Governing Specifications


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Job 20700: Airport Clearance Requirements

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Job 20700: Broadband Internet Service for Asphalt Concrete Plant

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Job 20700: Card Payment Act Requirements

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Job 20700: Goals for Depleted Business Enterprise Participation

Job 20700: Mandated Electronic Contract

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Job 20700: Offsite Construction

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Job 20700: Road Fills

Job 20700: Stormwater Culverts

Job 20700: Soil Stabilization

Job 20700: Storm Water Pollution Prevention Plan

Job 20700: Submission of asphalt concrete hot mix acceptance test results

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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 each owner.
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. Mail boxes 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 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 desiccation shall be used to ensure that all trees not to be removed shall be handled 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 adjacent. Varnish fence may be constructed wholly or in lieu thereof. The contractor at his own expense, may elect to provide temporary fencing suitable to contain livestock.
8. The projects are covered under a Section 404 Water Quality 14 permit, refer to Section 110 of the Standard Specifications, Edition of 2014, for permit requirements.
9. All flexible base and asphaltic pavement removed shall be paid for under the Item 210 - Unclassified Excavation.
10. The existing asphalt pavement to be removed from the remaining pavement shall be separated by sawing along a cutline. 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.

Note: Cross sections not normally included in plans sold to prospective bidders, but may have had upon request.
HWY. 51 - 2 Lanes Notch and Widen - SuperElevation

STAs:
- 500+3.56
- 515+79.17

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

2. ASPHALT FOR LEADING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER; CALCULATIONS FOR THE AMOUNT OF LEVELING SHOULDN'T BE PERFORMED BEFORE CONSTRUCTING MILE-MARKING.

3. THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE AGGREGATE SURFACE Course 81\(^{o}\) IN LEU OF AGGREGATE BASE Course UNDER THE PROPOSED SHOULDERS. NO ADDITIONAL COST TO THE DEPARTMENT WILL BE INCURRED FOR THE CONTRACTOR TO REPLACE THE STREETS.

4. THE FINAL 2' OF SURFACE Course IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN Laid. NORMAL SLOPES SHALL BE AT 81°.

5. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED AND NOT TO BE PLACED THE EXISTING PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO BE REMOVED. ANY DAMAGE TO THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

6. THE THICKNESS OF AGGREGATE BASE Course SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS. THE CONTRACTOR WILL CORRECT ANY DEFICIENCY OR EXCESS OF BASE Course AT THEIR EXPENSE. THE PAVEMENT WILL BE INCURRED FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.88'/'.

TYPICAL SECTIONS OF IMPROVEMENT
HWY. 51 - 2 Lanes Notch and Widen (6 Feet Left)

STA. 515+41.81 - STA. 521+49.35

NOTES:
1. REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL TOPS; NO CHANGES SHALL BE MADE TO THE SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE APPLIED FULL THICKNESS AS DIRECTED BY THE ENGINEER AND LEVELING AND/OR LEVING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. NO PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS CONTRACT ITEMS.
3. THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE AGRmens & OTHER COURSES IN THE LAY OF AGGREGATE BASE COURSE UNDER THE PROPOSED SLOPES WITHOUT ADDITIONAL COST TO THE AGRMENTS MEASUREMENT WILL BE BASED UPON CALCULATIONS FROM THE PLAN DIMENSIONS.
4. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAYED. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
5. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY CARRYING ALONG A NEAT LINE. AFTER CARRYING THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED. ALL EXISTING ASPHALT THAT IS TO REMAIN AND ANY DAMAGE OF THE ASPHALT PAYMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. THE THICKNERS 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.

HWY. 51 - 2 Lanes Notch and Widen (2 Feet Right)

STA. 589+33.07 - STA. 589+89.00
STA. 637+18.24 - STA. 645+00.00
STA. 673+73.95 - STA. 679+51.20
NOTES:

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

2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER/CALCULATIONS FOR THE AMOUNT OF LEVELING PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN AND DRAIN DAMAGE FROM THE ASPHALT PAVEMENT. THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

3. THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE ASPHALT SURFACE COURSE (13 IN.) LBS./TDA, OF AGGREGATE BASE COURSE UNDER THE PROPOSED SHOULDER AT NO ADDITIONAL COST TO THE CONTRACTOR. MEASUREMENT WILL BE BASED UPON CALCULATIONS FROM THE PLAN DIMENSIONS.

