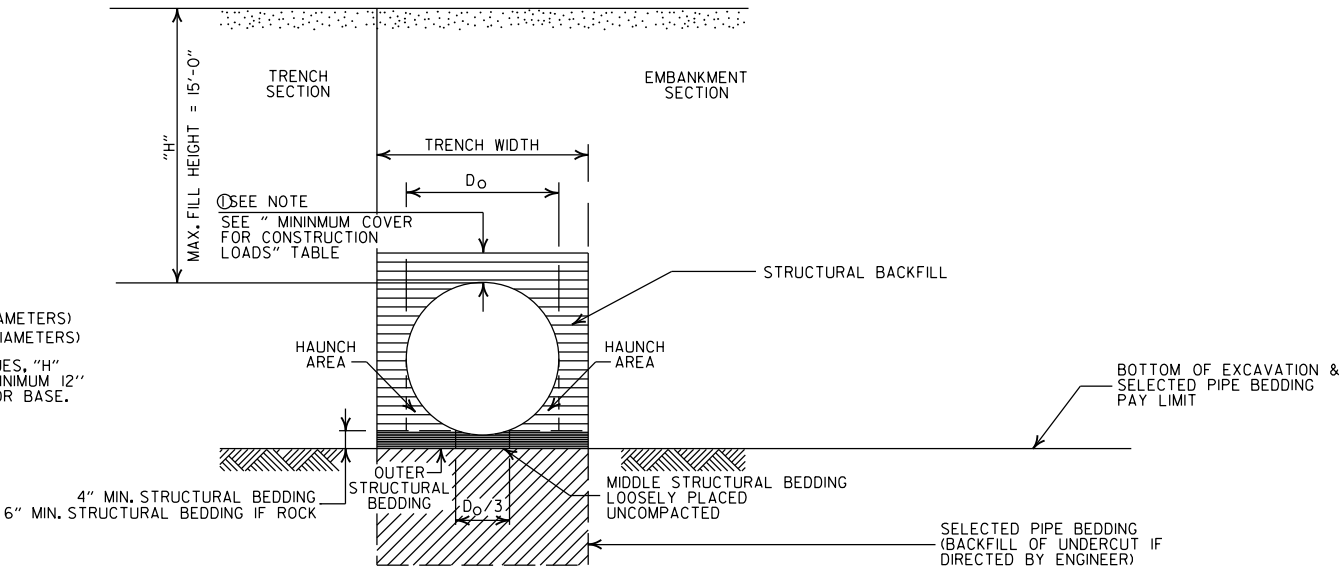
NOTE:  
18" MIN. (18" - 30" DIAMETERS)  
24" MIN. (36" - 48" DIAMETERS)  
MINIMUM COVER VALUES, "H"  
SHALL INCLUDE A MINIMUM 12"  
OF PAVEMENT AND/OR BASE.

MULTIPLE INSTALLATION OF  
HIGH DENSITY POLYETHYLENE PIPES

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

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

- 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

- PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
- INSTALL PIPE TO GRADE.
- COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
- 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.
- PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

- LEGEND -

- H = FILL HEIGHT (FT.)  
Do = OUTSIDE DIAMETER OF PIPE  
MAX. = MAXIMUM  
MIN. = MINIMUM
- ===== = STRUCTURAL BACKFILL MATERIAL  
===== = UNDISTURBED SOIL

GENERAL NOTES

- PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
- PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
- 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.
- 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.
- 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."
- 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."
- 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.
- HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
- 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.

|          |                                            |             |                                                     |
|----------|--------------------------------------------|-------------|-----------------------------------------------------|
|          |                                            |             | ARKANSAS STATE HIGHWAY COMMISSION                   |
|          |                                            |             | PLASTIC PIPE CULVERT<br>(HIGH DENSITY POLYETHYLENE) |
|          |                                            |             | STANDARD DRAWING PCP-1                              |
| 2-27-14  | REVISED GENERAL NOTE 1.                    |             |                                                     |
| 12-15-11 | REVISED GENERAL NOTES & MINIMUM COVER NOTE |             |                                                     |
| 11-17-10 | ISSUED                                     |             |                                                     |
| DATE     | REVISION                                   | DATE FILMED |                                                     |

| 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 1/4 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MINIMUM TRENCH WIDTH  
BASED ON FILL HEIGHT "H"

| PIPE DIAMETER | TRENCH WIDTH (FEET) |              |
|---------------|---------------------|--------------|
|               | "H" < 10'-0"        | "H" ≥ 10'-0" |
| 18"           | 4'-6"               | 4'-6"        |
| 24"           | 5'-0"               | 6'-0"        |
| 30"           | 5'-6"               | 7'-6"        |
| 36"           | 6'-0"               | 9'-0"        |

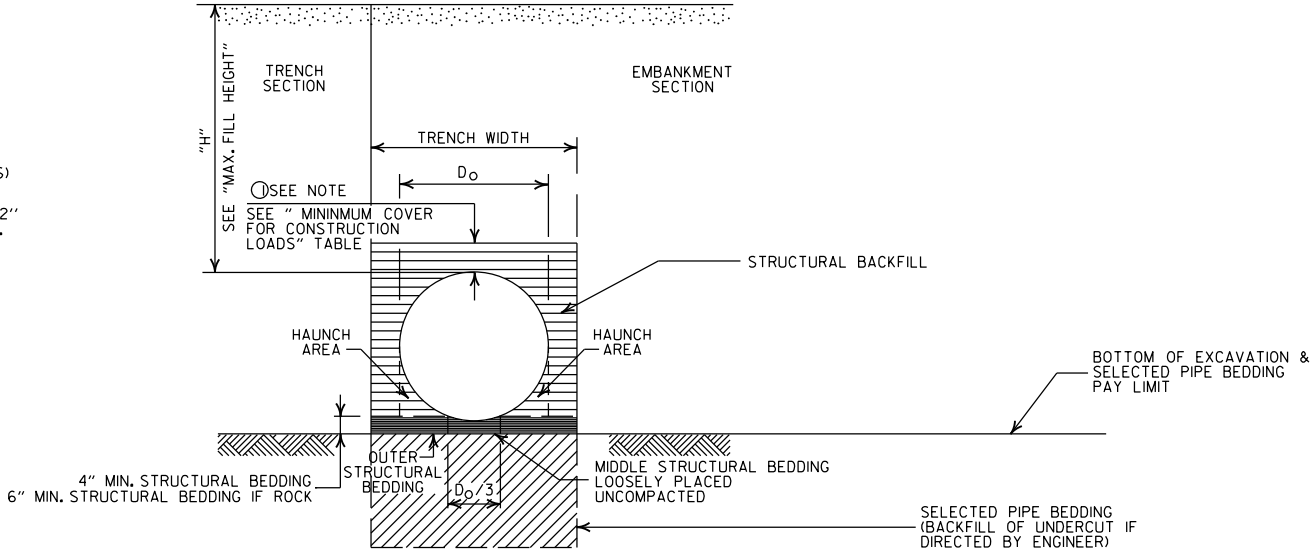
MULTIPLE INSTALLATION OF  
PVC PIPES

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

MAXIMUM FILL HEIGHT  
BASED ON STRUCTURAL BACKFILL

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

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



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.

- LEGEND -

H = FILL HEIGHT (FT.)  
D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE  
MAX. = MAXIMUM  
MIN. = MINIMUM

===== = STRUCTURAL BACKFILL MATERIAL  
XXXXXX = UNDISTURBED SOIL

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 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.

|          |                                                              |             |
|----------|--------------------------------------------------------------|-------------|
|          |                                                              |             |
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|          |                                                              |             |
|          |                                                              |             |
| 2-27-14  | REVISED GENERAL NOTE 1.                                      |             |
| 12-15-11 | REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL |             |
| 11-17-10 | ISSUED                                                       |             |
| DATE     | REVISION                                                     | DATE FILMED |

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) OR TYPE 1 INSTALLATION 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 POLYPROPYLENE PIPE.

#### MULTIPLE INSTALLATION OF POLYPROPYLENE 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"

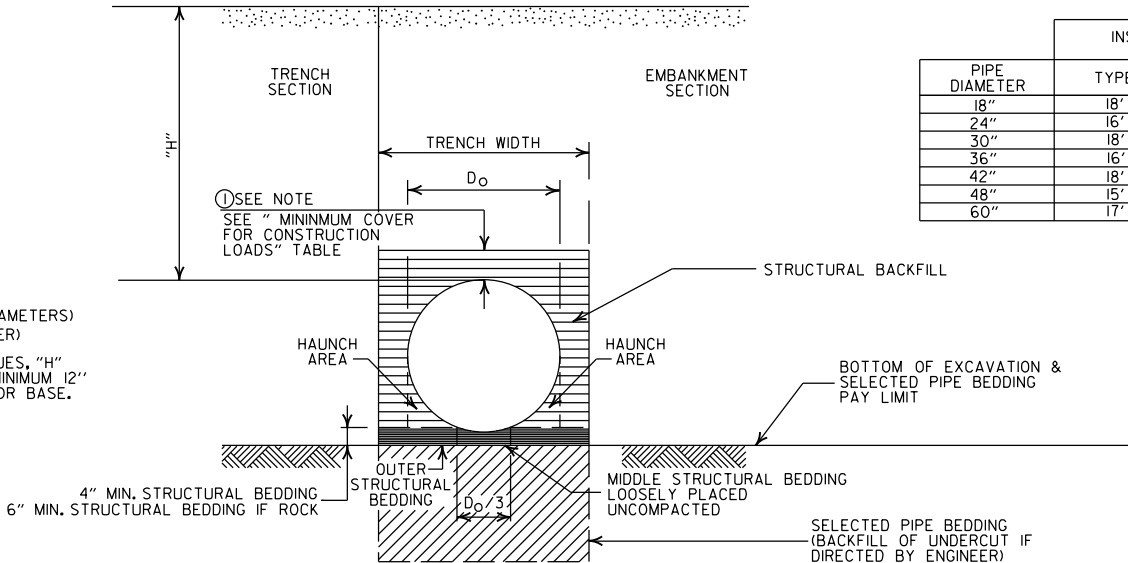
| PIPE DIAMETER | TRENCH WIDTH (FEET) |                 |
|---------------|---------------------|-----------------|
|               | "H" < 10'-0"        | "H" >OR= 10'-0" |
| 18"           | 4'-6"               | 4'-6"           |
| 24"           | 5'-0"               | 6'-0"           |
| 30"     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

①NOTE:  
12" MIN. (18" - 42" DIAMETERS)  
24" MIN. (60" DIAMETER)  
MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

#### MINIMUM COVER FOR CONSTRUCTION LOADS

| PIPE DIAMETER  | ② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS |                  |                   |                    |
|----------------|------------------------------------------------------|------------------|-------------------|--------------------|
|                | 18.0-50.0 (KIPS)                                     | 50.0-75.0 (KIPS) | 75.0-110.0 (KIPS) | 110.0-150.0 (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.



#### EMBANKMENT AND TRENCH INSTALLATIONS

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

#### CONSTRUCTION SEQUENCE

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

#### GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M330, TYPE S. 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, SIXTH EDITION (2012) WITH 2013 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. POLYPROPYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR POLYPROPYLENE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN SECTION 26.4.2.4 AND 30.4.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS 3RD EDITION (2010) WITH 2012 INTERIMS. JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

#### - LEGEND -

H = FILL HEIGHT (FT.)  
D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE  
MAX. = MAXIMUM  
MIN. = MINIMUM

===== = STRUCTURAL BACKFILL MATERIAL  
||||||| = UNDISTURBED SOIL

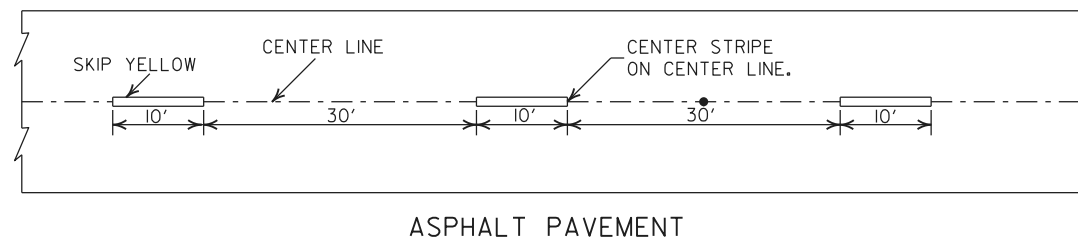
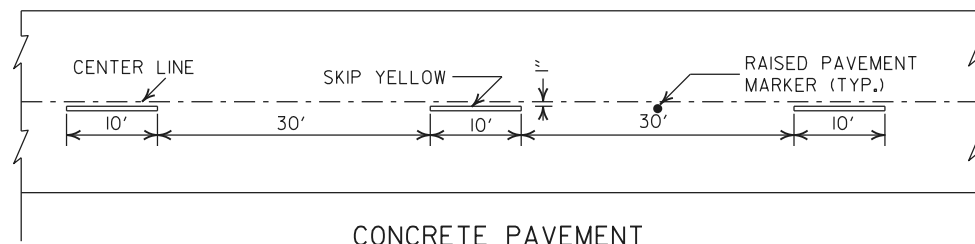
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|          |          |             |
| 02-27-20 | REVISED  |             |
| 11-07-19 | ISSUED   |             |
| DATE     | REVISION | DATE FILMED |

ARKANSAS STATE HIGHWAY COMMISSION

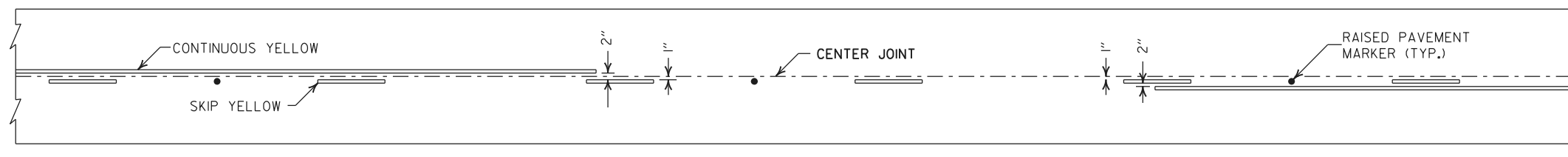
PLASTIC PIPE CULVERT  
(POLYPROPYLENE)

STANDARD DRAWING PCP-3





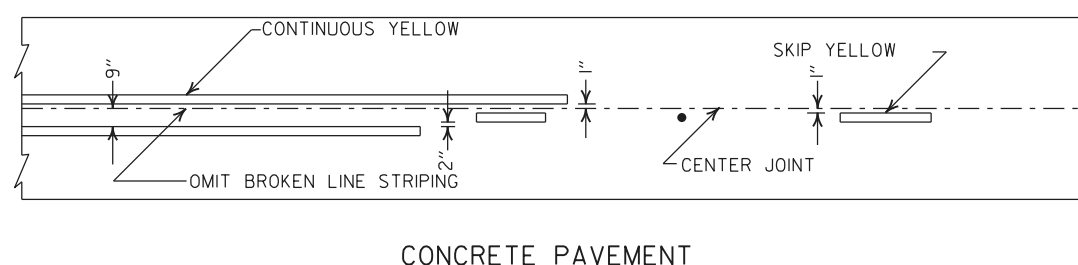
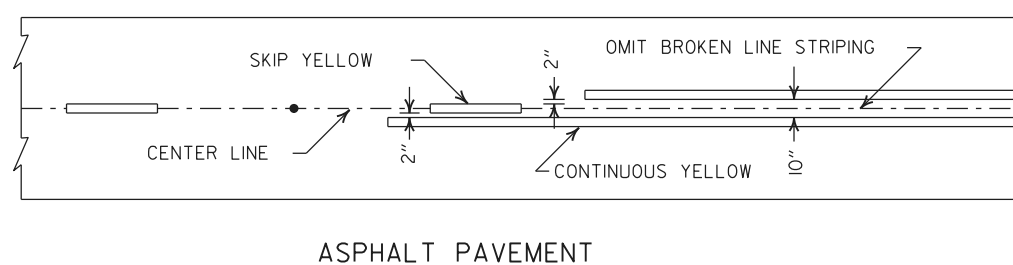
### BROKEN LINE STRIPING



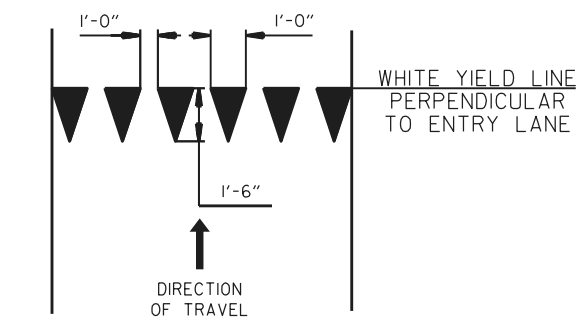
### SOLID LINE STRIPING ON CONCRETE PAVEMENT



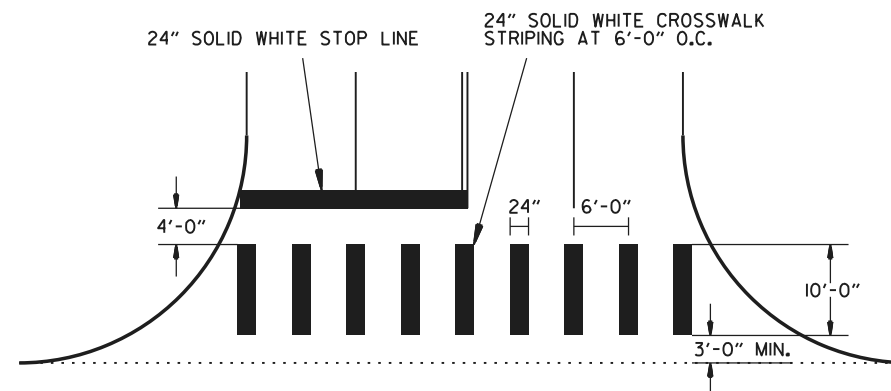
### SOLID LINE STRIPING ON ASPHALT PAVEMENT



### STRIPING AT ADJACENT NO PASSING LANES



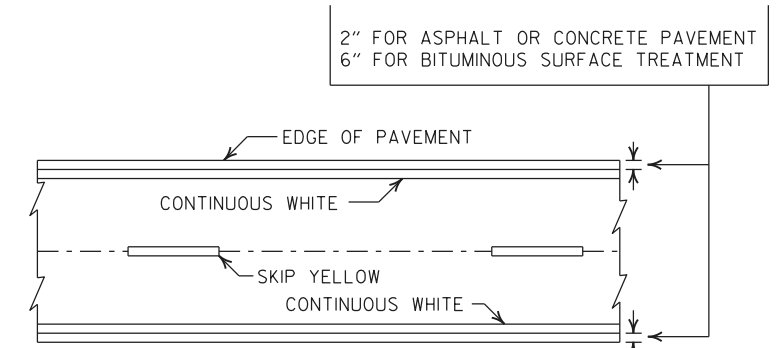
### YIELD LINE DETAIL



### CROSSWALK AND STOP LINE DETAILS

#### NOTES:

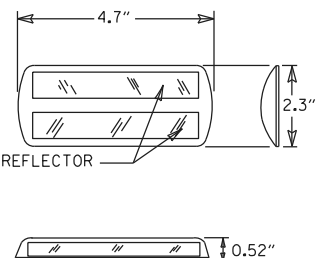
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.



### PAVEMENT EDGE LINE MARKING

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

TYPE II  
RED/CLEAR OR  
YELLOW/YELLOW  
PRISMATIC REFLECTOR



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.