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

5. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED FROM THE OLD ASPHALT PAVEMENT TO BE REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN AND DRAIN DAMAGE FROM THE ASPHALT PAVEMENT.

6. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN THE CONTRACTOR'S LEVELING WILL CORRECT ANY DEFICIENT IN THE THICKNESS PAVEMENT. ALL MATERIALS SHALL BE PAID FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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Hwy. 51 - 3 LANE FULL DEPTH SUPERELEVATION

STA. 652+55.52 - STA. 658+00.00

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Hwy. 51 - 3 NOTCH AND WIDEN SUPERELEVATION

STA. 658+00.00 - STA. 663+72.03
HWY. 51 - 2 LANES NOTCH AND WIDEN NORMAL CROWN (6 FEET RIGHT)  
STA. 706+3.10 - STA. 737+60.6  

20'-0" EXISTING PAVEMENT REMOVAL & OVERLAY  
+ IF AND WHERE DIRECTED BY THE ENGINEER

AGGREGATE BASE COURSE (CLASS 7)  
VAR. COMP. DEPTH  
3.00 TONS/STA.

AGGREGATE BASE COURSE (CLASS 7)  
VAR. COMP. DEPTH  
2.00 TONS/STA.

TYPICAL SECTIONS OF IMPROVEMENT
NOTES:

1. REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE TO FREELY SLOPED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND MOVING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY; THE PAYMENT WILL BE CONSIDERED INCURRIBLE IN THE PRIMARY CONTRACT.

3. THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE AGGREGATE BASE COURSE UNDER THE PROPOSED FULL DEPTH AT NO ADDITIONAL COST TO THE CONTRACTOR. THE REIMBURSEMENT WILL BE BASED UPON CALCULATIONS FROM THE PLAN DIMENSIONS.

4. THE FINAL 2' OF SURFACE LAYER IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN Laid. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

5. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE PLANNED PAVEMENT SHALL BE SEPARATED BY SAVING ALONG A NEAT LINE. AFTER SAVING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. DEFECTS OF THE ASPHALT THAT REMAINS IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

6. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE ENSURED BY MEASUREMENTS AT SPACES AND AT SPACES WHERE A THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

TYPICAL SECTIONS OF IMPROVEMENT
HWY. 51 - 3 Lanes Notch and Widen W/Curb and Gutter
STA. 75+47.55 - STA. 752+47.56

NOTES:
1. REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AVERAGE OF LEVELING MAY BE PERFORMED BEFORE CONSTRUCTING NOTCH AND LEVELING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS CONTRACT ITEMS.
3. ** THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE ASPHALT SURFACE COURSE 2.5 IN LEU OF AGGREGATE BASE COURSE UNDER THE PROPOSED SHOULDER AT NO ADDITIONAL COST TO THE DEPARTMENT. PAYMENT WILL BE BASED UPON THE DEPARTMENT'S PLANS. PAYMENT WILL BE BASED UPON THE DEPARTMENT'S PLANS.
4. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
5. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED FROM THE REMAINING PAVEMENT AND THE REMAINING ASPHALT PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT. THAT IS TO BE REPAIRED, AND DAMAGE OF THE ASPHALT PAVEMENT TEST TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
7. 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. THICKNESS WILL NOT BE MORE THAN MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

CONCRETE COMBINATION CURB & GUTTER (TYPE A) 1/4" - 1/2"

HWY. 51 - MILL & INLAY
STA. 599+24.49 - STA. 615+71.28
STA. 656+78.65 - STA. 625+13.64
STA. 614+45.35 - STA. 637+18.24
STA. 680+82.89 - STA. 693+78.38
STA. 694+80.55 - STA. 699+73.49

TYPICAL SECTIONS OF IMPROVEMENT
MOUNT ZION ROAD
STA. 60+18.00 - STA. 61+87.22

NOTES:
1. REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE IN SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. ALL LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING.
3. THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE AGGREGATE SURFACE COURSE IN THE LIEU OF AGGREGATE BASE COURSE UNDER THE PROPOSED SHOULDER AT NO ADDITIONAL COST TO THE DEPARTMENT. MEASUREMENTS WILL BE BASED UPON CALCULATIONS FROM THE PLAN DIMENSIONS.
4. THE FINAL "2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
5. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SANDING ALONG A MEAT LINE. AFTER SANDING THE PAVEMENT TO BE REMOVED SHALL BE CORRECTLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN THE CONTRACTOR'S CORRECT AND ACKNOWLEDGED THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED, PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
METHOD OF RAISING GRADE

NOTES:
1. THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.

2. QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

3. IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09, OF THE STANDARD SPECIFICATIONS.

DETAIL FOR DRIVeway TURNOUTS OPEN SHOULDER SECTION (ARTERIALS)

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

AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT OR GRAVEL DRIVE EXISTING, OR 6" CONCRETE IF CONCRETE DRIVE EXISTING.

DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION

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

AGGREGATE SURFACE COURSE (1/2") 1200 LBS. PER SQ. YD. AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH.
FULL DEPTH SHOULDER FOR MAINTENANCE OF TRAFFIC

STATION: 523.00 - 526.00 LT.

ADDITIONAL WIDENING FOR MAINTENANCE OF TRAFFIC

STATION: 524.00 - 526.00 LT.

NOTE: PAVEMENT STRUCTURE FOR STATE HIGHWAYS, CITY STREETS,
COUNTY ROADS, & STATE HIGHWAYS CURB & GUTTER SECTION.

SILT FENCE TYPE E-11

DETAIL OF SILT FENCE AT R.C. BOX

DETAIL OF SILT FENCE AT CROSS DRAINS
NOTE:

1. SHOULD BE CONSTRUCTED USING MATERIAL MEETING THE REQUIREMENTS OF THE SPECIAL PROVISION "ROCK FILL".
2. DEPTHS OF PLATING SHOULD BE EMBEDDED 2'-0" DEEP.
VAR. 32'-0" TO 44'-0" ACHM SURFACE COURSE (1/2")

220 LBS. PER SQ. YD.

VAR. COMP. DEPTH

(0.75 TON/STA.)

FRT. VIEW
SIDE VIEW

PIPER EXTENSION
REINFORCED CONCRETE COLLAR DETAIL

SPECIAL DETAILS

DETAIL FOR CONCRETE CURB AND GUTTER

STA. 518+00.00 TO STA. 524+00.00 RT.
STA. 556+05.00 TO STA. 579+50.00 RT. & LT.
STA. 746+50.00 TO STA. 752+47.56 LT.
**Mid-Section**

**Bar Lap Table**

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<tr>
<td>#4</td>
<td>16.0 ft - 2.0 ft</td>
</tr>
<tr>
<td>#5</td>
<td>15.0 ft - 2.0 ft</td>
</tr>
<tr>
<td>#6</td>
<td>15.0 ft - 2.0 ft</td>
</tr>
<tr>
<td>#7</td>
<td>14.0 ft - 2.0 ft</td>
</tr>
<tr>
<td>#8</td>
<td>14.0 ft - 2.0 ft</td>
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</tbody>
</table>

**Details of R.C. Box Culvert**

**SINGLE BARREL BOX CULVERT**

**STA. 525 + 61**

**Special Details**

- **Dry Bar Lap Required for the Skewed End Section.**
- **Concrete reinforcing steel - AASHTO 50 ksi.**
- **Lap长度 should be considered satisfactory to the main reinforcing steel - AASHTO 50 ksi.**
LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

Lengths for Non-Skewed Boxes

GENERAL NOTES


UNL LOADING: HL-93

All concrete shall be Class 5 with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry.

Reinforcing Steel shall be Grade 60 (yield strength > 40,000 psi) conforming to AASHTO M31 or M32, Type A, with yield test reports.

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

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

Membrane Waterproofing shall conform to the requirements of Section 823. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalks of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

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

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

Membrane Waterproofing, Wrap Folds, Geotextile Filter Fabric, and Drainage Filter Material shall be included for direct but shall be considered separately in the Plans.

When the top slab of the box culvert serves as finished roadway surface, curing and finishing shall be in accordance with subsections 802.17 and 802.20 for bridge roadway surface and the final finish shall be applied in accordance with subsections 802.19 for Class 3 Tied Bridge Roadway Surface Finish. Curing and finishing shall be paid for directly, but shall be considered incidental to the item "Class 5 Concrete Roadway." Class 5 Protective Surface Treatment shall be applied to the roadway surface and the final finish shall be paid for under the unit price bid for "Class 5 Protective Surface Treatment."