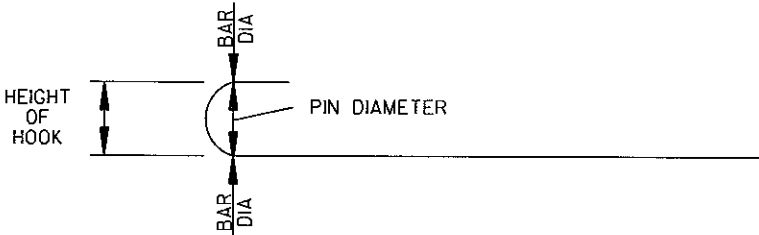
### DETAIL OF STANDARD RAISED PAVEMENT MARKERS

|                                    |          |                                                                                       |                                   |  |
|------------------------------------|----------|---------------------------------------------------------------------------------------|-----------------------------------|--|
| REV. CROSSWALK & STOP LINE DETAILS |          |  | ARKANSAS STATE HIGHWAY COMMISSION |  |
| 04-09-26                           | 02-27-20 |                                                                                       | PAVEMENT MARKING DETAILS          |  |
| 06-01-17                           | 05-12-16 |                                                                                       |                                   |  |
| 09-12-13                           |          |                                                                                       |                                   |  |
|                                    |          |                                                                                       |                                   |  |
| DATE                               | REV      | DESCRIPTION                                                                           |                                   |  |
| DATE EFFECTIVE                     |          | STANDARD DRAWING                                                                      | PM-1                              |  |
| 04-09-2026                         |          |                                                                                       |                                   |  |

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

| BAR SIZE | PIN DIAMETER | HOOK EXTENSION "K" |
|----------|--------------|--------------------|
| 3        | 2 1/4"       | 4"                 |
| 4        | 3 "          | 4 1/2"             |
| 5        | 3 3/4"       | 5"                 |
| 6        | 4 1/2"       | 6"                 |
| 7        | 5 1/4"       | 7"                 |
| 8        | 6"           | 8"                 |

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2 3/4 INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

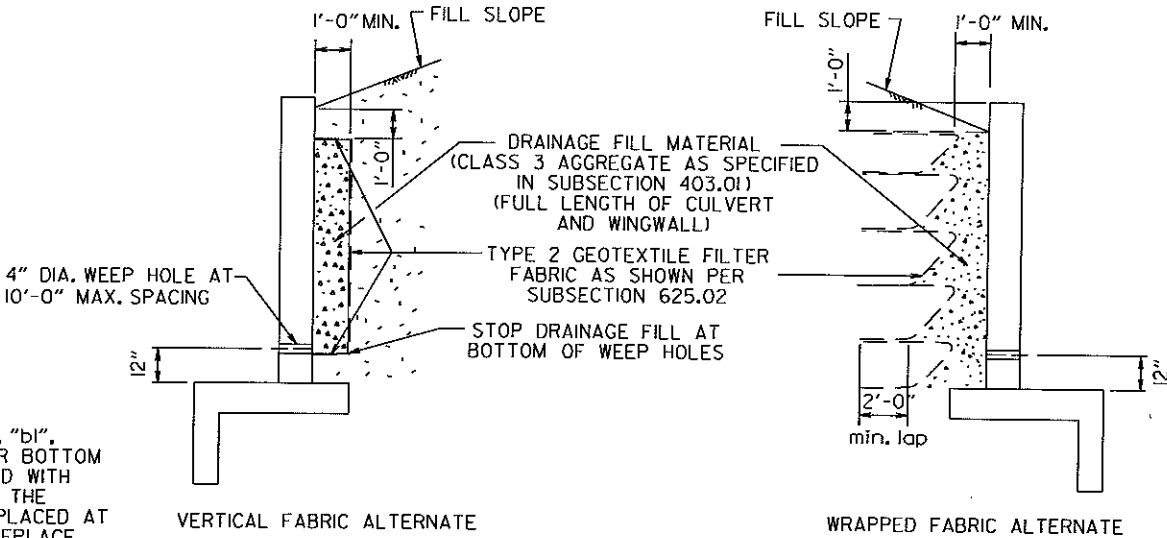
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

| BAR SIZE:<br>"b", "b1", "b2" OR "b3" | LENGTH OF<br>HOOKED BAR | LENGTH OF<br>STRAIGHT BAR |
|--------------------------------------|-------------------------|---------------------------|
| #4                                   | L + 1' - 0"             | SEE "c" BAR LENGTH        |
| #5                                   | L + 1' - 2"             | SEE "c" BAR LENGTH        |
| #6                                   | L + 1' - 4"             | SEE "c" BAR LENGTH        |
| #7                                   | L + 1' - 8"             | SEE "c" BAR LENGTH        |
| #8                                   | L + 1' - 10"            | SEE "c" BAR LENGTH        |
| #9                                   | L + 2' - 6"             | SEE "c" BAR LENGTH        |

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI. REINFORCING STEEL SHALL BE AASHTO M 31OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

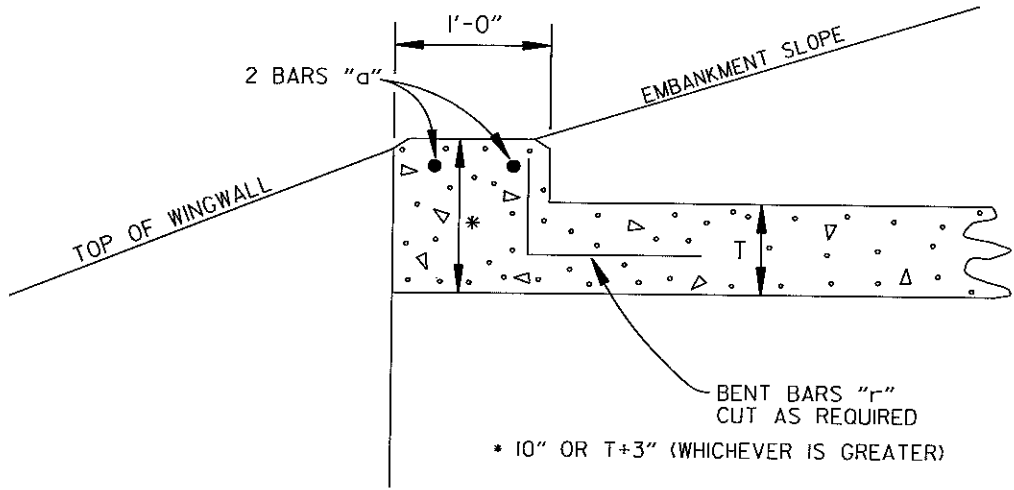
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS 1/2 INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

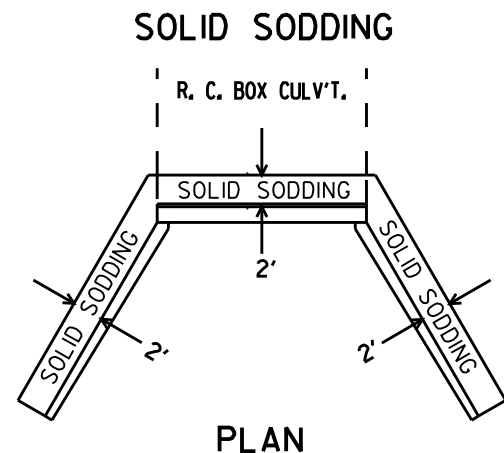
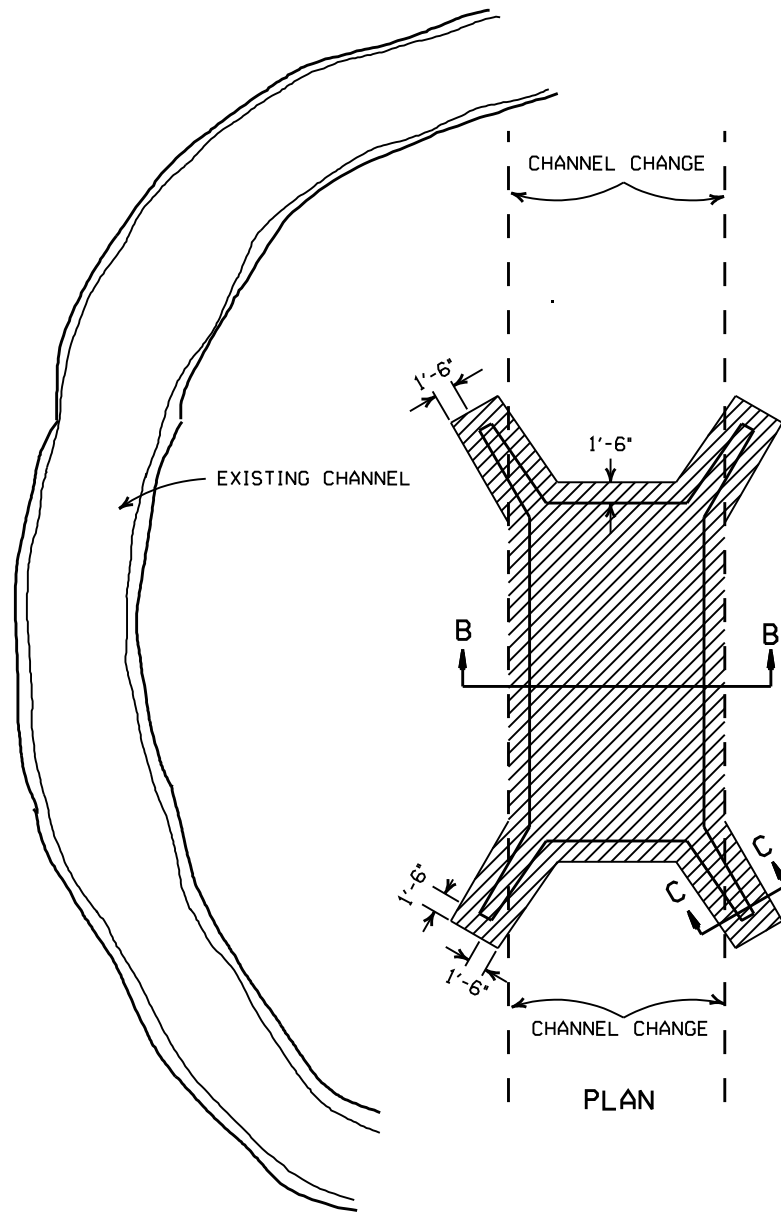
R.C. BOX CULVERT HEADWALL MODIFICATIONS

| DATE     | REVISION                                                | DATE FILMED |
|----------|---------------------------------------------------------|-------------|
| 7/26/12  | REV. DRAINAGE FILL MATERIAL & DETAIL                    |             |
| 12/15/11 | REQUIRE WEEP HOLES IN BOX CULVERT WALLS                 |             |
| 5-25-06  | REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM |             |
| 11-16-01 | ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES        |             |
| 10-18-96 | REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM            |             |
| 10-12-95 | MOVED SOLID SODDING DETAIL TO RCB-2                     |             |
| 6-2-94   | ADDED SOLID SODDING PLAN DETAIL                         |             |
| 8-5-93   | REVISED PIN DIAMETER TO SPECS.                          |             |
| 8-15-91  | DRAWN AND ISSUED                                        |             |

ARKANSAS STATE HIGHWAY COMMISSION

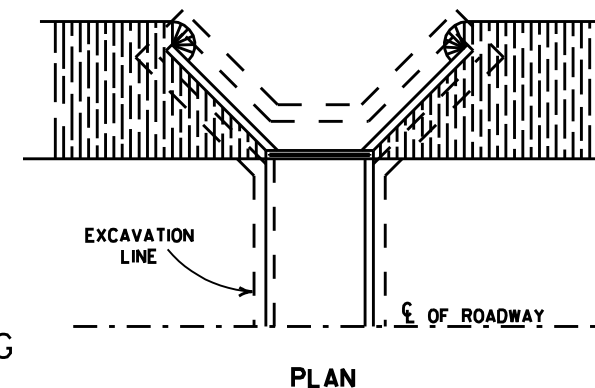
REINFORCED CONCRETE BOX  
CULVERT DETAILS

STANDARD DRAWING RCB-1



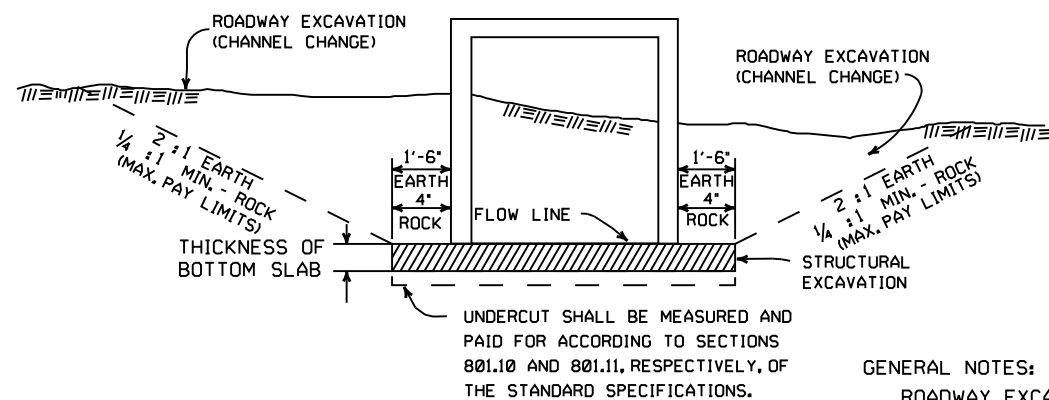
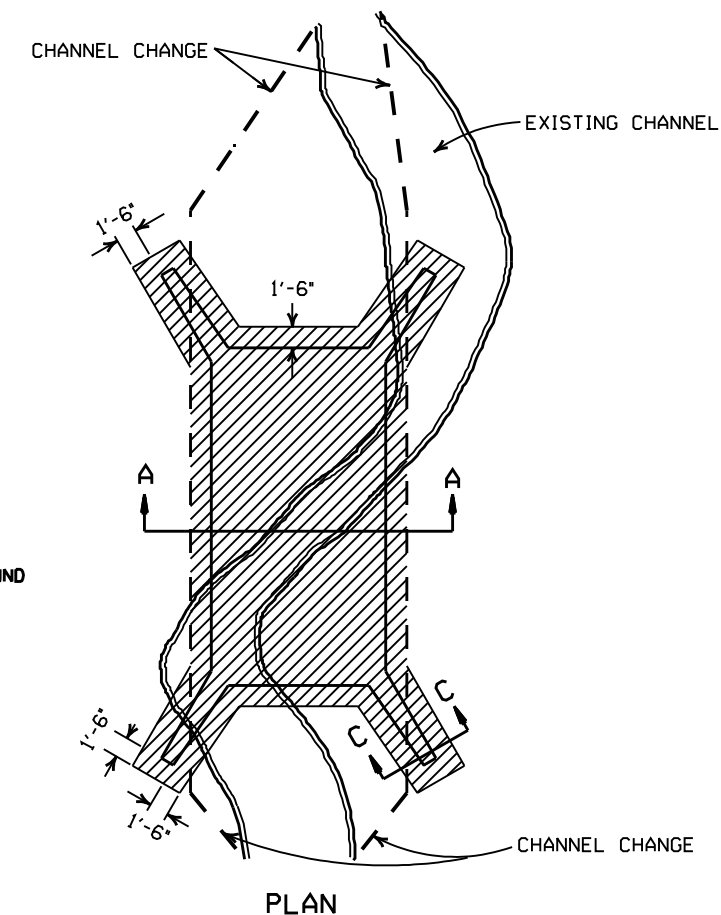
PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

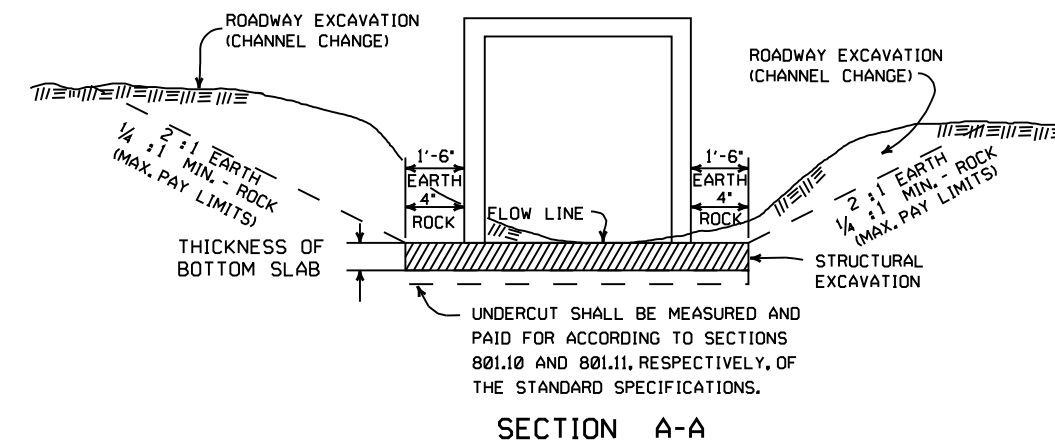
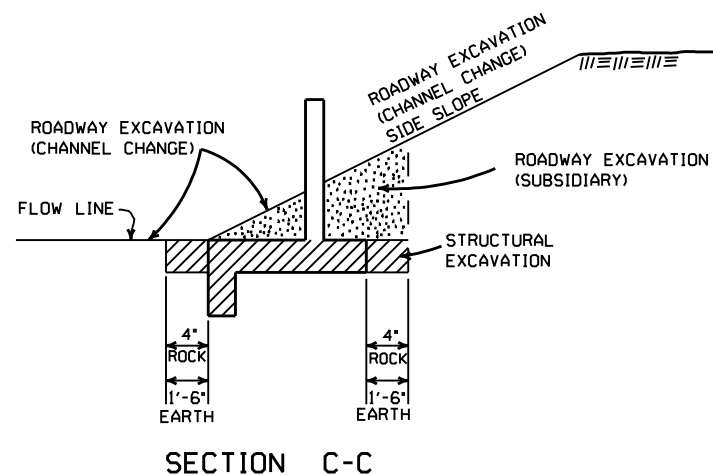


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT



DETAILS FOR NEW CHANNELS



DETAILS THROUGH EXISTING CHANNELS

# GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

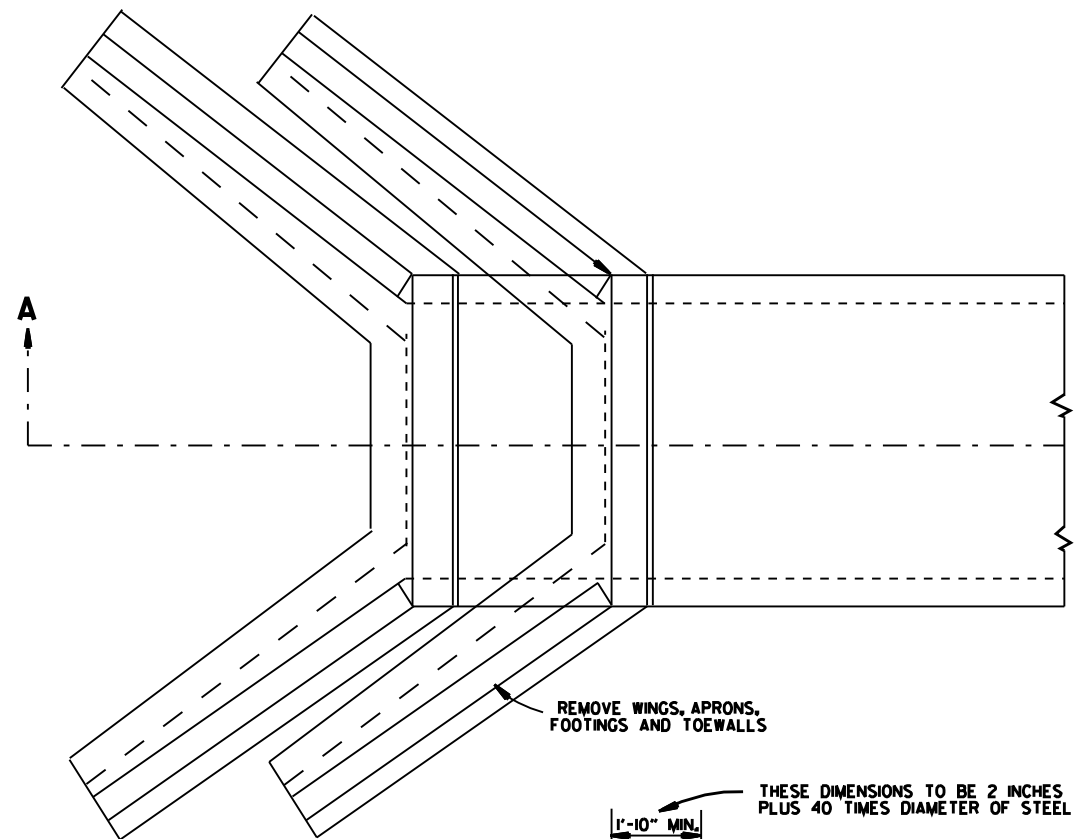
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

| DATE     | REVISION                 | FILMED       |
|----------|--------------------------|--------------|
| 11-20-03 | REVISED SECTION A-A NOTE |              |
| 8-22-02  | REVISED SECTION B-B NOTE |              |
| 10-12-95 | COMBINED 1891B AND 1888A |              |
| 1-4-83   | REVISED GENERAL NOTES    | 674-1-4-83   |
|          | AND ADDED MAXIMUM PAY    |              |
|          | LIMIT NOTES.             |              |
| 2-2-76   | EXCAV. PAY LIMITS        | 917-2-2-76   |
| 10-2-72  | REVISED AND REDRAWN      | 564-10-16-72 |
|          |                          |              |

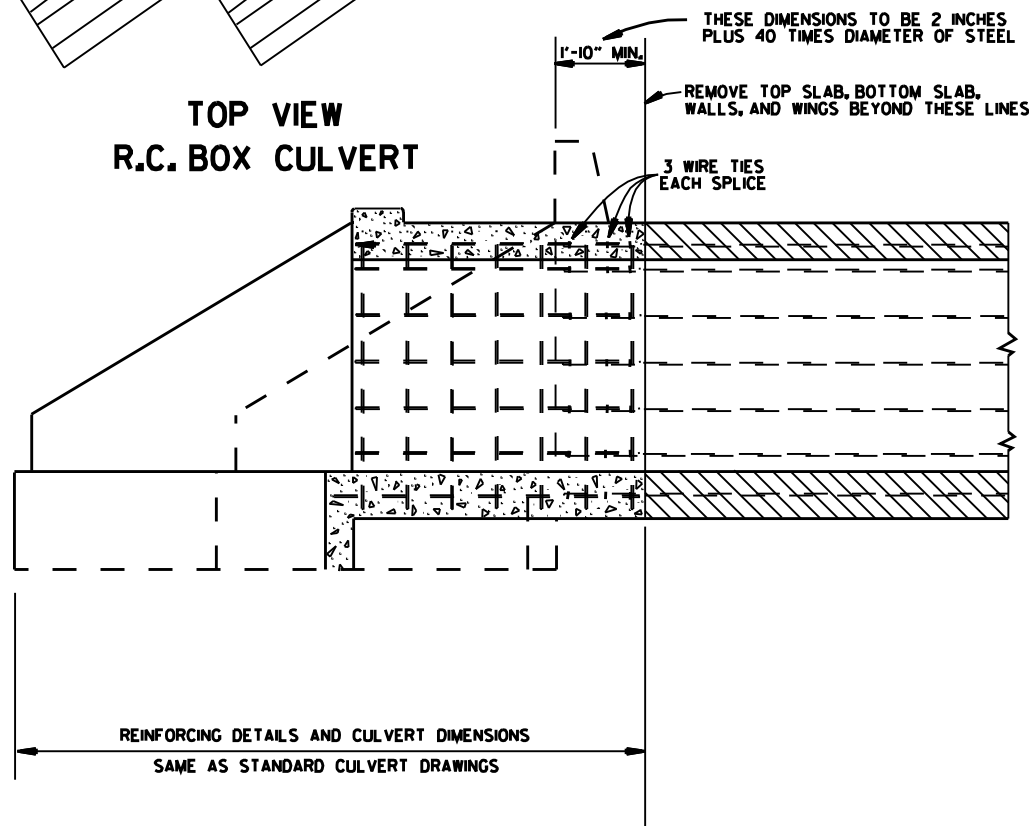
## ARKANSAS STATE HIGHWAY COMMISSION

## EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

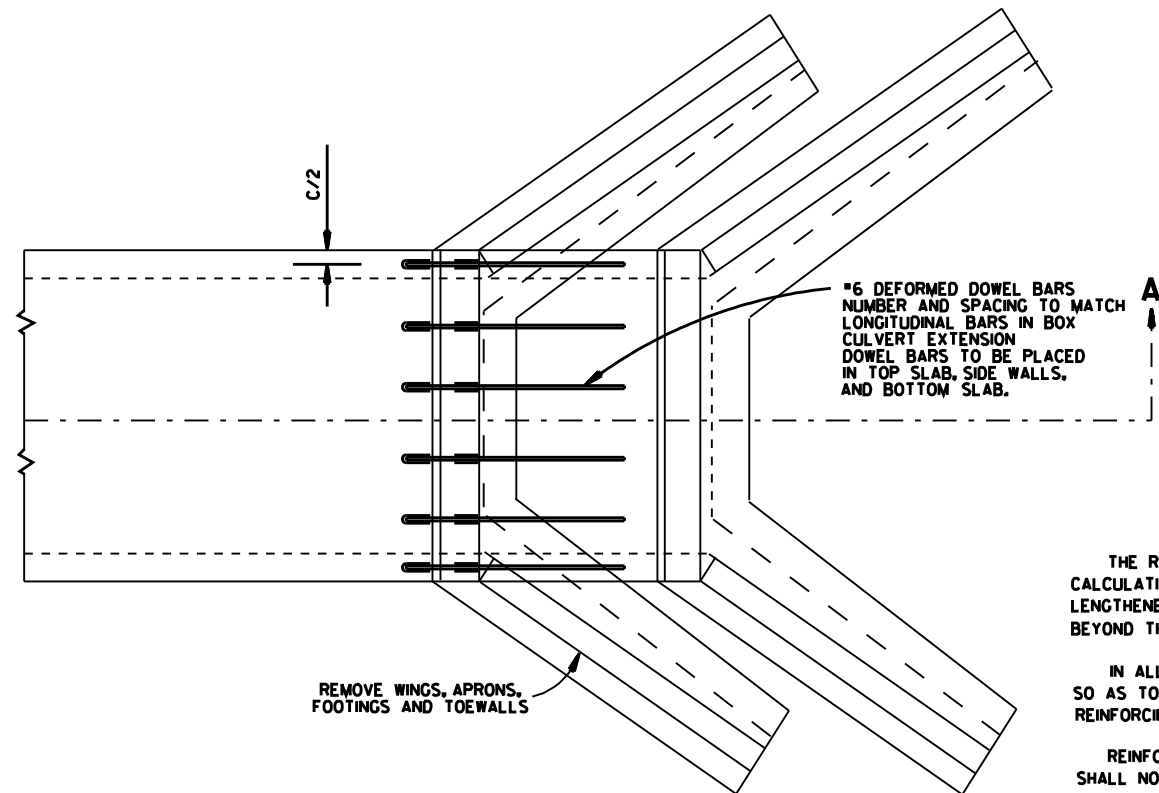
STANDARD DRAWING RCB-2



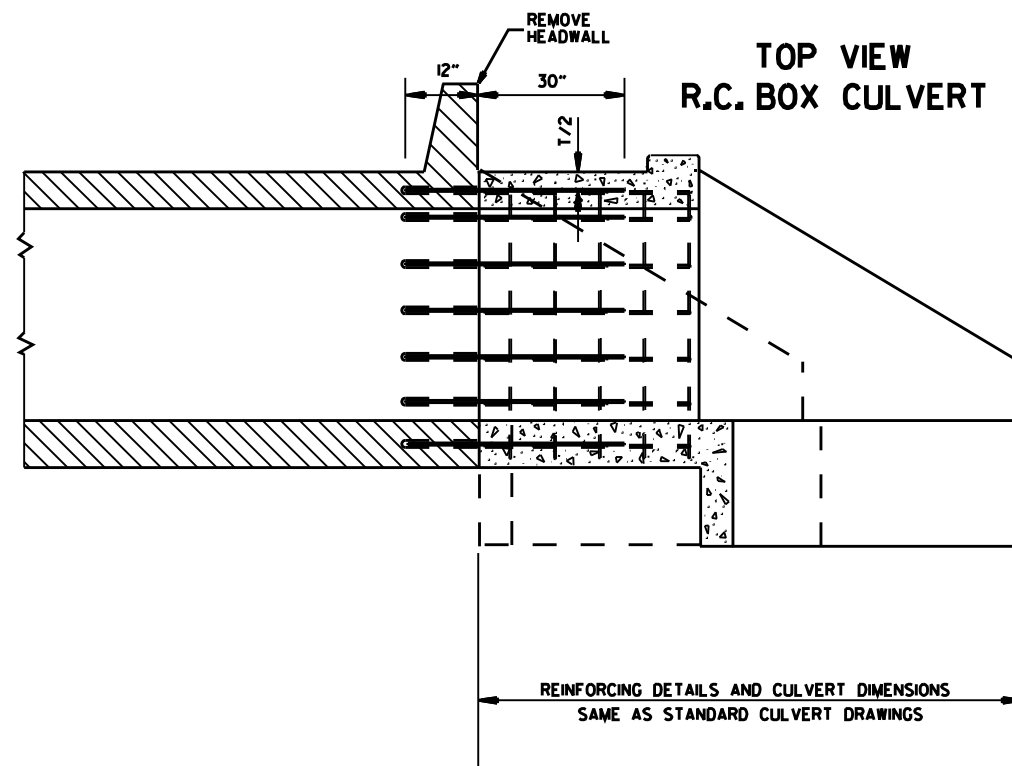
TOP VIEW  
R.C. BOX CULVERT



SECTION A-A  
METHOD 1



TOP VIEW  
R.C. BOX CULVERT



SECTION A-A  
METHOD 2

- GENERAL NOTES
- THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.
- IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.
- REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.
- ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON, THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.
- DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER, AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.
- THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2, REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.

NOTE:  
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.  
SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

|                                                   |                                |           |
|---------------------------------------------------|--------------------------------|-----------|
| ARKANSAS STATE HIGHWAY COMMISSION                 |                                |           |
| METHOD OF EXTENDING<br>EXISTING R.C. BOX CULVERTS |                                |           |
| STANDARD DRAWING RCB-3                            |                                |           |
| 10-12-95                                          | CHANGED DRAWING * FROM 144-A   |           |
| 4-1-93                                            | ADDED GENERAL NOTE             |           |
| 10-1-92                                           | ADDED ALT. METHOD OF EXTENSION |           |
| 11-30-89                                          | REDRAWN                        |           |
| 1-4-83                                            | ELIMINATED CONCRETE CLASS      |           |
| 12-20-56                                          | RETRACED                       |           |
| DATE                                              | REVISION                       | DATE FILM |

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

| DEGREE<br>OF<br>CURVE | 30 MPH |         |           | 35 MPH |         |           | 40 MPH |         |           | 45 MPH |         |           | 50 MPH |         |           | 55 MPH |         |           | 60 MPH |         |           | 65 MPH |         |           | 70 MPH |         |           | 75 MPH |         |           |
|-----------------------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|
|                       | e      | Ls (FT) |           | e      | Ls (FT) |           | e      | Ls (FT) |           | e      | Ls (FT) |           | e      | Ls (FT) |           | e      | Ls (FT) |           | e      | Ls (FT) |           | e      | Ls (FT) |           | e      | Ls (FT) |           | e      | Ls (FT) |           |
|                       |        | MINIMUM | DESIRABLE |        | MINIMUM | DESIRABLE |        | MINIMUM | DESIRABLE |        | MINIMUM | DESIRABLE |        | MINIMUM | DESIRABLE |        | MINIMUM | DESIRABLE |        | MINIMUM | DESIRABLE |        | MINIMUM | DESIRABLE |        | MINIMUM | DESIRABLE |        | MINIMUM | DESIRABLE |
| 0° 15'                | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           |
| 0° 30'                | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | RC     | 96      |           | RC     | 96      |           | RC     | 96      |           | RC     | 96      |           |
| 0° 45'                | NC     |         |           | NC     |         |           | NC     |         |           | NC     |         |           | RC     | 96      |           | RC     | 96      |           | 0.024  | 106     |           | 0.026  | 110     |           | 0.030  | 120     |           | 0.030  | 120     |           |
| 1° 00'                | NC     |         |           | NC     |         |           | NC     |         |           | RC     | 90      |           | 0.022  | 101     |           | 0.026  | 110     |           | 0.030  | 120     |           | 0.034  | 130     |           | 0.038  | 139     |           | 0.038  | 139     |           |
| 1° 15'                | NC     |         |           | NC     |         |           | RC     | 84      |           | 0.022  | 95      |           | 0.028  | 115     |           | 0.032  | 125     |           | 0.038  | 139     |           | 0.042  | 149     |           | 0.046  | 158     |           | 0.046  | 158     |           |
| 1° 30'                | NC     |         |           | RC     | 78      |           | 0.022  | 88      |           | 0.028  | 108     |           | 0.032  | 125     |           | 0.038  | 139     |           | 0.044  | 154     |           | 0.050  | 168     |           | 0.056  | 182     |           | 0.056  | 182     |           |
| 1° 45'                | RC     | 72      |           | RC     | 78      |           | 0.026  | 97      |           | 0.030  | 113     |           | 0.036  | 134     |           | 0.044  | 154     |           | 0.050  | 168     |           | 0.056  | 182     |           | 0.064  | 202     |           | 0.064  | 202     |           |
| 2° 00'                | RC     | 72      |           | 0.024  | 86      |           | 0.028  | 101     |           | 0.034  | 122     |           | 0.042  | 149     |           | 0.048  | 163     |           | 0.056  | 182     |           | 0.064  | 202     |           | 0.070  | 216     |           | 0.070  | 216     |           |
| 2° 15'                | RC     | 72      |           | 0.026  | 90      |           | 0.032  | 109     |           | 0.038  | 131     |           | 0.046  | 158     |           | 0.054  | 178     |           | 0.062  | 197     |           | 0.070  | 216     |           | 0.078  | 235     |           | 0.078  | 235     |           |
| 2° 30'                | 0.022  | 75      |           | 0.028  | 94      |           | 0.034  | 113     |           | 0.042  | 140     |           | 0.050  | 168     |           | 0.058  | 187     |           | 0.068  | 211     |           | 0.076  | 230     |           | 0.086  | 254     |           | 0.086  | 254     |           |
| 2° 45'                | 0.024  | 79      |           | 0.030  | 98      |           | 0.038  | 122     |           | 0.046  | 149     |           | 0.054  | 178     |           | 0.064  | 202     |           | 0.072  | 221     |           | 0.082  | 245     |           | 0.092  | 269     |           | 0.092  | 269     |           |
| 3° 00'                | 0.026  | 83      |           | 0.034  | 105     |           | 0.040  | 126     |           | 0.050  | 158     |           | 0.058  | 187     |           | 0.068  | 211     |           | 0.078  | 235     |           | 0.088  | 259     |           | 0.098  | 283     |           | 0.098  | 283     |           |
| 3° 15'                | 0.028  | 86      |           | 0.036  | 109     |           | 0.044  | 134     |           | 0.052  | 162     |           | 0.062  | 197     |           | 0.072  | 221     |           | 0.082  | 245     |           | 0.092  | 269     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 3° 30'                | 0.030  | 90      |           | 0.038  | 113     |           | 0.046  | 139     |           | 0.056  | 171     |           | 0.066  | 206     |           | 0.076  | 230     |           | 0.086  | 254     |           | 0.096  | 278     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 3° 45'                | 0.032  | 93      |           | 0.040  | 117     |           | 0.050  | 147     |           | 0.058  | 176     |           | 0.070  | 216     |           | 0.080  | 240     |           | 0.090  | 264     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 4° 00'                | 0.034  | 97      |           | 0.042  | 121     |           | 0.052  | 151     |           | 0.062  | 185     |           | 0.072  | 221     |           | 0.084  | 250     |           | 0.094  | 274     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 4° 15'                | 0.036  | 100     |           | 0.044  | 125     |           | 0.054  | 155     |           | 0.064  | 189     |           | 0.076  | 230     |           | 0.086  | 254     |           | 0.096  | 278     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 4° 30'                | 0.036  | 100     |           | 0.046  | 129     |           | 0.056  | 160     |           | 0.068  | 198     |           | 0.078  | 235     |           | 0.090  | 264     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 4° 45'                | 0.038  | 104     |           | 0.048  | 133     |           | 0.060  | 168     |           | 0.070  | 203     |           | 0.082  | 245     |           | 0.092  | 269     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 5° 00'                | 0.040  | 108     |           | 0.050  | 137     |           | 0.062  | 172     |           | 0.072  | 207     |           | 0.084  | 250     |           | 0.094  | 274     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 5° 30'                | 0.044  | 115     |           | 0.054  | 144     |           | 0.066  | 181     |           | 0.078  | 221     |           | 0.088  | 259     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 6° 00'                | 0.046  | 119     |           | 0.058  | 152     |           | 0.070  | 189     |           | 0.082  | 230     |           | 0.092  | 269     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 6° 30'                | 0.050  | 126     |           | 0.062  | 160     |           | 0.074  | 198     |           | 0.086  | 239     |           | 0.096  | 278     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 7° 00'                | 0.052  | 130     |           | 0.064  | 164     |           | 0.078  | 206     |           | 0.090  | 248     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 7° 30'                | 0.054  | 133     |           | 0.068  | 172     |           | 0.080  | 210     |           | 0.092  | 252     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 8° 00'                | 0.058  | 140     |           | 0.070  | 176     |           | 0.084  | 219     |           | 0.094  | 257     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 8° 30'                | 0.060  | 144     |           | 0.072  | 179     |           | 0.086  | 223     |           | 0.096  | 261     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 9° 00'                | 0.062  | 148     |           | 0.076  | 187     |           | 0.088  | 227     |           | 0.098  | 266     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 9° 30'                | 0.064  | 151     |           | 0.078  | 191     |           | 0.092  | 235     |           | 0.098  | 266     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 10° 00'               | 0.066  | 155     |           | 0.080  | 195     |           | 0.094  | 240     |           | 0.098  | 266     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 11° 00'               | 0.070  | 162     |           | 0.084  | 203     |           | 0.096  | 244     |           | 0.098  | 266     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 12° 00'               | 0.074  | 169     |           | 0.088  | 211     |           | 0.098  | 248     |           | 0.098  | 266     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 13° 00'               | 0.076  | 173     |           | 0.090  | 215     |           | 0.098  | 248     |           | 0.098  | 266     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 14° 00'               | 0.080  | 180     |           | 0.094  | 222     |           | 0.098  | 248     |           | 0.098  | 266     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 15° 00'               | 0.082  | 184     |           | 0.096  | 226     |           | 0.098  | 248     |           | 0.098  | 266     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 16° 00'               | 0.086  | 191     |           | 0.098  | 230     |           | 0.098  | 248     |           | 0.098  | 266     |           | 0.098  | 283     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           | 0.100  | 288     |           |
| 17° 00'               | 0.088  | 194     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           |
| 18° 00'               | 0.090  | 198     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           |
| 19° 00'               | 0.092  | 202     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           |
| 20° 00'               | 0.094  | 205     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           |
| 21° 00'               | 0.096  | 209     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           |
| 22° 00'               | 0.096  | 209     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           |
| 23° 00'               | 0.098  | 212     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           |
| 24° 00'               | 0.098  | 212     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           |
| 25° 00'               | 0.100  | 216     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           | 0.100  | 234     |           |

ABBREVIATIONS

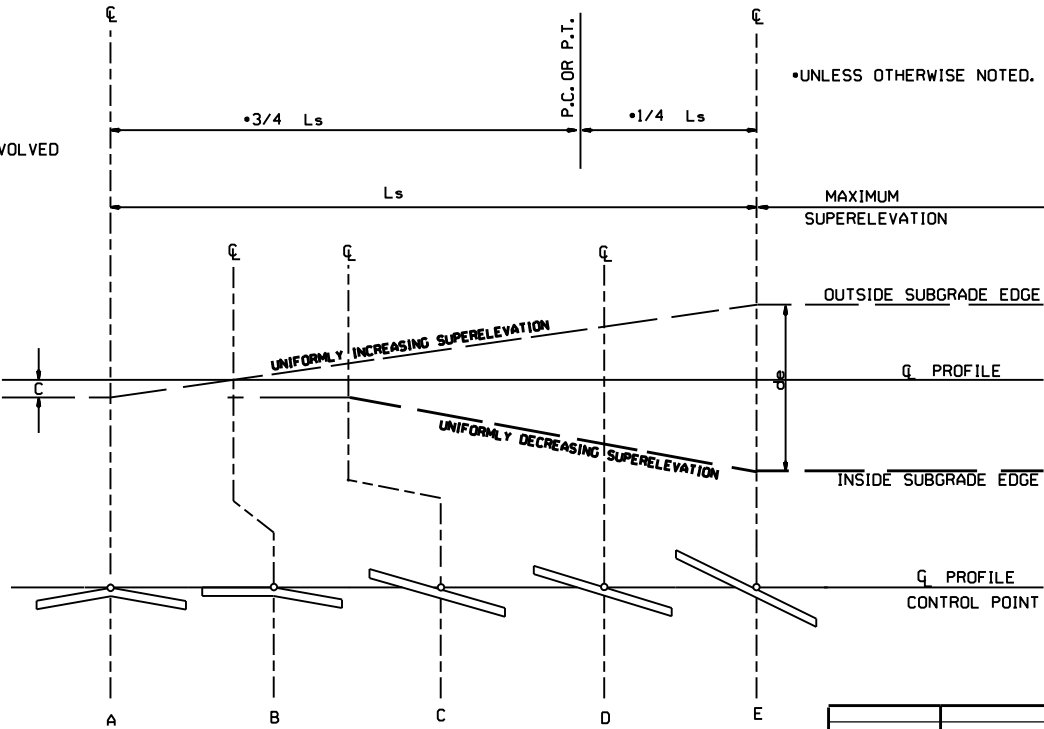
NC - NORMAL CROWN  
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE  
e - RATE OF SUPERELEVATION (FT. PER FT.)  
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)  
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)  
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)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

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

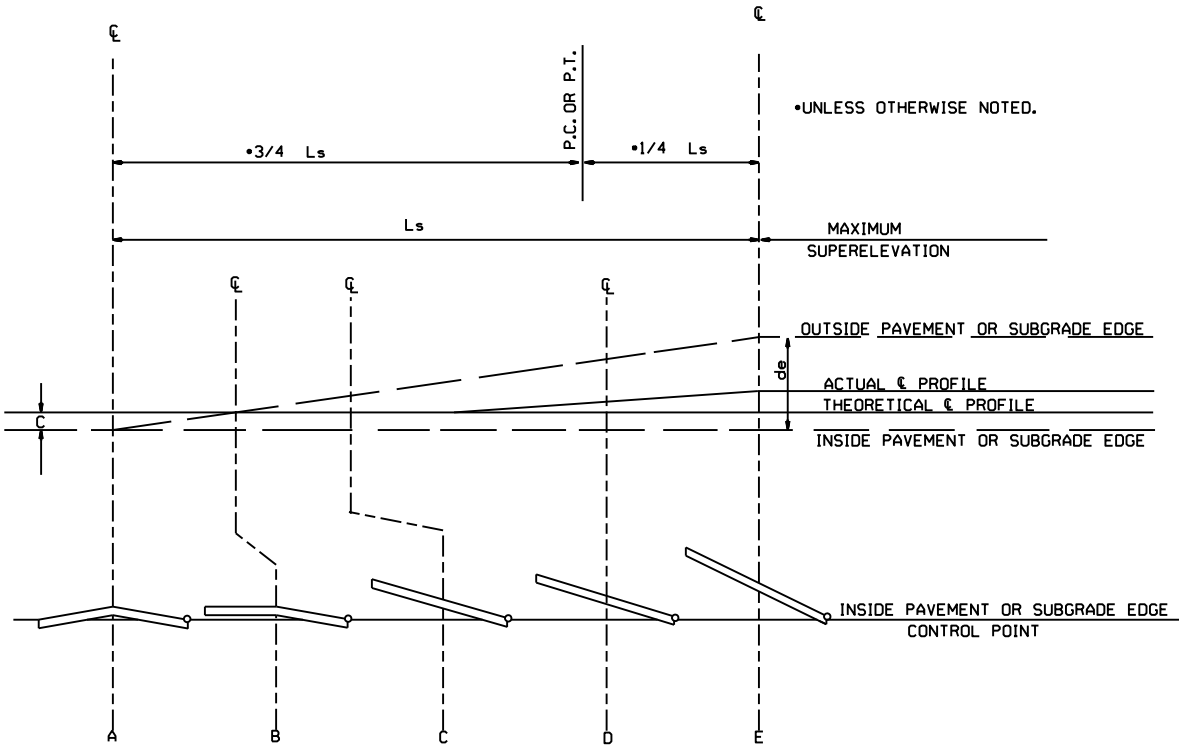
3 LANE UNDIVIDED - - - - +20%  
4 LANE UNDIVIDED - - - - +50%  
5 LANE UNDIVIDED - - - - +80%  
6 LANE UNDIVIDED - - - - +100%

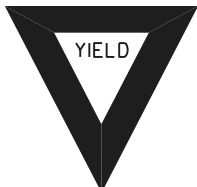
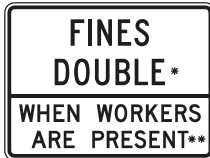
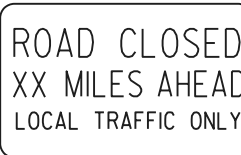
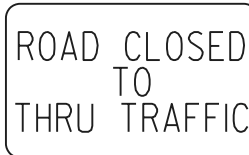
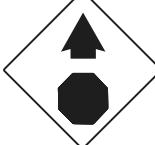
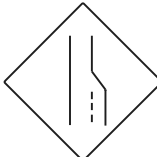
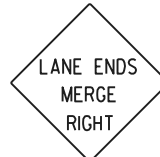
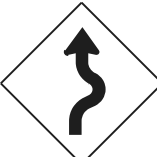
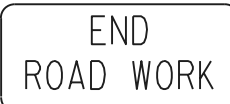
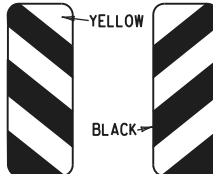
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.  
RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.