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1537 and meet the requirements of Section 801. When the top slab of the box culvert serves as the finished roadway surface, a precast reinforced concrete box culvert substitution is not allowed.

SHEET 1 OF 4

GENERAL DETAILS OF R.C. BOX Culvert

GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE

SPECIAL DETAILS
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND DREDGING OPERATIONS ARE STARTED. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE PROJECT UNLESS OTHERWISE SPECIFIED.
LEGEND

- SAND BAG DITCH CHECKS
- ROCK DITCH CHECKS
- SILT FENCE
- DROP INLET SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRADING OPERATIONS ARE STARTED. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

STA 576+76 - STA 577+25
INSTALL E-H = 240/LIN FT.
STA 579+55 - STA 580+00
INSTALL E-H = 375 LIN FT.

STA 588+83
INSTALL E-H = 25 LIN FT.

STAGE I
TEMPORARY EROSION CONTROL DETAILS
TEMPORARY EROSION CONTROL DETAILS

LEGEND

- = SAND BAG DITCH CHECKS
- = ROCK DITCH CHECKS
- = SILT FENCE
- = DROP INLET SILT FENCE

NOTES:
- PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRAVING OPERATIONS ARE STARTED.
- MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB UNLESS OTHERWISE SPECIFIED.

REVISIONS

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<tr>
<td>STA. 646+00 - STA. 651+00 INSTALL E-1 = 150 LIN. FT.</td>
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<tr>
<td>STA. 654+00 - STA. 659+00 INSTALL E-1 = 200 LIN. FT.</td>
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STA. 657+00 - STA. 658+00 INSTALL E-1 = 200 LIN. FT.

STA. 656+05 - STA. 657+00 INSTALL E-1 = 25 LIN. FT.

STA. 657+15 - STA. 658+16 INSTALL E-1 = 625 LIN. FT.
STA 673+80 - STA 674+07
INSTALL E=4X100 LIN.FT.
LEGEND

- E9  = SAND BAG DITCH CHECKS
- E6  = ROCK DITCH CHECKS
- E8  = SILT FENCE
- E7  = DROP INLET SILT FENCE

NOTE: PERMETER CONTROLS SHALL BE PLACED AT CLEARING AND DRIVING OPERATIONS ARE STARTED, CONTINUOUSLY UNTIL THE END OF THE JOB UNLESS OTHERWISE SPECIFIED.

REVISIONS

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STAGE 1

TEMPORARY EROSION CONTROL DETAILS
STA. 738+75 - STA. 740+75
INSTALL E=9 = 250 LIN. FT.
STA. 740+00 - STA. 743+00
INSTALL E=9 = 250 LIN. FT.

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEANING AND DRESSING OPERATIONS ARE STARTED. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB UNLESS OTHERWISE SPECIFIED.

STAGE I
TEMPORARY EROSION CONTROL DETAILS

LEGEND

E5  = SAND BAG
E6  = DITCH CHECKS
E7  = ROCK
E8  = DITCH CHECKS
E9  = SLT FENCE
E10 = DROP INLET
     SLT FENCE

STAGE 2
TEMPORARY EROSION CONTROL DETAILS
INSTALLATION

REVISIONS

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

LEGEND

- SAND BAG
- ROCK
- DITCH CHECKS
- DITCH CHECKS
- SILT FENCE
- DROP INLET

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

STA 500+35.56
BEGIN JOB 070364
LOG MILE 16.03

STA 54+25 - STA 54+75
INSTALL E+1 ISO LNR, FT.
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND DRYING OPERATIONS ARE STARTED. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

LEGEND

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>E5</td>
<td>SAND BAG DITCH CHECKS</td>
</tr>
<tr>
<td>E6</td>
<td>ROCK DITCH CHECKS</td>
</tr>
<tr>
<td>E7</td>
<td>SILT FENCE</td>
</tr>
<tr>
<td>E8</td>
<td>DROP INLET SILT FENCE</td>
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</tbody>
</table>

REVISIONS

<table>
<thead>
<tr>
<th>Date of Revision</th>
<th>Revision</th>
</tr>
</thead>
</table>

STAGE 2
TEMPORARY EROSION CONTROL DETAILS
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS REQUIRED AND BARRIERS DETERMINED DEPENDENT UPON THE END OF THE BARRIER UNLESS OTHERWISE SPECIFIED.
LEGEND

- E3 = SAND BAG
- DITCH CHECKS
- E6 = ROCK
- DITCH CHECKS
- E8 = SILT FENCE
- E2 = DROP INLET
- SILT FENCE

Notes: Perimeter controls shall be planted as clearing and grading operations are started. Perimeter controls shall be removed at the end of the job unless otherwise specified.