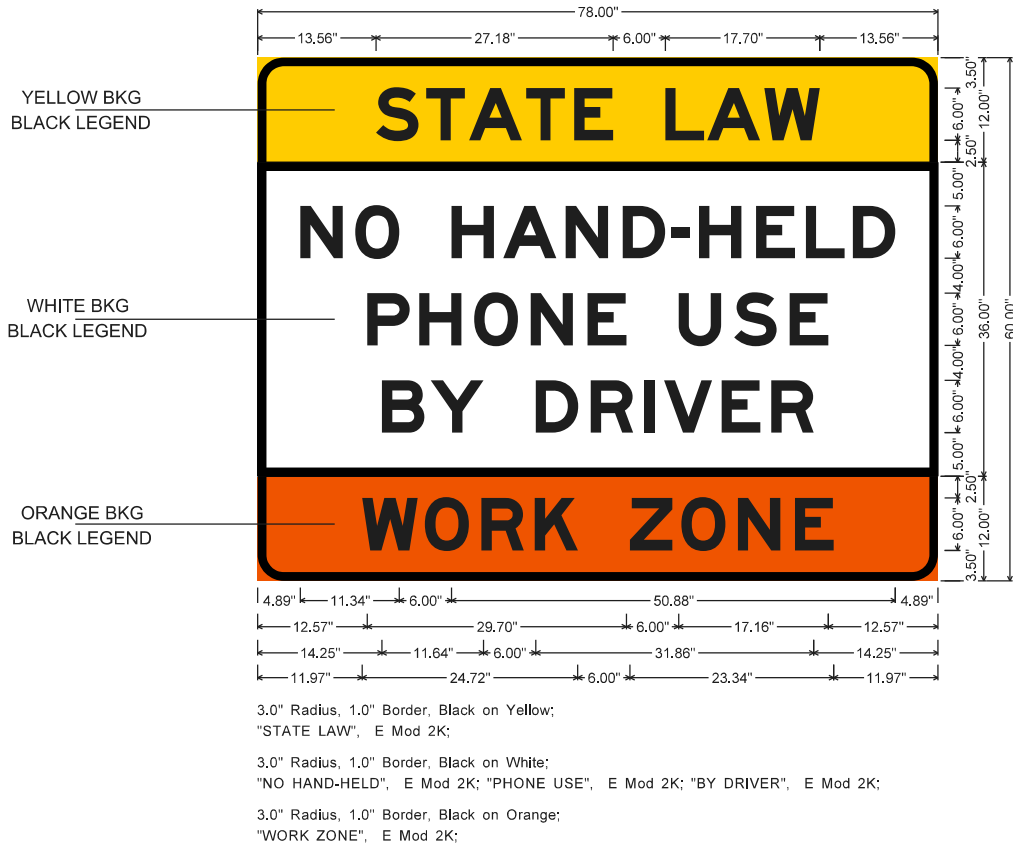
SUPERELEVATION FORMULA =  $\frac{Lde}{Ls}$



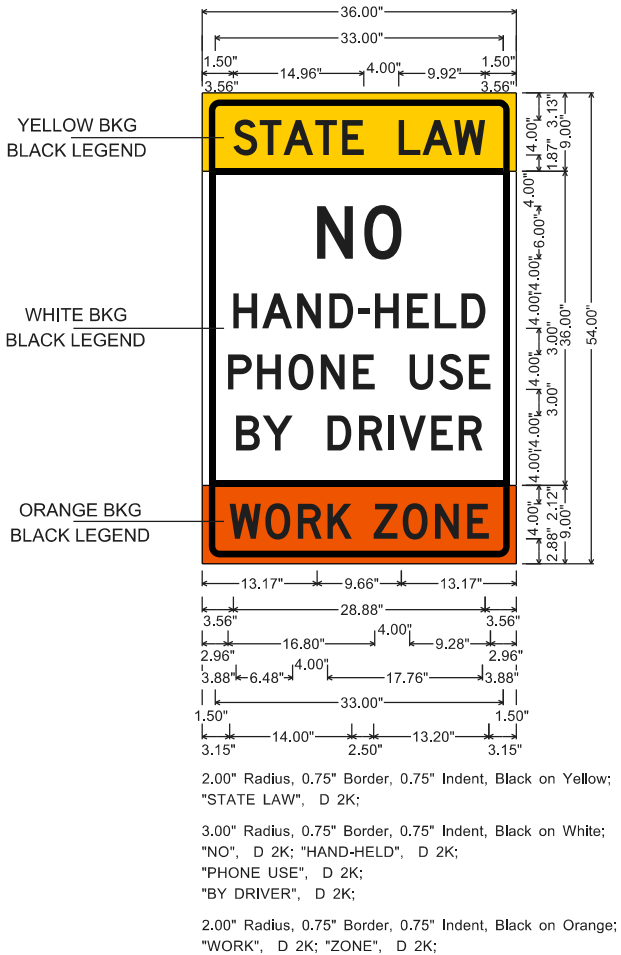
STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE



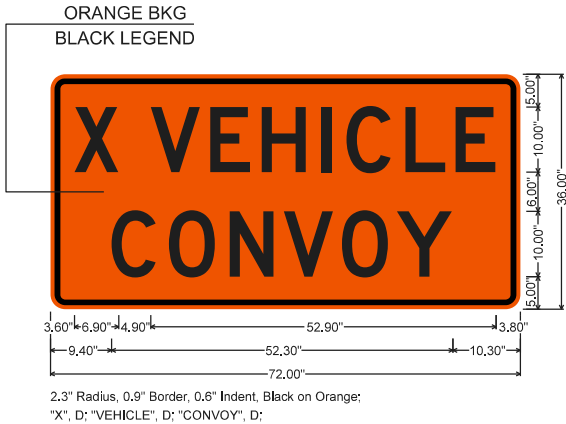
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| <div>RI-I</div> <div></div> <div>STANDARD 30"x30"<br/>EXPRESSWAY 36"x36"<br/>SPECIAL 48"x48"</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div>RI-2</div> <div></div> <div>STD. 36"x36"x36"<br/>EXPWY. 48"x48"x48"<br/>FWY. 60"x60"x60"</div> | <div>R2-I</div> <div></div> <div>STD. 24"x30"<br/>EXPWY. 36"x48"<br/>FWY. 48"x60"</div>                   | <div>W3-5</div> <div></div> <div>STD. 36"x36"<br/>EXPWY. 48"x48"<br/>FWY. 48"x48"</div>                     | <div>W3-5a</div> <div></div> <div>STD. 36"x36"<br/>EXPWY. 48"x48"<br/>FWY. 48"x48"</div> | <div>R4-I</div> <div></div> <div>STD. 24"x30"<br/>EXPWY. 36"x48"<br/>FWY. 48"x60"</div>       | <div>R4-2</div> <div></div> <div>STD. 24"x30"<br/>EXPWY. 36"x48"<br/>FWY. 48"x60"</div> | <div>R2-6aP</div> <div></div> <div>48"x36"<br/><br/>*USE 6" C LETTERS<br/>**USE 4" D LETTERS</div> | <div>GENERAL NOTES:</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.</div> <div>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.</div> <div>10. R2-6aP PLAQUES SHALL BE MOUNTED BELOW AN APPLICABLE ADVANCE WARNING SIGN THAT IS LOCATED AT LEAST 1500' BUT NOT MORE THAN 1MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE PLAQUE SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE W3-5 "REDUCED SPEED AHEAD" SIGN. R2-II SIGNS SHALL BE INSTALLED AT OR NEAR THE DOWNSTREAM END OF THE WORK ZONE. SEE STANDARD DRAWINGS TC-2, TC-3, AND TC-6 FOR TYPICAL PLACEMENT LOCATIONS.</div> <div><br/>• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 &amp; 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.</div> |          |                  |            |                              |          |                                                  |          |               |      |     |             |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                |  |                  |      |  |  |  |  |  |  |  |  |  |  |  |            |  |
| <div>R5-I</div> <div></div> <div>STD. 30"x30"<br/>EXPWY. 36"x36"<br/>SPECIAL 48"x48"</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <div>RII-2</div> <div></div> <div>48"x30"</div>                                                    | <div>RII-3A</div> <div></div> <div>60"x30"</div>                                                          | <div>RII-4</div> <div></div> <div>60"x30"</div>                                                             | <div>W2I-5a</div> <div></div> <div>STD. 36"x36"<br/>FWY. 48"x48"</div>                   | <div>WI-I</div> <div></div> <div>STD. 36"x36"<br/>FWY. 48"x48"</div>                          | <div>WI-2</div> <div></div> <div>STD. 36"x36"<br/>FWY. 48"x48"</div>                    | <div>R2-II</div> <div></div> <div>36"x48"</div>                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| <div>WI-3</div> <div></div> <div>STD. 48"x48"</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <div>WI-4</div> <div></div> <div>STD. 48"x48"</div>                                                | <div>WI-6</div> <div></div> <div>STD. 48"x24"<br/>SPECIAL 60"x30"</div>                                   | <div>WI-8</div> <div></div> <div>STD. 18"x24"<br/>SPECIAL 24"x30"<br/>EXPWY. 30"x36"<br/>FWY. 36"x48"</div> | <div>W3-I</div> <div></div> <div>STD. 36"x36"<br/>SPECIAL 48"x48"</div>                  | <div>W3-2</div> <div></div> <div>STD. 36"x36"<br/>SPECIAL 48"x48"</div>                       | <div>W4-2</div> <div></div> <div>STD. 36"x36"<br/>FWY. 48"x48"</div>                    | <div>R56-I</div> <div></div> <div>STD. 18"x18"</div>                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| <div>W5-I</div> <div></div> <div>STD. 36"x36"<br/>SPECIAL 48"x48"</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <div>W6-3</div> <div></div> <div>EXPWY. 36"x36"<br/>SPECIAL 48"x48"</div>                        | <div>W8-7</div> <div></div> <div>EXPWY. 36"x36"<br/>FWY. 48"x48"</div>                                  | <div>W9-2</div> <div></div> <div>STD. 36"x36"<br/>FWY. 48"x48"</div>                                      | <div>W13-I</div> <div></div> <div>STD. 24"x24"</div>                                   | <div>W20-I</div> <div></div> <div>STD. 48"x48"</div>                                        | <div>W20-2</div> <div></div> <div>STD. 48"x48"</div>                                  | <div>W20-3</div> <div></div> <div>STD. 48"x48"</div>                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| <div>W20-4</div> <div></div> <div>STD. 48"x48"</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <div>W20-5</div> <div></div> <div>STD. 48"x48"</div>                                             | <div>W20-7a</div> <div><div>18" 500 FEET W16-2 24"</div></div> <div>STD. 36"x36"<br/>FWY. 48"x48"</div> | <div>W2I-2</div> <div></div> <div>STD. 30"x30"<br/>SPECIAL 36"x36"</div>                                  | <div>W2I-5</div> <div></div> <div>STD. 30"x30"<br/>SPECIAL 36"x36"</div>               | <div>W24-I</div> <div></div> <div>STD. 36"x36"</div>                                        | <div>WI-4b</div> <div></div> <div>STD. 48"x48"</div>                                  |                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| <div>W8-II</div> <div></div> <div>STD. 36"x36"<br/>FWY. 48"x48"</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <div>W8-9</div> <div></div> <div>STD. 36"x36"<br/>FWY. 48"x48"</div>                             | <div>G20-I</div> <div></div> <div>60"x24"</div>                                                         | <div>G20-2</div> <div></div> <div>48"x24"</div>                                                           | <div>OM-3L OM-3R</div> <div></div> <div>12"x36"</div>                                  | <div>M4-9</div> <div></div> <div>STD. 30"x24"<br/>SPECIAL 48"x36"<br/>SPECIAL 60"x48"</div> | <div>M4-10</div> <div></div> <div>48"x18"</div>                                       |                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| <table><tr><td rowspan="4">08-14-25</td><td>REPLACED R55-1 WITH R2-6aP, ADDED R2-11 &amp; REVISED NOTE 10</td><td rowspan="6">11-07-19</td><td>REVISED FOR MASH</td><td rowspan="6">04-13-17</td><td>DELETED RSP-1 &amp; ADDED W21-5a</td><td rowspan="6">09-02-15</td><td>REVISED REDUCED SPEED AHEAD SIGNS NEXT SIX MILES</td><td rowspan="6">12-15-11</td><td>REVISED W24-1</td><td rowspan="4">DATE</td><td rowspan="4">REV</td><td rowspan="6">DESCRIPTION</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td colspan="11"></td><td colspan="2">DATE EFFECTIVE</td><td rowspan="2">STANDARD DRAWING</td><td rowspan="2">TC-1</td></tr><tr><td colspan="11"></td><td colspan="2">08-14-2025</td></tr></table> |                                                                                                                                                                                     |                         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                                                                | REPLACED R55-1 WITH R2-6aP, ADDED R2-11 & REVISED NOTE 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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MASH | 04-13-17   | DELETED RSP-1 & ADDED W21-5a | 09-02-15 | REVISED REDUCED SPEED AHEAD SIGNS NEXT SIX MILES | 12-15-11 | REVISED W24-1 | DATE | REV | DESCRIPTION |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | DATE EFFECTIVE |  | STANDARD DRAWING | TC-1 |  |  |  |  |  |  |  |  |  |  |  | 08-14-2025 |  |
| 08-14-25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | REPLACED R55-1 WITH R2-6aP, ADDED R2-11 & REVISED NOTE 10                                                                                                                           | 11-07-19                                                                                                                                                                                   | REVISED FOR MASH                                                                                                                                                                              | 04-13-17                                                                                                                                                                    | DELETED RSP-1 & ADDED W21-5a                                                                                                                                                     | 09-02-15                                                                                                                                                                   |                                                                                                                                                                                       | REVISED REDUCED SPEED AHEAD SIGNS NEXT SIX MILES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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 |            | REVISED W24-1                |          | DATE                                             |          | REV           |      |     |             | DESCRIPTION |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                |  |                  |      |  |  |  |  |  |  |  |  |  |  |  |            |  |
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 |            | DATE EFFECTIVE               |          | STANDARD DRAWING                                 |          | TC-1          |      |     |             |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                |  |                  |      |  |  |  |  |  |  |  |  |  |  |  |            |  |
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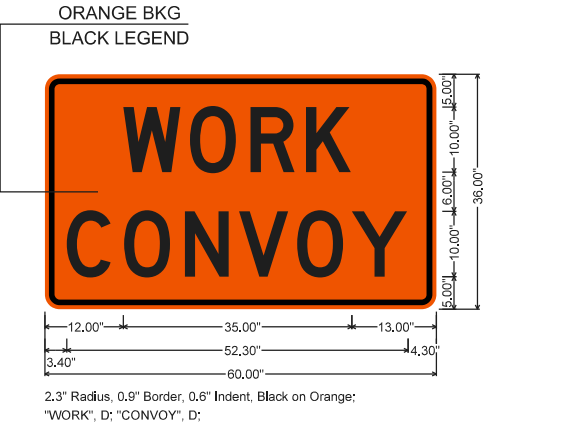
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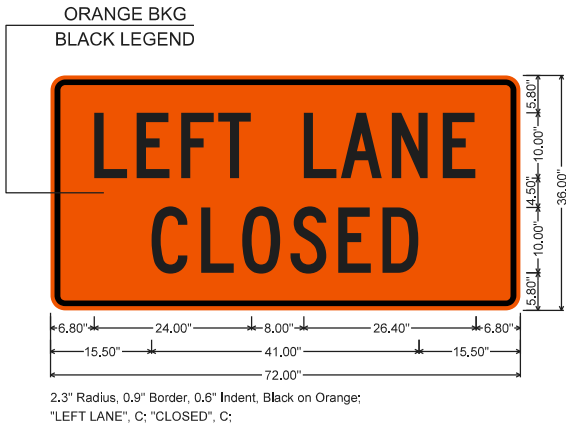
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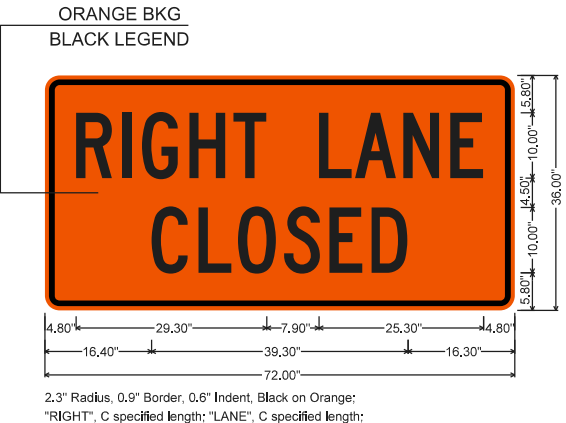
WZ-2 SIGN



WZ-3 SIGN



WZ-W20-5L SIGN



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NOTE: REFER TO STANDARD DRAWING TC-1 FOR GENERAL NOTES.

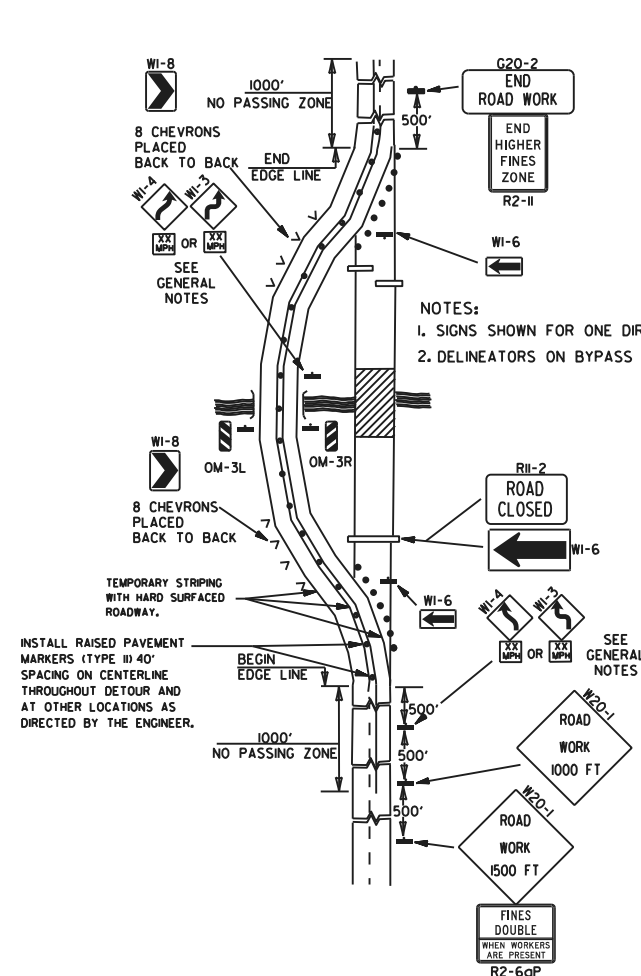


CONSTRUCTION PROJECT INFORMATION SIGN

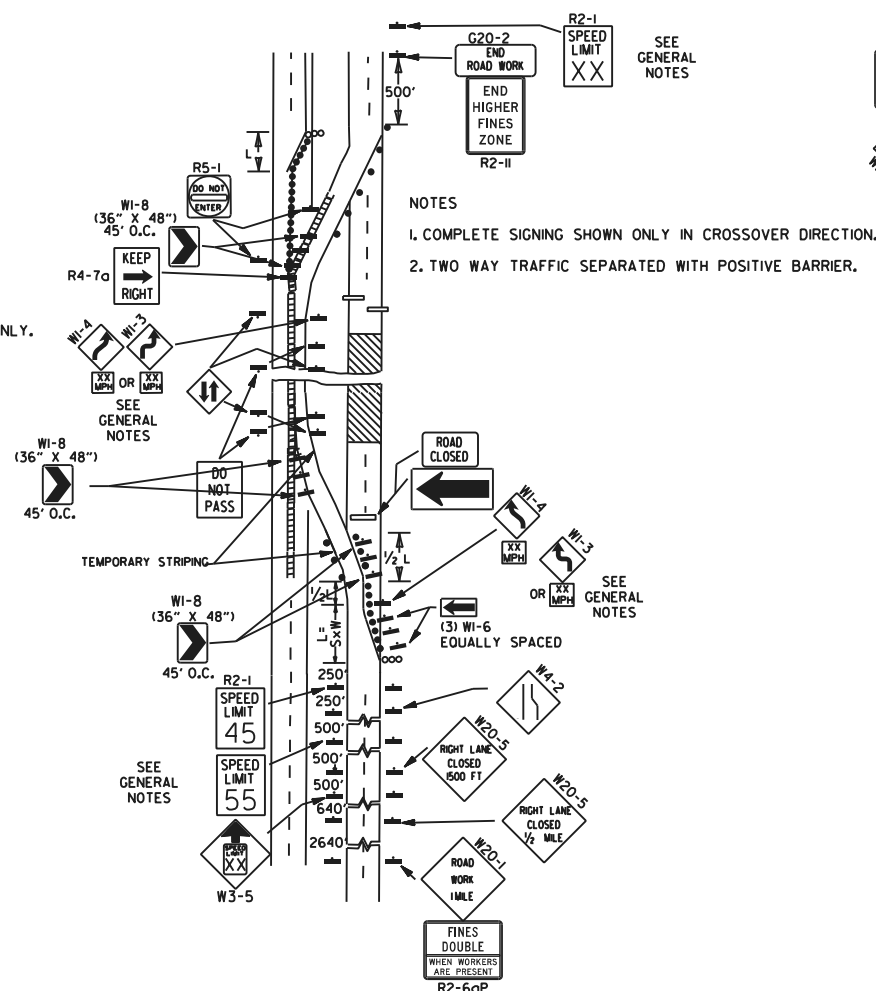


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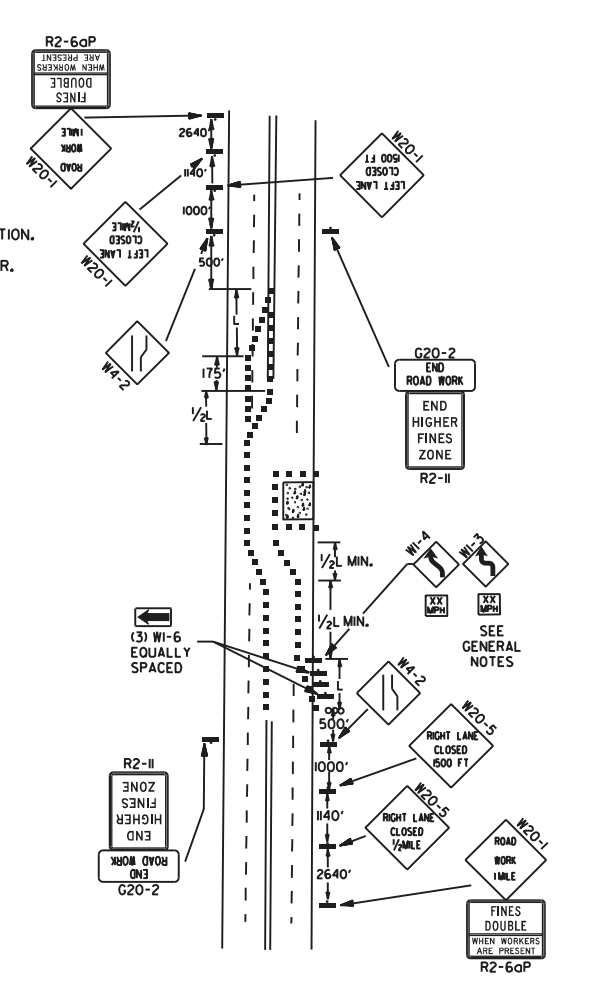
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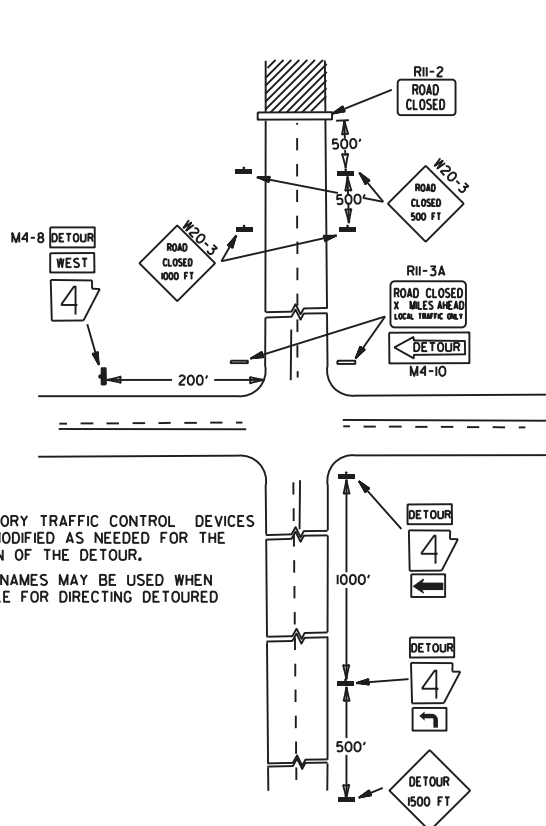
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



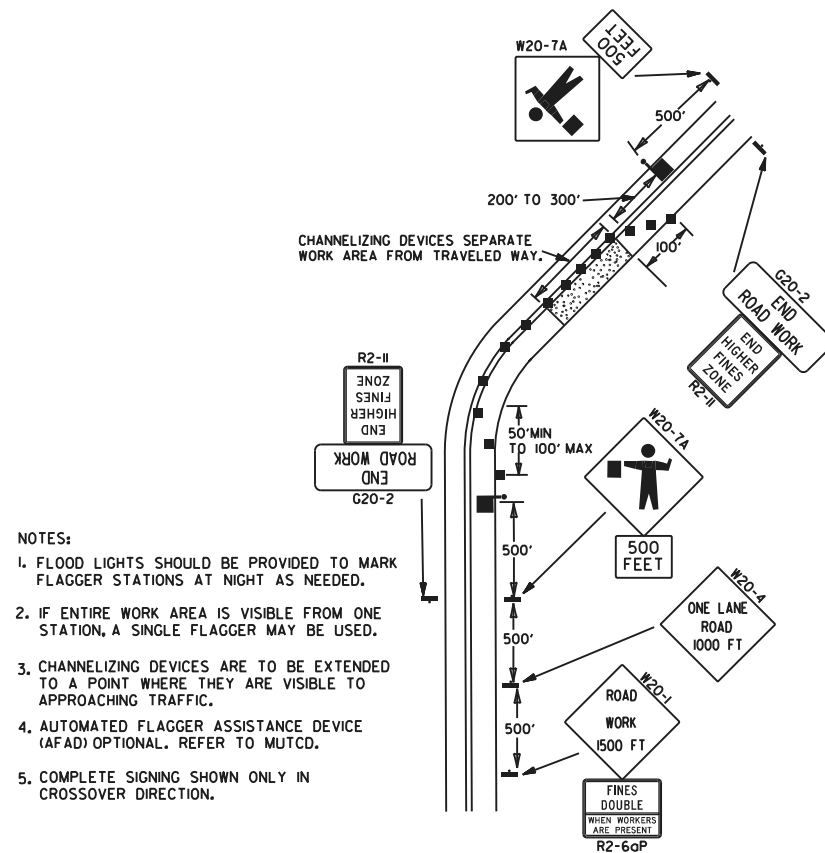
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



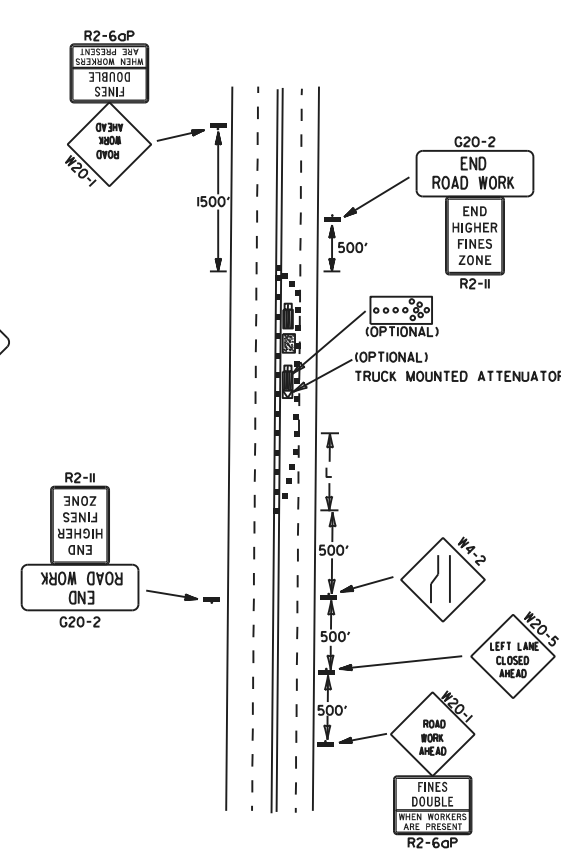
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



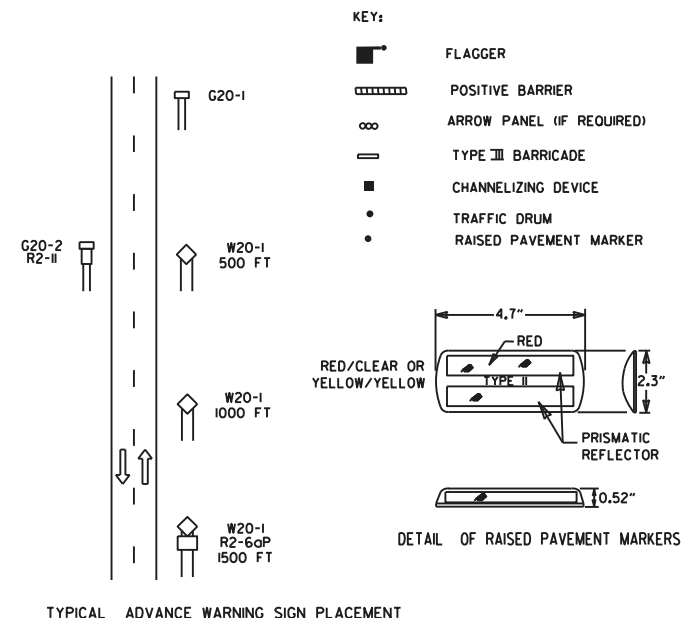
(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



(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.



- 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(45)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
  3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(65) SHALL BE OMITTED. ADDITIONAL R2-1(55)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
  4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
  5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
  6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
  7. 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. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
  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).

| REVISIONS                                                                                  |                                                                              | DESCRIPTION      | DATE                                         | REV  |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------|----------------------------------------------|------|
| DATE                                                                                       | REV                                                                          |                  |                                              |      |
| 08-14-25                                                                                   | ADDED R2-6aP AND R2-11                                                       |                  |                                              |      |
| 05-20-21                                                                                   | REVISED NOTE 7                                                               |                  |                                              |      |
| 11-07-19                                                                                   | ADDED NOTE 1, 9                                                              |                  |                                              |      |
| 09-02-15                                                                                   | REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5 |                  |                                              |      |
| 09-12-13                                                                                   | REVISED DETAIL OF RAISED PAVEMENT MARKERS                                    |                  |                                              |      |
| <div> <div>AR</div> <div>DOT</div> <div>ARKANSAS DEPARTMENT OF TRANSPORTATION</div> </div> |                                                                              |                  | <div>ARKANSAS STATE HIGHWAY COMMISSION</div> |      |
| STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION                                         |                                                                              |                  |                                              |      |
| DATE EFFECTIVE                                                                             |                                                                              | STANDARD DRAWING |                                              | TC-2 |
| 08-14-2025                                                                                 |                                                                              |                  |                                              |      |

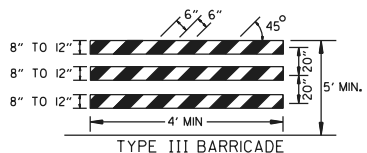
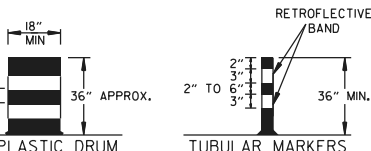
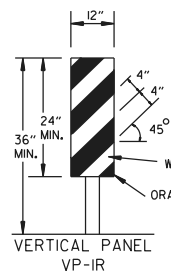
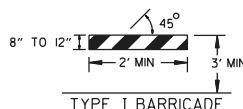
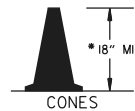
(A) TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

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

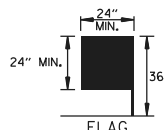
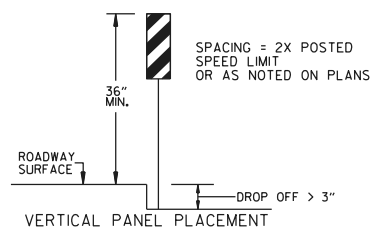
(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

### CHANNELIZING DEVICES

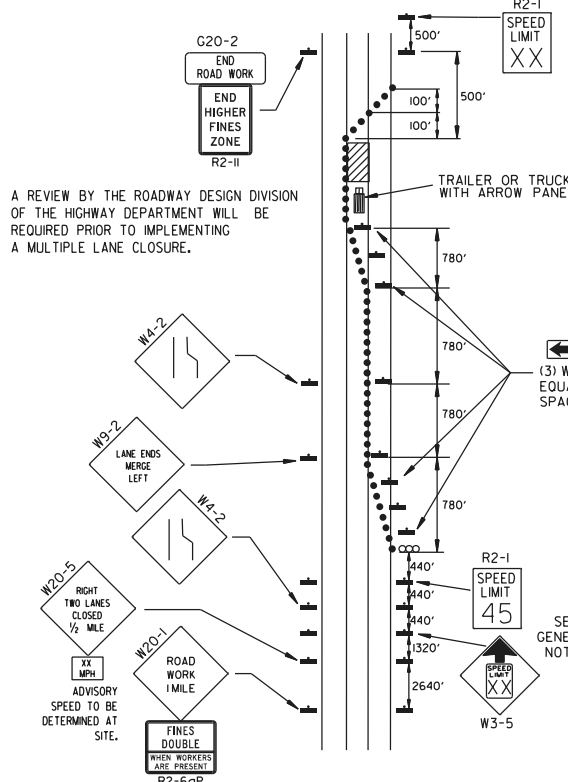
\* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.



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



FLAG SHALL BE OF GOOD GRADE RED MATERIAL



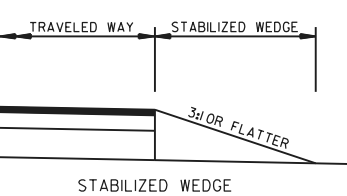
(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

### TRAFFIC CONTROL DEVICES

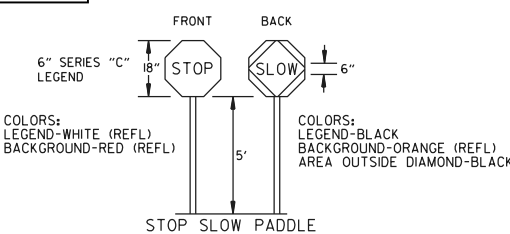
| VERTICAL DIFFERENTIAL | LOCATION                                  | NON-INTERSTATE                                              |                                                                                 |
|-----------------------|-------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------|
|                       |                                           | TRAFFIC CONTROL                                             |                                                                                 |
|                       |                                           | ≤ 45 MPH                                                    | > 45 MPH                                                                        |
| ≤ 1"                  | CENTERLINE                                | W8-11                                                       | W8-11                                                                           |
| > 1"                  | CENTERLINE                                | W8-11 AND CENTERLINE LANE STRIPING                          | W8-11 AND CENTERLINE LANE STRIPING                                              |
| > 3"                  | CENTERLINE                                | STANDARD LANE CLOSURE <sup>(6)</sup>                        | STANDARD LANE CLOSURE <sup>(6)</sup>                                            |
| ≤ 3"                  | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-9 AND TRAFFIC DRUMS <sup>(1)</sup>                       | W8-9 AND TRAFFIC DRUMS <sup>(1)</sup>                                           |
| > 3"                  | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup> | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup>                     |
| > 6"                  | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup> | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup>                     |
| > 18"                 | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup> | A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup> |
| > 24"                 | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | PRECAST CONCRETE BARRIER <sup>(4)</sup> & EDGE LINES        | PRECAST CONCRETE BARRIER <sup>(4)</sup> & EDGE LINES                            |

| VERTICAL DIFFERENTIAL | LOCATION                                  | INTERSTATE                                                  |                                                             |
|-----------------------|-------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
|                       |                                           | TRAFFIC CONTROL                                             |                                                             |
|                       |                                           | ≤ 45 MPH                                                    | > 45 MPH                                                    |
| ≤ 3"                  | CENTERLINE                                | W8-11 AND LANE STRIPING                                     | W8-11 AND LANE STRIPING                                     |
| ≤ 3"                  | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup>  | W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup>  |
| > 3"                  | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup> | W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup> |
| > 6"                  | EDGE OF TRAVELED LANE OR EDGE OF SHOULDER | PRECAST CONCRETE BARRIER & EDGE LINES                       | 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            |



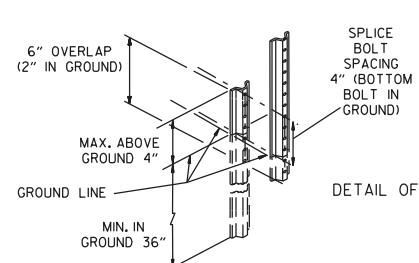
NOTE: MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.



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.



08-14-25 ADDED R2-6aP AND R2-11 REVISED TRAFFIC CONTROL DEVICES AND NOTES, ADDED NOTE 12

05-22-25

08-12-21 REVISED TRAFFIC CONTROL DEVICES AND NOTES

05-20-21 REVISED TRAFFIC CONTROL DEVICES AND NOTES

02-27-20

DATE

REV

DESCRIPTION

AR DOT ARKANSAS DEPARTMENT OF TRANSPORTATION

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

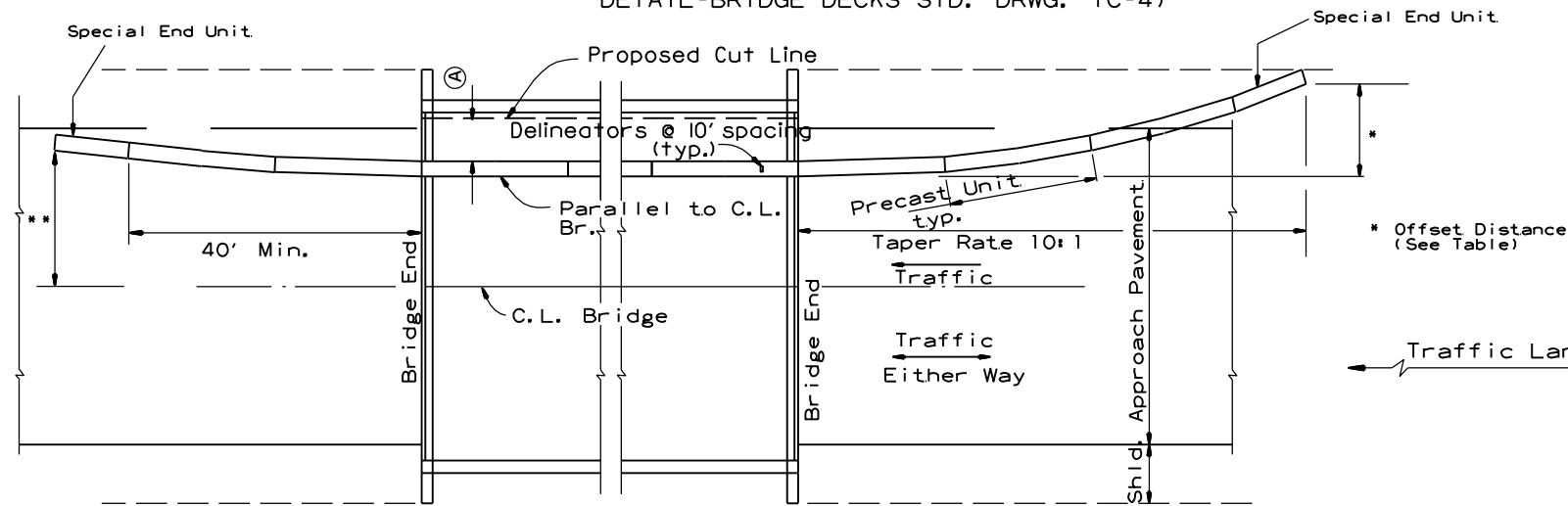
DATE EFFECTIVE 08-14-2025

STANDARD DRAWING

TC-3



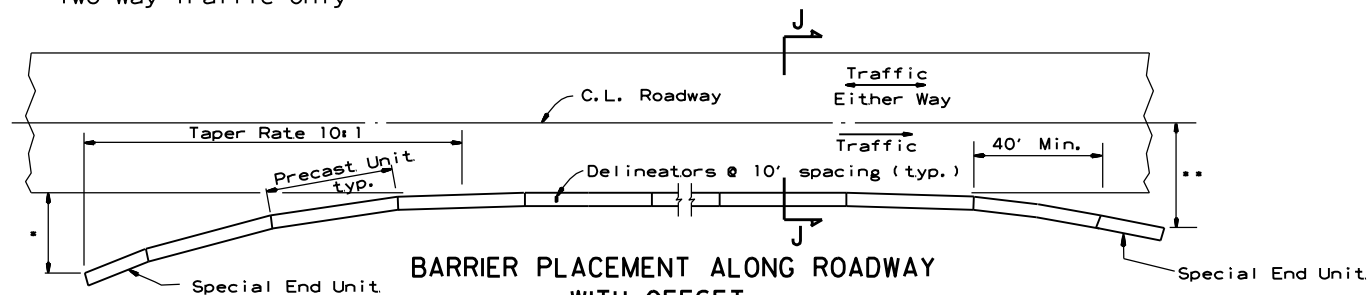
- (A) 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



**BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET**

No Scale

\*\* Offset Distance for Two Way Traffic Only



**BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET**

No Scale

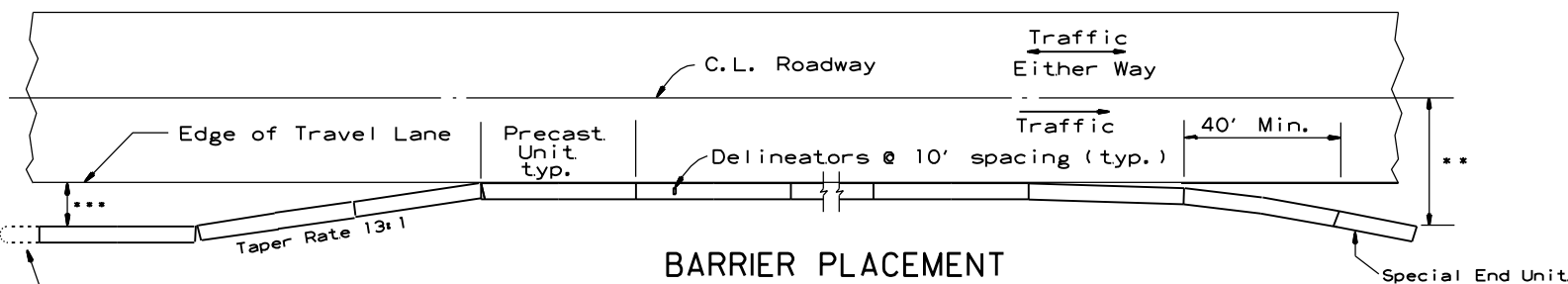
\* Offset Distance (See Table)

\*\* Offset Distance For Two Way Traffic Only

**Offset Distance Table**

| Speed (MPH) | Offset Distance (FT.) |
|-------------|-----------------------|
| ≤ 45        | 12                    |
| > 45        | 18                    |

If offset distance is not attainable, then see "Barrier Placement With Attenuator" Detail shown below.

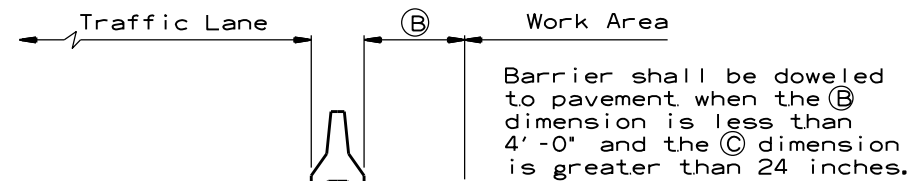


**BARRIER PLACEMENT WITH ATTENUATOR**

No Scale

\*\* Offset Distance For Two Way Traffic Only

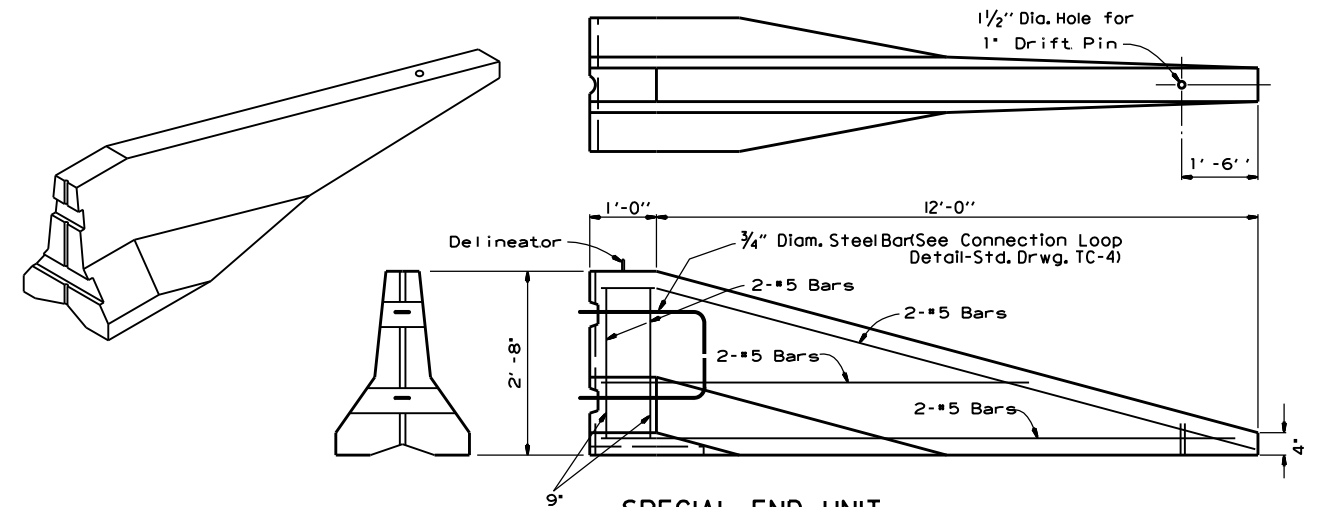
\*\*\*Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator



**SECTION J-J**

No Scale

Barrier shall be doweled to pavement when the B dimension is less than 4'-0" and the C dimension is greater than 24 inches.



**SPECIAL END UNIT**

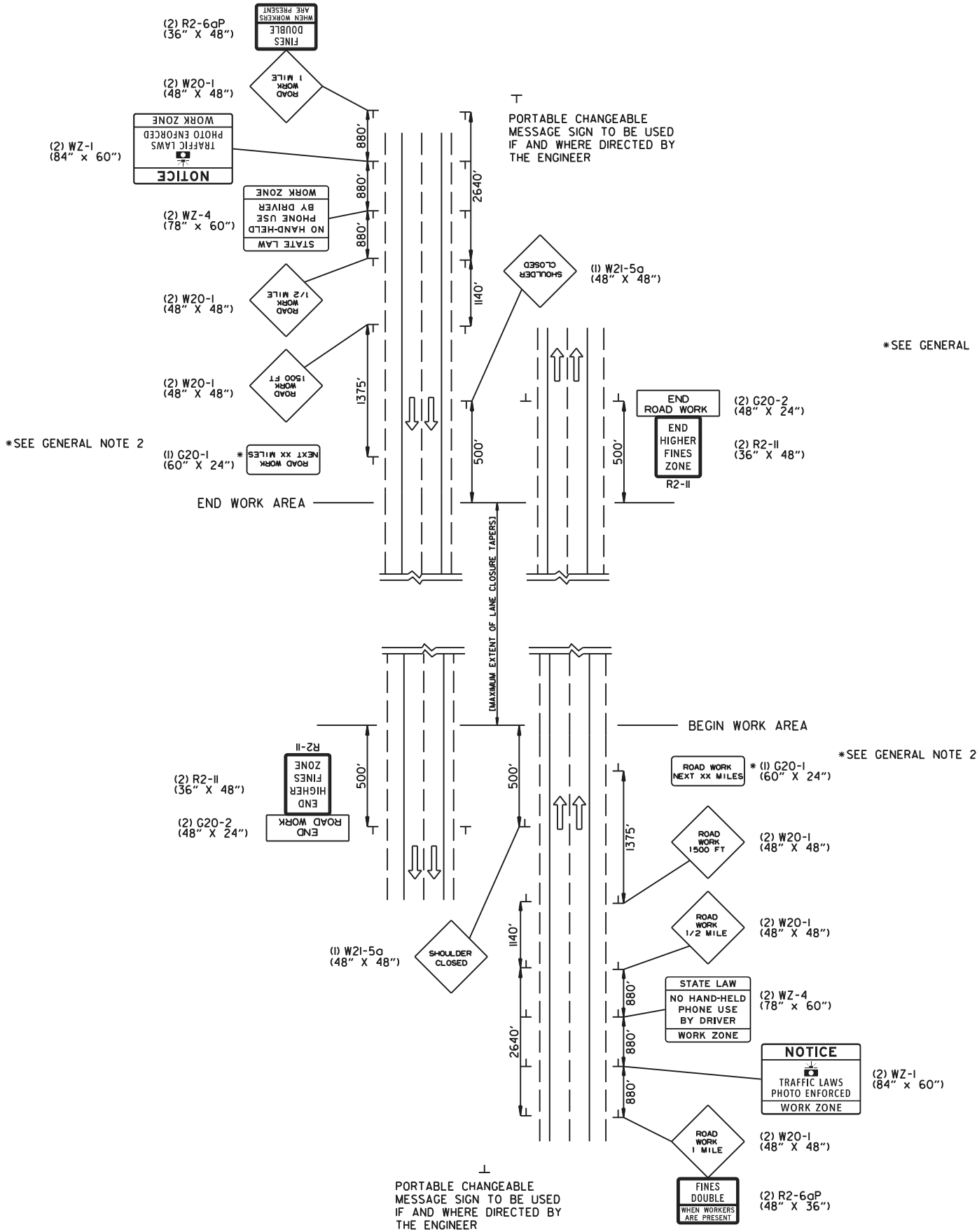
No Scale

**General Notes**

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with a Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

|          |                           |        |                                                                                               |  |
|----------|---------------------------|--------|-----------------------------------------------------------------------------------------------|--|
|          |                           |        | <b>ARKANSAS STATE HIGHWAY COMMISSION</b>                                                      |  |
|          |                           |        | <b>STANDARD TRAFFIC CONTROLS<br/>FOR HIGHWAY CONSTRUCTION -<br/>TEMPORARY PRECAST BARRIER</b> |  |
| 11-07-19 | REVISED NOTE              |        | <b>STANDARD DRAWING TC-5</b>                                                                  |  |
| 10-15-09 | ADDED REFERENCE TO MASH   |        |                                                                                               |  |
| 5-25-06  | REVISED BARRIER PLACEMENT |        |                                                                                               |  |
| 8-22-02  | ISSUED NEW DRAWING        |        |                                                                                               |  |
| DATE     | REVISION                  | FILMED |                                                                                               |  |

NOTE : W20-1(VARIOUS DISTANCE) ADVANCE SIGNS  
TO BE REPLACED AS NEEDED BY EQUIVALENT W20-5 SIGNS  
AS WORKING AREA SHIFTS.



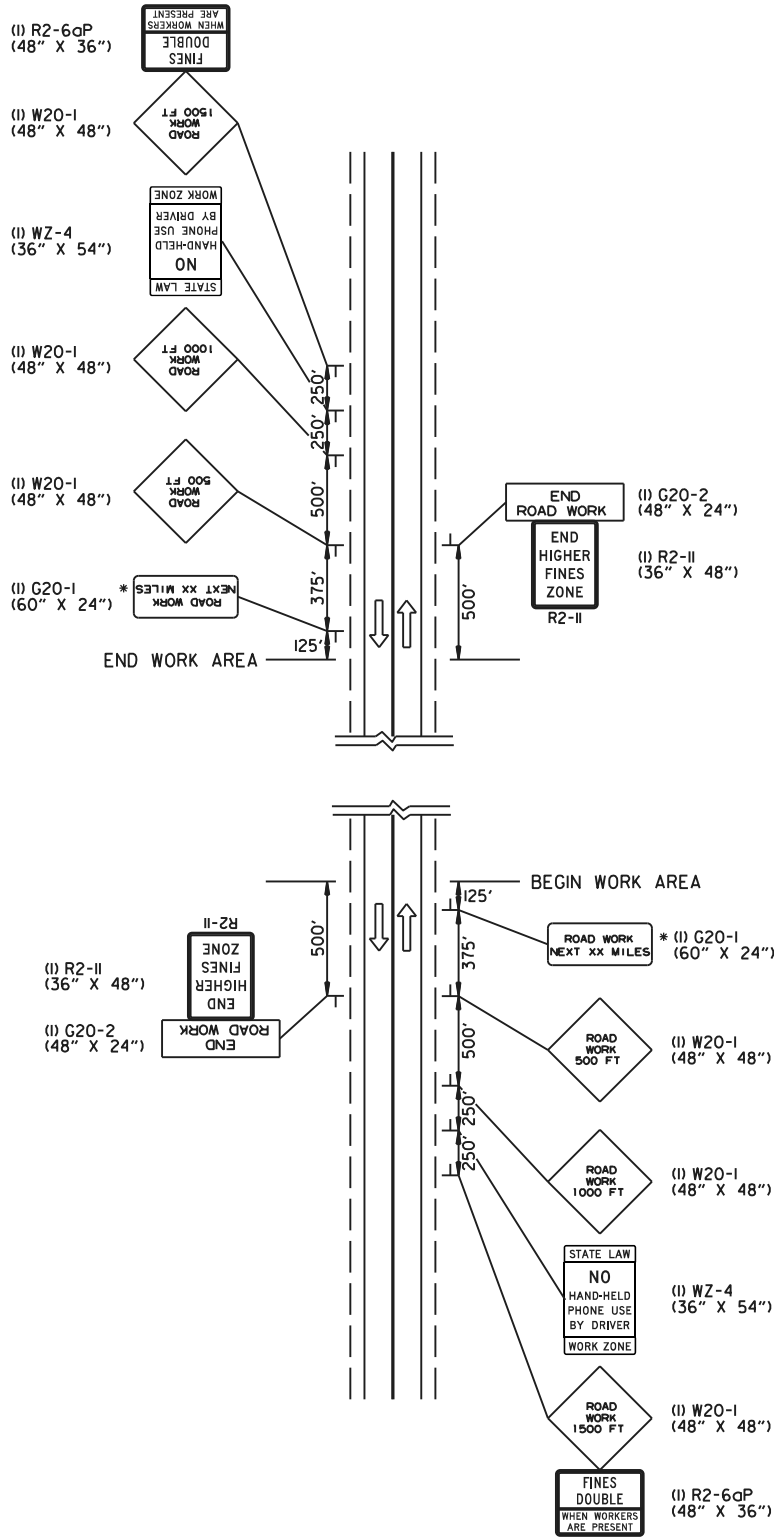
(A) TYPICAL APPLICATION - ADVANCE WARNING SIGNS AT BEGINNING AND  
END OF JOB (FULLY CONTROLLED ACCESS FACILITIES) (ALL STAGES)

\*SEE GENERAL NOTE 2

\*SEE GENERAL NOTE 2

(2) WZ-1  
(84" X 60")

NOTE : W20-1(VARIOUS DISTANCE) ADVANCE SIGNS  
TO BE REPLACED AS NEEDED BY EQUIVALENT W20-5 SIGNS  
AS WORKING AREA SHIFTS.



(B) TYPICAL APPLICATION - ADVANCE WARNING SIGNS AT BEGINNING AND  
END OF JOB (NON-FULLY CONTROLLED ACCESS FACILITIES) (ALL STAGES)

GENERAL NOTES:

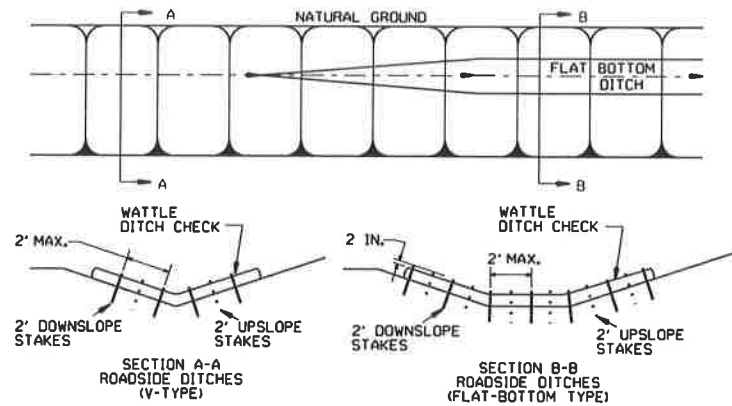
1. FLAGS MAY BE MOUNTED TO SIGNS AT NIGHT AS NEEDED.
2. THE G20-1SIGN SHOULD BE INSTALLED ON JOBS OF OVER TWO MILES IN LENGTH. WHEN THE LANE CLOSURE IS NOT AT THE BEGINNING OF THE PROJECT, THE G20-1SIGN SHALL BE ERECTED 125' IN ADVANCE OF THE JOB LIMIT. ADDITIONAL W20-1(1MILE OR 1500 FT) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS. THE DISTANCE DISPLAYED ON THE G20-1SIGN SHALL BE STATED TO THE NEAREST WHOLE MILE.
3. 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, THIS DEVICE SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR PORTABLE CHANGEABLE MESSAGE SIGNS.
4. PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

\*SEE GENERAL NOTE 2

|                                                                                                                                                        |  |  |  |                                                       |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|-------------------------------------------------------|--|
| CORRECTED WZ-4 SIGN<br>DIMENSIONS<br>ADDED WZ-4 AND REVISED<br>GENERAL NOTE 1<br>REPLACED *SPEED* WITH<br>*TRAFFIC LAWS* ON WZ-1<br>ISSUED<br>DATE REV |  |  |  | DESCRIPTION                                           |  |
| 04-09-26                                                                                                                                               |  |  |  | 01-22-26                                              |  |
| 08-14-25                                                                                                                                               |  |  |  | 04-09-2026                                            |  |
| DATE EFFECTIVE                                                                                                                                         |  |  |  | STANDARD DRAWING                                      |  |
| TC-6                                                                                                                                                   |  |  |  | AR DOT<br>ARKANSAS DEPARTMENT<br>OF TRANSPORTATION    |  |
| ARKANSAS STATE<br>HIGHWAY COMMISSION                                                                                                                   |  |  |  | STANDARD TRAFFIC CONTROLS<br>FOR HIGHWAY CONSTRUCTION |  |

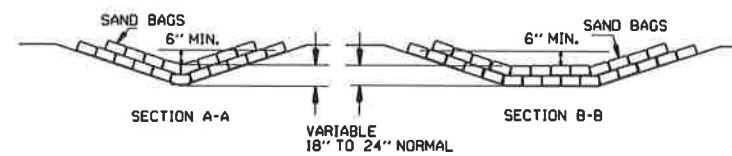
# GENERAL NOTES

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

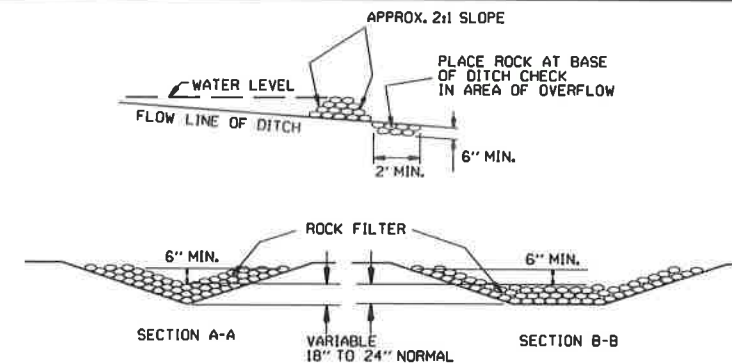


WATTLE DITCH CHECK (E-1)

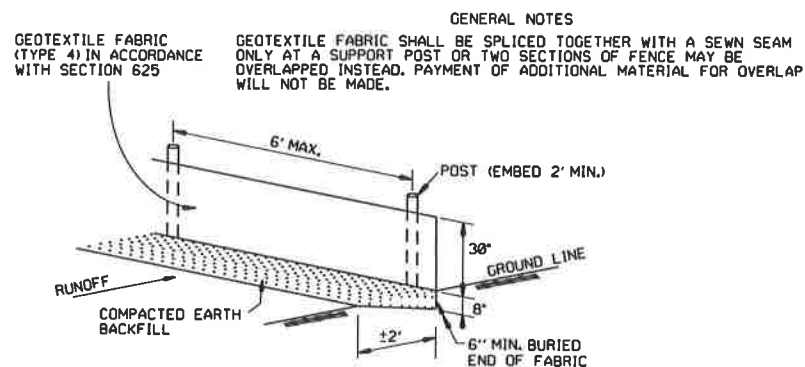
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS. PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW.



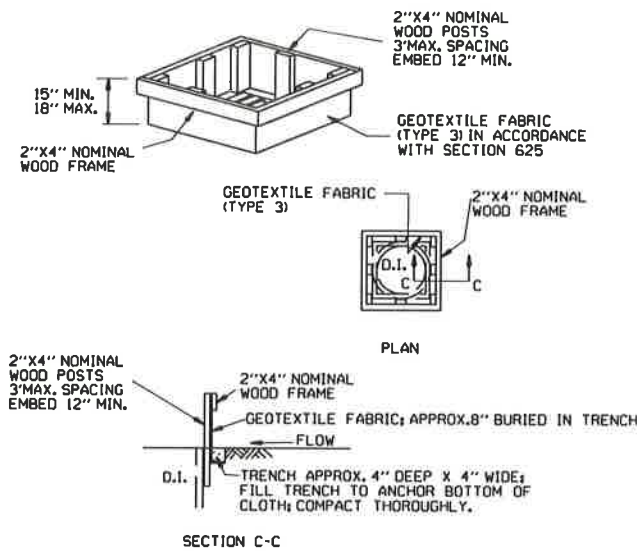
SAND BAG DITCH CHECK (E-5)



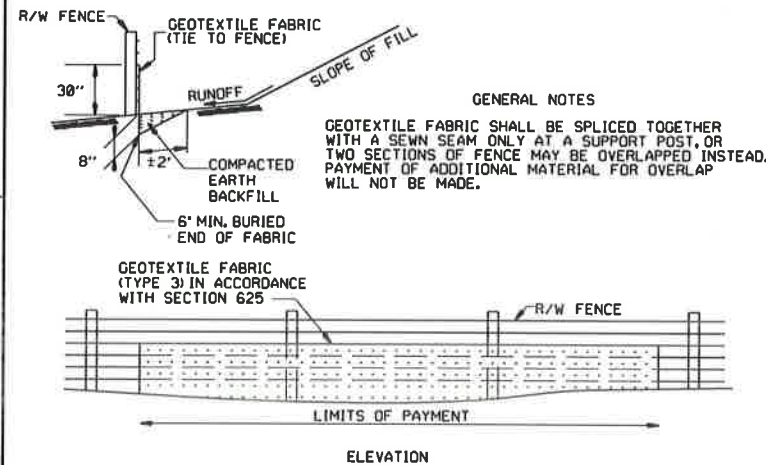
ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

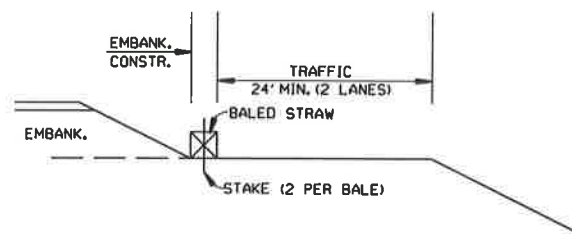


DROP INLET SILT FENCE (E-7)

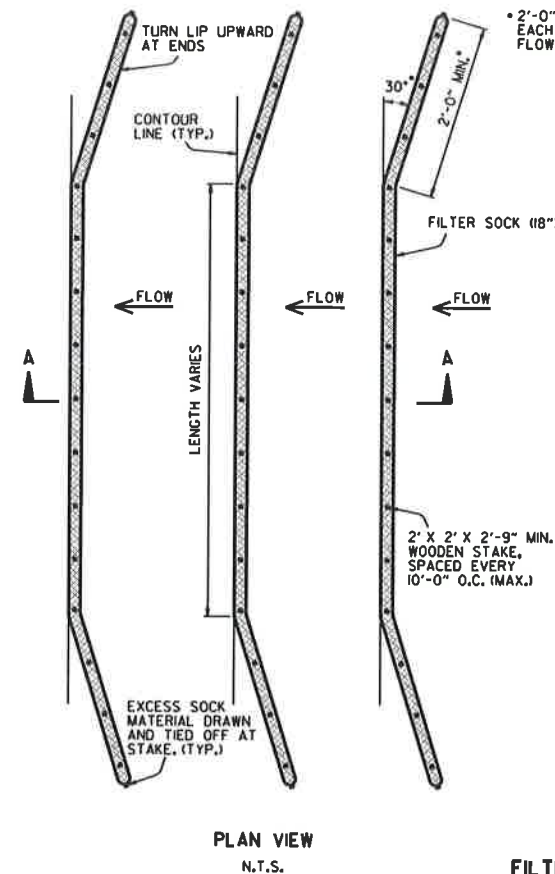


SILT FENCE ON R/W FENCE (E-4)

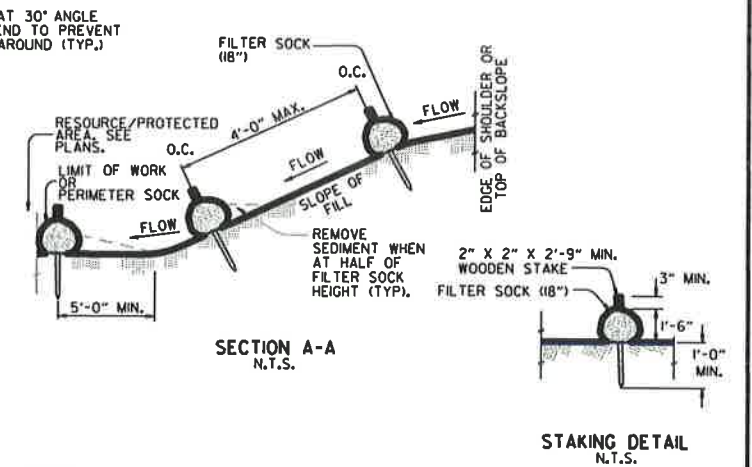
GENERAL NOTES  
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.  
2. NO GAPS SHALL BE LEFT BETWEEN BALES.  
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED 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.



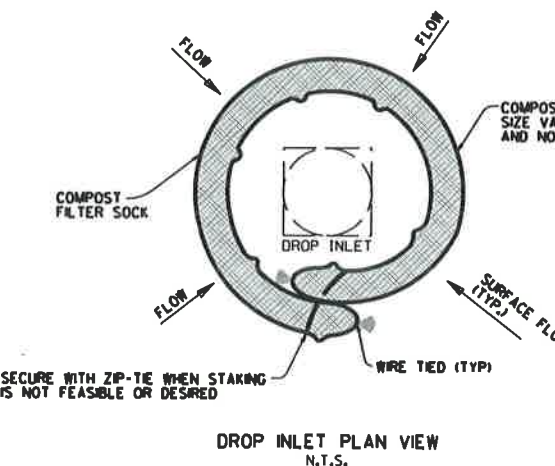
BALED STRAW FILTER BARRIER (E-2)



FILTER SOCK ALONG SLOPE (E-3)



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 EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBSIDIARY 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.



COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

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.

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

ARKANSAS STATE HIGHWAY COMMISSION  
TEMPORARY EROSION  
CONTROL DEVICES  
STANDARD DRAWING TEC-1

| FED. ROAD DIST. NO. | STATE | FED. AID PROJECT NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|----------------------|-------------|-----------|--------------|
| 6                   | ARK.  |                      |             |           |              |
| JOB NO.             |       |                      |             |           |              |

## WING DIMENSIONS

| CLEAR HEIGHT<br>OF BOX | THICKNESS OF<br>WING FOOTING<br>AT HEADWALL = C | WINGWALL<br>HEIGHTS | WIDTHS OF WING<br>FOOTINGS |                      | PERPENDICULAR<br>FOOTING DIMENSION | PERPENDICULAR<br>DIST. FROM HWALL<br>TO END OF HWALL | LENGTH OF<br>WING WALLS | INSIDE<br>FOOTING<br>DIMENSION | * QUANTITY<br>PER WING |               |        |       |
|------------------------|-------------------------------------------------|---------------------|----------------------------|----------------------|------------------------------------|------------------------------------------------------|-------------------------|--------------------------------|------------------------|---------------|--------|-------|
|                        |                                                 |                     |                            |                      |                                    |                                                      |                         |                                | CLASS S<br>CONCRETE    |               |        |       |
|                        |                                                 |                     | AT<br>HEADWALL             | AT<br>END<br>OF WING |                                    |                                                      |                         |                                | INLET<br>END           | OUTLET<br>END |        |       |
| H                      | WB                                              | CW                  | WH <sub>1</sub>            | WH <sub>2</sub>      | WF                                 | W <sub>1</sub>                                       | F                       | E                              | W <sub>2</sub>         | CU.YD.        | CU.YD. |       |
| 2'                     | 7"                                              | 6"                  | 2'-0"                      | 0'-8"                | 2'-4"                              | 2'-0"                                                | 0'-11 1/2"              | 6'-6"                          | 7'-6"                  | 7'-1 1/2"     | 0.889  | 0.986 |
| 3'                     | 7"                                              | 6"                  | 3'-0"                      | 1'-0"                | 2'-8"                              | 2'-4"                                                | 1'-4 3/4"               | 8'-6"                          | 9'-9 3/4"              | 9'-2 1/2"     | 1.338  | 1.466 |
| 4'                     | 7"                                              | 6"                  | 4'-0"                      | 1'-4"                | 3'-0"                              | 2'-8"                                                | 1'-0"                   | 10'-6"                         | 12'-1 1/2"             | 10'-5 1/2"    | 1.668  | 2.027 |
| 5'                     | 7"                                              | 6"                  | 5'-0"                      | 1'-8"                | 3'-4"                              | 2'-8"                                                | 2'-1 1/2"               | 12'-6"                         | 14'-5 1/2"             | 14'-7 1/2"    | 2.478  | 2.648 |
|                        |                                                 | 7"                  | 5'-0"                      | 1'-8"                | 3'-4"                              | 2'-8"                                                | 2'-1 1/2"               | 12'-6"                         | 14'-5 1/2"             | 14'-7 1/2"    | 2.682  | 2.772 |
| 6'                     | 8"                                              | 7"                  | 6'-0"                      | 2'-0"                | 3'-8"                              | 2'-8"                                                | 2'-6 1/2"               | 14'-6"                         | 16'-9"                 | 17'-1 1/2"    | 3.440  | 3.661 |
|                        |                                                 | 7 1/2"              | 6'-0"                      | 2'-0"                | 3'-8"                              | 2'-8"                                                | 2'-6 1/2"               | 14'-6"                         | 16'-9"                 | 17'-1 1/2"    | 3.511  | 3.732 |
|                        |                                                 | 8"                  | 6'-0"                      | 2'-0"                | 3'-8"                              | 2'-8"                                                | 2'-6 1/2"               | 14'-6"                         | 16'-9"                 | 17'-1 1/2"    | 3.582  | 3.803 |
| 7'                     | 8 1/2"                                          | 7 1/2"              | 7'-0"                      | 2'-4"                | 4'-2"                              | 2'-8"                                                | 3'-1 1/2"               | 16'-6"                         | 19'-0"                 | 19'-8 1/2"    | 4.505  | 4.758 |
|                        |                                                 | 8"                  | 7'-0"                      | 2'-4"                | 4'-2"                              | 2'-8"                                                | 3'-1 1/2"               | 16'-6"                         | 19'-0"                 | 19'-8 1/2"    | 4.597  | 4.851 |
| 8'                     | 9"                                              | 8"                  | 8'-0"                      | 2'-8"                | 4'-8"                              | 2'-8"                                                | 3'-8"                   | 18'-6"                         | 21'-4 1/4"             | 22'-9"        | 5.761  | 6.047 |

\* Quantity per wing does not include headwall or that portion of apron or trewall for the length W<sub>3</sub>.

APRON DIMENSION W<sub>3</sub>

| CLEAR SPAN | CLEAR HEIGHT | FOOTING DIMENSION | W <sub>3</sub> = (OW - 2F) |                |                       |                |                       |                |                          |                |                          |                |
|------------|--------------|-------------------|----------------------------|----------------|-----------------------|----------------|-----------------------|----------------|--------------------------|----------------|--------------------------|----------------|
|            |              |                   | SINGLE BARREL CULVERT      |                | DOUBLE BARREL CULVERT |                | TRIPLE BARREL CULVERT |                | QUADRUPLE BARREL CULVERT |                | QUINTUPLE BARREL CULVERT |                |
| S          | H            | 2F                | OW                         | W <sub>3</sub> | OW                    | W <sub>3</sub> | OW                    | W <sub>3</sub> | OW                       | W <sub>3</sub> | OW                       | W <sub>3</sub> |
| 2'         | 2'-1 1/2"    | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 3'         | 2'-8 1/2"    | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 4'         | 3'-4"        | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 5'         | 4'-0"        | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 6'         | 4'-6"        | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 7'         | 5'-2"        | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 8'         | 5'-8"        | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 9'         | 6'-4"        | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 10'        | 7'-0"        | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 11'        | 7'-6"        | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |
| 12'        | 8'-2"        | 5'-0"             | 3'-0"                      | 9'-8"          | 7'-8"                 | 14'-4"         | 12'-4"                | 19'-0"         | 17'-0"                   | 23'-8"         | 21'-8"                   |                |

## QUANTITIES

| CLEAR SPAN | CLEAR HEIGHT | THICKNESS OF WING AT HEADWALL | THICKNESS OF WING FOOTING | REINFORCING STEEL - FOR 4 WINGS | CLASS S CONCRETE - 4 WINGS                         |                       |                       |                          |                          |
|------------|--------------|-------------------------------|---------------------------|---------------------------------|----------------------------------------------------|-----------------------|-----------------------|--------------------------|--------------------------|
|            |              |                               |                           |                                 | HEADWALLS, WINGWALLS, FOOTINGS, TOWALLS AND APRONS |                       |                       |                          |                          |
|            |              |                               |                           |                                 | SINGLE BARREL CULVERT                              | DOUBLE BARREL CULVERT | TRIPLE BARREL CULVERT | QUADRUPLE BARREL CULVERT | QUINTUPLE BARREL CULVERT |
| S          | H            | CW                            | WB                        | LB.                             | CU.YD.                                             | CU.YD.                | CU.YD.                | CU.YD.                   | CU.YD.                   |
| 4'         | 2'           | 6"                            | 7"                        | 108.0                           | 4.50                                               | 5.94                  | 6.92                  | 7.38                     | 8.34                     |
|            | 3'           | 6"                            | 7"                        | 149.4                           | 6.26                                               | 7.21                  | 8.17                  | 9.13                     | 10.09                    |
|            | 4'           | 6"                            | 7"                        | 204.6                           | 8.33                                               | 9.28                  | 10.24                 | 11.20                    | 12.16                    |
|            | 5'           | 6"                            | 7"                        | 273.8                           | 10.72                                              | 11.68                 | 12.64                 | 13.60                    | 14.56                    |
| 5'         | 6'           | 7"                            | 8"                        | 593.1                           | 14.55                                              | 15.53                 | 16.52                 | 17.51                    | 18.49                    |
|            | 3'           | 6'                            | 7"                        | 144.4                           | 6.47                                               | 7.63                  | 8.79                  | 9.96                     | 11.12                    |
|            | 4'           | 6'                            | 7"                        | 204.6                           | 8.94                                               | 9.70                  | 10.97                 | 12.03                    | 13.20                    |
|            | 5'           | 6'                            | 7"                        | 267.8                           | 10.94                                              | 12.10                 | 13.26                 | 14.43                    | 15.59                    |
| 6'         | 6'           | 7"                            | 8"                        | 583.1                           | 14.77                                              | 15.96                 | 17.15                 | 18.34                    | 19.54                    |
|            | 7'           | 7"                            | 8"                        | 1134.6                          | 18.94                                              | 20.15                 | 21.37                 | 22.59                    | 23.80                    |
|            | 3'           | 6"                            | 7"                        | 144.4                           | 6.68                                               | 8.06                  | 9.42                  | 10.80                    | 12.18                    |
|            | 4'           | 6"                            | 7"                        | 204.6                           | 8.75                                               | 10.14                 | 11.49                 | 12.87                    | 14.25                    |
| 6'         | 5'           | 6"                            | 7"                        | 257.8                           | 11.15                                              | 12.53                 | 13.89                 | 15.27                    | 16.65                    |
|            | 6'           | 7"                            | 8"                        | 568.1                           | 14.98                                              | 16.39                 | 17.78                 | 19.18                    | 20.59                    |
|            | 7'           | 7"                            | 8"                        | 1134.6                          | 19.15                                              | 20.58                 | 22.00                 | 23.43                    | 24.86                    |
|            | 8'           | 8"                            | 9"                        | 1425.6                          | 24.09                                              | 25.53                 | 26.96                 | 28.39                    | 29.83                    |
| 7'         | 4'           | 6"                            | 7"                        | 204.6                           | 8.97                                               | 10.58                 | 12.15                 | 13.76                    | 15.35                    |
|            | 5'           | 6"                            | 7"                        | 257.8                           | 11.36                                              | 12.97                 | 14.54                 | 16.15                    | 17.75                    |
|            | 6'           | 7"                            | 8"                        | 563.1                           | 15.20                                              | 16.82                 | 18.42                 | 20.04                    | 21.66                    |
|            | 7'           | 7"                            | 8"                        | 1134.6                          | 19.38                                              | 21.02                 | 22.64                 | 24.28                    | 25.92                    |
| 7'         | 8'           | 8"                            | 9"                        | 1425.6                          | 24.32                                              | 25.97                 | 27.60                 | 29.25                    | 30.89                    |
|            | 4'           | 6"                            | 7"                        | 204.6                           | 9.19                                               | 11.03                 | 12.82                 | 14.65                    | 16.45                    |
|            | 5'           | 7"                            | 7"                        | 257.8                           | 12.03                                              | 13.89                 | 15.70                 | 17.55                    | 19.34                    |
|            | 6'           | 7"                            | 8"                        | 568.1                           | 15.92                                              | 17.27                 | 19.09                 | 20.93                    | 22.75                    |
| 8'         | 7'           | 7"                            | 8"                        | 1134.6                          | 19.59                                              | 21.46                 | 23.30                 | 25.16                    | 26.99                    |
|            | 8'           | 8"                            | 9"                        | 1425.6                          | 24.54                                              | 26.47                 | 28.24                 | 30.11                    | 31.96                    |
|            | 5'           | 7"                            | 7"                        | 257.8                           | 12.26                                              | 14.99                 | 16.87                 | 18.45                    | 20.47                    |
|            | 6'           | 7"                            | 8"                        | 563.1                           | 15.94                                              | 18.04                 | 20.09                 | 22.19                    | 24.23                    |
| 9'         | 7'           | 7"                            | 8"                        | 1134.6                          | 19.81                                              | 21.91                 | 23.96                 | 26.06                    | 28.10                    |
|            | 8'           | 8"                            | 9"                        | 1425.6                          | 24.76                                              | 26.86                 | 28.91                 | 31.00                    | 33.05                    |
|            | 5'           | 7"                            | 7"                        | 257.8                           | 12.49                                              | 14.80                 | 17.05                 | 19.24                    | 21.52                    |
|            | 6'           | 7"                            | 8"                        | 563.1                           | 16.17                                              | 18.50                 | 20.77                 | 22.99                    | 25.28                    |
| 10'        | 7'           | 7"                            | 8"                        | 1134.6                          | 20.04                                              | 22.37                 | 24.64                 | 26.87                    | 29.15                    |
|            | 8'           | 8"                            | 9"                        | 1425.6                          | 24.98                                              | 27.31                 | 29.58                 | 31.81                    | 34.10                    |
|            | 6'           | 8"                            | 9"                        | 563.1                           | 16.69                                              | 19.27                 | 21.76                 | 24.23                    |                          |
|            | 7'           | 8"                            | 8"                        | 1134.6                          | 20.64                                              | 23.22                 | 25.71                 | 28.18                    |                          |
| 11'        | 8'           | 8"                            | 9"                        | 1425.6                          | 25.19                                              | 27.77                 | 30.27                 | 32.74                    |                          |
|            | 6'           | 8"                            | 9"                        | 563.1                           | 16.92                                              | 19.75                 | 22.45                 | 25.18                    |                          |
|            | 7'           | 8"                            | 8"                        | 1134.6                          | 20.87                                              | 23.69                 | 26.40                 | 29.19                    |                          |
|            | 8'           | 8"                            | 9"                        | 1425.6                          | 25.42                                              | 28.25                 | 30.96                 | 33.69                    |                          |

\* For reinforcing steel in Headwalls and Aprons, See Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.

## GENERAL NOTES:-

- CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have 3/4 chamfers.  
 REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.  
 CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and side walls shall be only where shown on plans.  
 SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

## UNIT STRESSES:-

Class S Concrete (n=10) 1200 psi  
 Reinforcing Steel 20,000 psi

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos. as listed below.

| SINGLES   | DOUBLES   | TRIPLES   | QUADRUPLES | QUINTUPLES |
|-----------|-----------|-----------|------------|------------|
| R-100X-0  | R-200X-0  | R-300X-0  | R-400X-0   | R-500X-0   |
| R-100X-X1 | R-200X-X1 | R-300X-X1 | R-400X-X1  | R-500X-X1  |
| R-100X-X2 | R-200X-X2 | R-300X-X2 | R-400X-X2  |            |
|           | R-200X-X3 | R-300X-X3 |            |            |

## CLASS S CONCRETE

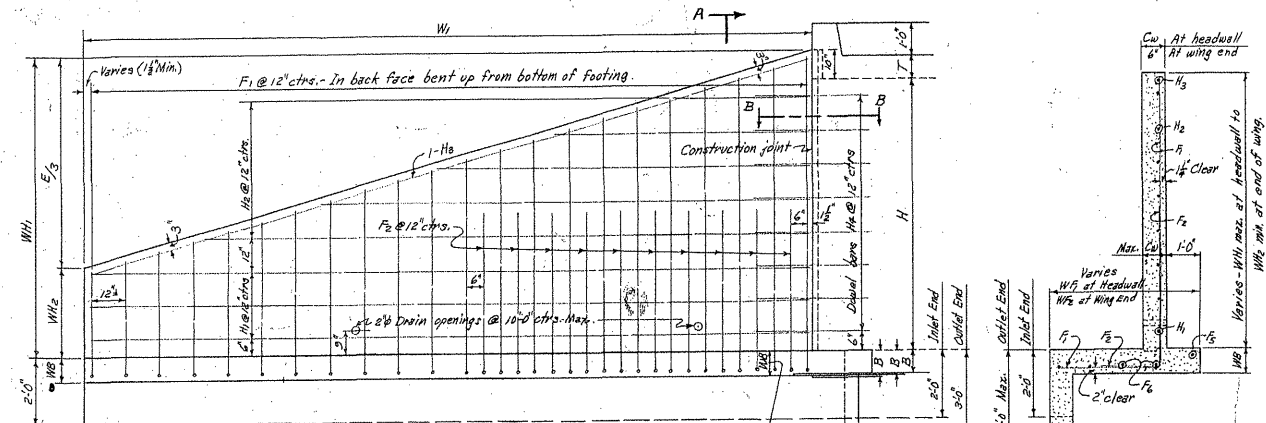
## ARKANSAS STATE HIGHWAY COMMISSION

## DETAILS OF STANDARD WINGS

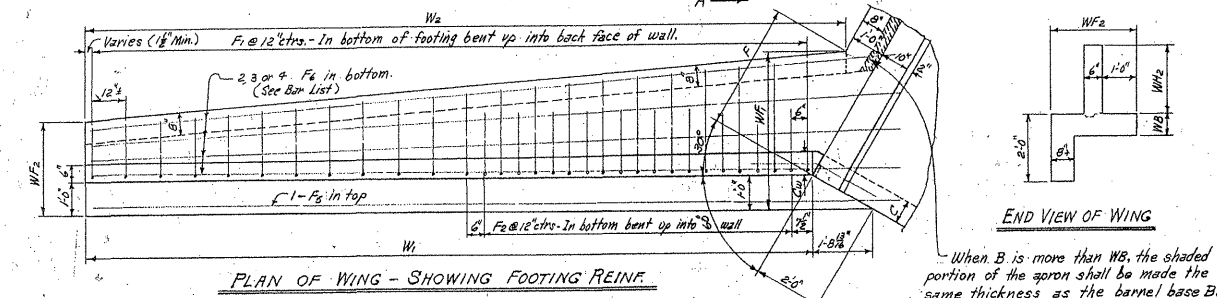
## FOR REINFORCED CONCRETE BOX CULVERTS

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS 3:1 SLOPES  
 SINGLES, DOUBLES, TRIPLES, ALL DEPTHS OF COVER  
 QUADRUPLES & QUINTUPLES. FOR H=8'-0" OR LESS

STANDARD DRAWING NO. W-X003-1



REAR ELEVATION OF WING - SHOWING BACK FACE REIN.



PLAN OF WING - SHOWING FOOTING REIN.

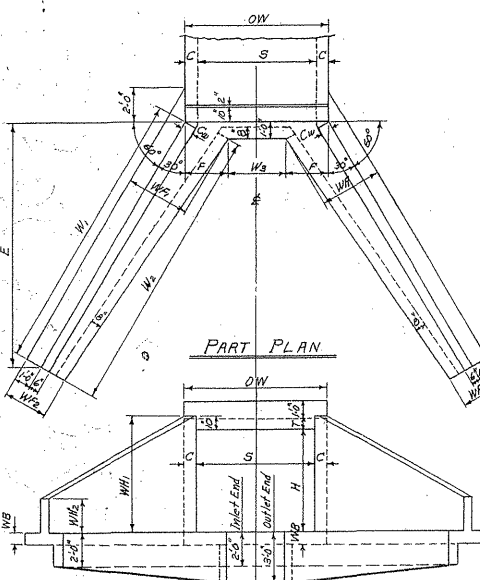
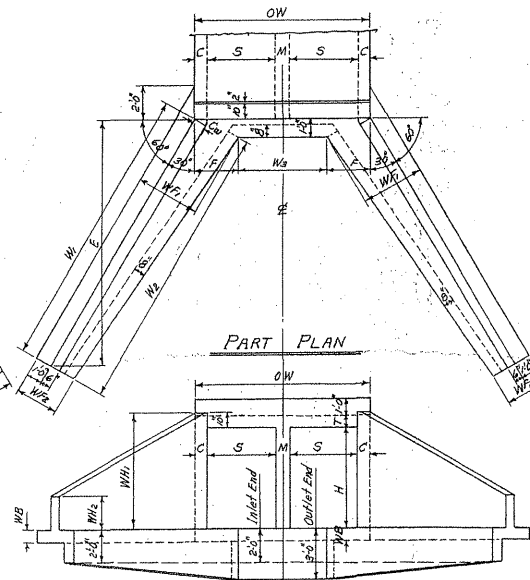
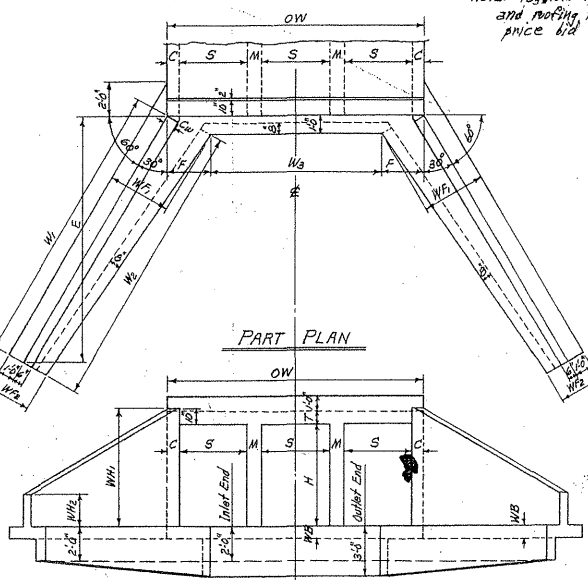
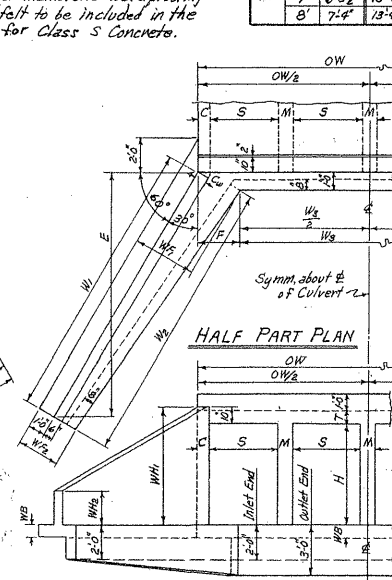
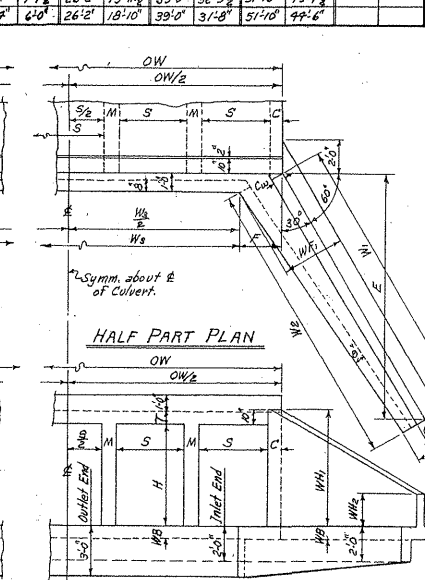
END VIEW OF WING

When B is more than W<sub>3</sub>, the shaded portion of the apron shall be made the same thickness as the barrel base B.

SECTION B-B THRU CONSTRUCTION JOINT

DETAIL AT TOP OF WING

NOTE:- Payment for membrane waterproofing and nailing felt to be included in the price bid for Class S Concrete.

END ELEVATION  
SINGLE BARREL CULVERTEND ELEVATION  
DOUBLE BARREL CULVERTEND ELEVATION  
TRIPLE BARREL CULVERTHALF END ELEVATION  
QUADRUPLE BARREL CULVERTHALF END ELEVATION  
QUINTUPLE BARREL CULVERT

NOTE:- Plans and Elevations are not to scale.

## BAR LIST FOR ONE WING - 4 REQUIRED

| CLEAR<br>HEIGHT | BAR LIST FOR ONE WING                                                               |         |          |                 |        |        |                                                                                           |        |         |          |                                                    |    |                                                      |        |                                        |        |                                                                |         |                                             |                 | QUANTITY<br>REINFORCING STEEL<br>PER WING | BAR BENDING<br>DIAGRAMS |                                                   |          |        |    |         |    |         |    |       |       |       |       |       |
|-----------------|-------------------------------------------------------------------------------------|---------|----------|-----------------|--------|--------|-------------------------------------------------------------------------------------------|--------|---------|----------|----------------------------------------------------|----|------------------------------------------------------|--------|----------------------------------------|--------|----------------------------------------------------------------|---------|---------------------------------------------|-----------------|-------------------------------------------|-------------------------|---------------------------------------------------|----------|--------|----|---------|----|---------|----|-------|-------|-------|-------|-------|
|                 | F <sub>1</sub>                                                                      |         |          |                 |        |        | F <sub>2</sub>                                                                            |        |         |          | F <sub>3</sub>                                     |    | F <sub>4</sub>                                       |        | H <sub>1</sub>                         |        | H <sub>2</sub>                                                 |         | H <sub>3</sub>                              |                 |                                           |                         | H <sub>4</sub>                                    |          |        |    |         |    |         |    |       |       |       |       |       |
|                 | BENT                                                                                |         |          |                 |        |        | BENT                                                                                      |        |         |          | STRAIGHT                                           |    |                                                      |        | STRAIGHT                               |        | STRAIGHT                                                       |         | BENT                                        |                 |                                           |                         |                                                   |          |        |    |         |    |         |    |       |       |       |       |       |
|                 | In bottom of footing, bent up into<br>back face of wing.<br>One bar of each length. |         |          |                 |        |        | In bottom of footing, bent<br>up into back face of wing.<br>All with F <sub>2</sub> bars. |        |         |          | Longitudinal<br>in top of<br>wing footing<br>heel. |    | Longitudinal<br>in bottom of<br>wing footing<br>toe. |        | Horizontal in<br>back face of<br>wing. |        | Horizontal in back<br>face of wing.<br>One bar of each length. |         | In back face<br>of wing at<br>top-on slope. |                 |                                           |                         | Dowels thru<br>construction joint<br>at headwall. |          |        |    |         |    |         |    |       |       |       |       |       |
| H               | SIZE                                                                                | SPACING | No. Bars | LENGTHS<br>VARY |        | X      | Y                                                                                         | SIZE   | SPACING | No. Bars | LENGTH                                             | X  | Y                                                    | SIZE   | No. Bars                               | LENGTH | SIZE                                                           | SPACING | No. Bars                                    | LENGTHS<br>VARY |                                           | SIZE                    | SPACING                                           | No. Bars | LENGTH | X  | LB.     |    |         |    |       |       |       |       |       |
|                 |                                                                                     |         |          | MIN.            | MAX.   | MIN.   | MAX.                                                                                      |        |         |          |                                                    |    |                                                      |        |                                        |        |                                                                |         |                                             |                 | MAX.                                      | MIN.                    |                                                   |          |        |    |         |    |         |    |       |       |       |       |       |
| 2'              | #3                                                                                  | 12"     | 8        | 1'-6"           | 3'-0"  | 0'-8"  | 1'-0"                                                                                     | 0'-11" | 2'-11"  | —        | —                                                  | —  | —                                                    | #3     | 1                                      | 9'-8"  | #3                                                             | 2       | 9'-6"                                       | #3              | 12"                                       | 1                       | 7'-8"                                             | #3       | 12"    | 1  | 7'-8"   | #3 | 12"     | 2  | 2'-8" | 1'-4" | 27.0  |       |       |
| 3'              | #3                                                                                  | 12"     | 10       | 2'-2"           | 5'-2"  | 0'-8"  | 1'-3"                                                                                     | 1'-5"  | 4'-0"   | —        | —                                                  | —  | —                                                    | #3     | 1                                      | 12'-0" | #3                                                             | 2       | 11'-8"                                      | #3              | 12"                                       | 1                       | 9'-6"                                             | #3       | 12"    | 2  | 7'-6"   | #3 | 12"     | 3  | 2'-8" | 1'-4" | 41.1  |       |       |
| 4'              | #3                                                                                  | 12"     | 13       | 2'-4"           | 6'-6"  | 0'-11" | 1'-6"                                                                                     | 1'-6"  | 5'-0"   | —        | —                                                  | —  | —                                                    | #3     | 1                                      | 14'-4" | #3                                                             | 3       | 13'-6"                                      | #3              | 12"                                       | 1                       | 11'-10"                                           | #3       | 12"    | 3  | 10'-11" | #3 | 12"     | 4  | 2'-8" | 1'-4" | 63.7  |       |       |
| 5'              | #3                                                                                  | 12"     | 15       | 2'-11"          | 7'-10" | 1'-1"  | 1'-11"                                                                                    | 1'-11" | 6'-0"   | #3       | 12"                                                | 9  | 3'-6"                                                | 1'-1"  | 2'-6"                                  | #3     | 1                                                              | 16'-0"  | #3                                          | 3               | 16'-0"                                    | #3                      | 12"                                               | 2        | 14'-2" | #3 | 12"     | 3  | 10'-11" | #3 | 12"   | 5     | 2'-8" | 1'-4" | 89.5  |
| 6'              | #4                                                                                  | 12"     | 17       | 3'-6"           | 9'-3"  | 1'-2"  | 2'-3"                                                                                     | 2'-5"  | 7'-1"   | #3       | 12"                                                | 4  | 4'-6"                                                | 1'-4"  | 3'-3"                                  | #3     | 1                                                              | 19'-0"  | #3                                          | 3               | 18'-6"                                    | #3                      | 12"                                               | 2        | 16'-4" | #3 | 12"     | 4  | 14'-4"  | #3 | 12"   | 6     | 2'-8" | 1'-4" | 145.8 |
| 7'              | #4                                                                                  | 12"     | 20       | 3'-9"           | 10'-9" | 1'-3"  | 2'-9"                                                                                     | 2'-7"  | 8'-11"  | #3       | 12"                                                | 7  | 5'-6"                                                | 1'-7"  | 4'-0"                                  | #3     | 1                                                              | 21'-4"  | #3                                          | 4               | 21'-0"                                    | #4                      | 12"                                               | 2        | 18'-8" | #4 | 12"     | 5  | 17'-9"  | #4 | 12"   | 7     | 3'-6" | 1'-4" | 283.7 |
| 8'              | #4                                                                                  | 12"     | 22       | 4'-4"           | 12'-3" | 1'-5"  | 3'-2"                                                                                     | 3'-0"  | 9'-2"   | #4       | 12"                                                | 10 | 6'-6"                                                | 1'-10" | 4'-9"                                  | #4     | 1                                                              | 23'-8"  | #4                                          | 4               | 23'-3"                                    | #4                      | 12"                                               | 5        | 17'-9" | #4 | 12"     | 5  | 17'-9"  | #4 | 12"   | 8     | 3'-6" | 1'-4" | 356.4 |

NOTE: Dimensions are to bar centers.

REVISIONS:- Membrane added. 5-10-66 W.C.H.

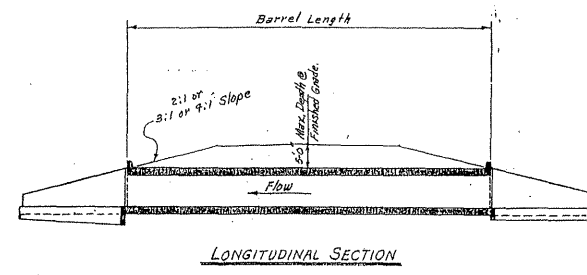
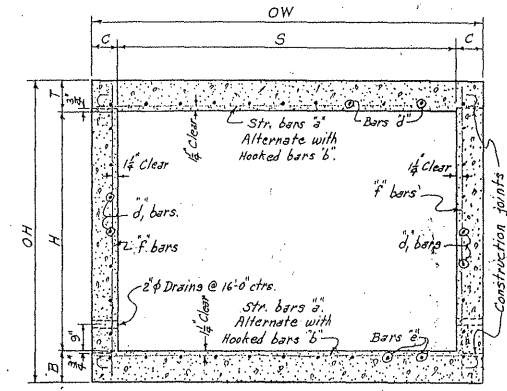
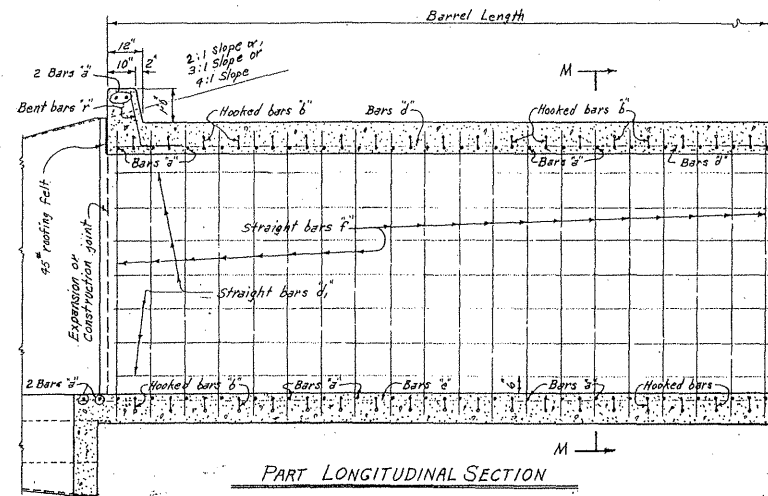
# BAR LIST FOR BARREL SECTION 60'-0" IN LENGTH

| DEPTH OF COVER | CLEAR SPAN | CLEAR HEIGHT | a bars                             |              | b bars                             |              | c bars                             |              | d bars                     |              | e bars                                |              | f bars                  |              |
|----------------|------------|--------------|------------------------------------|--------------|------------------------------------|--------------|------------------------------------|--------------|----------------------------|--------------|---------------------------------------|--------------|-------------------------|--------------|
|                |            |              | STRAIGHT                           |              | BENT - See Diagram below           |              | STRAIGHT                           |              | STRAIGHT                   |              | STRAIGHT                              |              | STRAIGHT                |              |
|                |            |              | In Top and Bottom Slabs of Barrel. |              | In Top and Bottom Slabs of Barrel. |              | Longitudinal in Top Slab of Barrel |              | Longitudinal in Side Walls |              | Longitudinal in Bottom Slab of Barrel |              | Verticals in Side Walls |              |
|                |            |              | SIZE                               | NUMBER REQ'D | SIZE                               | NUMBER REQ'D | SIZE                               | NUMBER REQ'D | SIZE                       | NUMBER REQ'D | SIZE                                  | NUMBER REQ'D | SIZE                    | NUMBER REQ'D |
| D              | S          | H            | 3:1                                | 4:1          | 3:1                                | 4:1          | 3:1                                | 4:1          | 3:1                        | 4:1          | 3:1                                   | 4:1          | 3:1                     | 4:1          |

## DIMENSIONS QUANTITIES

| MAX. DESIGN DEPTH OF COVER | CLEAR SPAN | CLEAR HEIGHT | BARREL DIMENSIONS     |                        |                          |                        |                       | UNIT QUANTITIES        |                        |                        |                        |                        |
|----------------------------|------------|--------------|-----------------------|------------------------|--------------------------|------------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                            |            |              | OW                    | T                      | C                        | B                      | OH                    | CUYD                   | LB.                    | LB.                    | LB.                    | LB.                    |
|                            |            |              | THICKNESS OF TOP SLAB | THICKNESS OF SIDEWALLS | THICKNESS OF BOTTOM SLAB | THICKNESS OF SIDEWALLS | THICKNESS OF TOP SLAB | PER LIN. FT. OF BARREL | PER LIN. FT. OF BARREL | PER LIN. FT. OF BARREL | PER LIN. FT. OF BARREL | PER LIN. FT. OF BARREL |

Note: For details of wings and bar laps, see Drawing Nos. W-X002-1 or W-X003-1 or W-X004-1 or W-X004-2.



**GENERAL NOTES:-**  
 CONCRETE:- All concrete to be Class S, and shall be poured in the dry.  
 All exposed corners to have 3/4" chamfers.  
 REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.  
 BAR LAPS:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters.  
 CONSTRUCTION JOINTS:- Construction joints between wingwalls, side walls and slabs shall be only where shown on plans.  
 SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

**DESIGN LIVE LOAD**  
 H20-S16 LOADING A.A.S.H.O. 1961  
 AND  
 SPECIAL MILITARY LOADING  
 Two 25,000 lb. Axles @ 9'-0" cts.

**UNIT STRESSES:-**  
 Class S Concrete (n=10) 1200 psi  
 Reinforcing Steel 20,000 psi

Note: This drawing to be used in conjunction with Standard Drawing Nos. W-X003-1 or W-X003-2 and W-X004-1 or W-X004-2. Also Drawing No. W-X002-1 or W-X002-2.

**CLASS S CONCRETE**

ARKANSAS STATE HIGHWAY COMMISSION  
 DETAILS OF STANDARD BARREL SECTIONS  
 FOR  
 REINFORCED CONCRETE BOX CULVERTS  
 4'-6", 6'-0", 7'-0", 8'-0", 9'-0", 10'-0", 11'-0", 12'-0" SPANS  
 SINGLES UNDER 5'-0" COVER  
 3:1 OR 4:1 SLOPES

STANDARD DRAWING NO. 1R-100X-0

| BAR SIZE | PIN DIAM. | K      | ADD FOR 2 HOOKS | BENDING DIAGRAM |
|----------|-----------|--------|-----------------|-----------------|
| #6       | 3/8"      | 5"     | 1'-2"           |                 |
| #7       | 3/8"      | 5 1/2" | 1'-4"           |                 |

NOTE:- Dimensions are to centers of bars.

| DOWEL BARS FOR TWO HEADWALLS |      |         |        |        | Bars "n"  |
|------------------------------|------|---------|--------|--------|-----------|
| SPAN                         | SIZE | SPACING | NUMBER | LENGTH |           |
| 4'                           | #4   | 11"     | 12     | 2'-6"  | 1'-3"     |
| 5'                           | #4   | 11"     | 14     | 2'-7"  | 1'-3 1/2" |
| 6'                           | #4   | 11"     | 16     | 2'-8"  | 1'-4"     |
| 7'                           | #4   | 11"     | 18     | 2'-9"  | 1'-4 1/2" |
| 8'                           | #4   | 11 1/2" | 20     | 2'-11" | 1'-5 1/2" |
| 9'                           | #4   | 11 1/2" | 22     | 3'-0"  | 1'-6"     |
| 10'                          | #4   | 11 1/2" | 24     | 3'-1"  | 1'-6 1/2" |
| 11'                          | #4   | 12"     | 26     | 3'-2"  | 1'-7"     |
| 12'                          | #4   | 12"     | 28     | 3'-3"  | 1'-7 1/2" |

Designed By: W.C.H. 1-23-63. Checked By: B.M.S. 5-25-63  
 Drawn By: W.C.H. 2-8-63. Checked By: B.M.S. 5-25-63  
 Quantities By: W.C.H. 2-12-63. Checked By: B.M.S. 5-25-63