STA 696+00 - STA 705+00
INSTALL E= 750 LIN. FT.

STA 708+00 - STA 710+00
INSTALL E= 225 LIN. FT.

REVISIONS

DATE OF
REVISION

TEMPORARY EROSION CONTROL DETAILS
STA. 737+00 - STA. 738+00
INSTALL E-II: 150 LIN. FT.

STA. 752+47.58
END QDB 070364

STA. 751+00 - STA. 752+08
INSTALL E-II: 550 LIN. FT.

LEGEND

**E5** = SAND BAG DITCH CHECKS
**E6** = ROCK DITCH CHECKS
**E7** = SILT FENCE
**E8** = DROP INLET SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GROUNDING OPERATIONS ARE STARTED. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB UNLESS OTHERWISE SPECIFIED.

STAGE 2
TEMPORARY EROSION CONTROL DETAILS
STAGE 3  
TEMPORARY EROSION CONTROL DETAILS

LEGEND
- - = SAND BAG
- - = ROCK
- - = DITCH CHECKS
- - = DITCH CHECKS
- - = SILT FENCE
- - = DROP INLET SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS
CLEANING AND DREDGING OPERATIONS ARE STARTED.
MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE
END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

STA. 524+00 - STA. 527+00
INSTALL E+C = 325 LRL FT.

INSTALL E+C = 325 LRL FT.
TRAFFIC DRUMS AND SIGNS ON EXISTING SHOULDER FOR EXTENDING/CONSTRUCTING PIPE CULVERTS LT. AND RT.

STA. 54+46 STA. 57+48 STA. 64+49 STA. 67+92 STA. 73+46
STA. 54+38 STA. 58+83 STA. 66+98 STA. 72+31 STA. 75+57

TRAFFIC DRUMS PLACEMENT AT DRIVES

CONSTRUCTION SEQUENCE

STAGE 1

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AS SHOWN ON THE ADVANCE WARNING DETAIL.

APPLY LEVELING COURSE IF AND WHERE DIRECTED BY THE ENGINEER.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 45° O.C. TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

CONSTRUCT FULL DEPTH PAVEMENT SECTION ON HWY. 51

STAGE 1-A STA. 565+00 TO STA. 575+00 (LT.)
STAGE 1-B STA. 565+00 TO STA. 575+00 (RT.)
STAGE 1-C STA. 575+00 TO STA. 590+00 (LT.)
STAGE 1-D STA. 575+00 TO STA. 590+00 (RT.)
STAGE 1-E STA. 639+00 TO STA. 650+00 (LT.)
STAGE 1-F STA. 639+00 TO STA. 650+00 (RT.)
STAGE 1-G STA. 650+00 TO STA. 660+00 (LT.)
STAGE 1-H STA. 650+00 TO STA. 660+00 (RT.)

UTILIZING TEMPORARY PORTABLE TRAFFIC SIGNALS.

NOTCH AND WIDEN LEFT SIDE OF HWY. 51.

CONSTRUCT MOUNT ZION ROAD.

SHIFT TRAFFIC 2' RT. OF THE EXISTING CENTERLINE APPROACHING R.C. BOX AT STA. 525+61 AND CONSTRUCT NEW SECTION OF R.C. BOX CULVERT WITH TEMPORARY WIDENING ON LEFT OF THE CONSTRUCT CENTERLINE.

STAGE 2

INSTALL CONSTRUCTION PAVEMENT MARKINGS.

USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 45° O.C. TO DELINEATE THE WORK ZONE. USE TRAFFIC DRUMS TO DELINEATE DRIVEWAYS.

NOTCH AND WIDEN RIGHT SIDE OF HWY. 51.

SHIFT TRAFFIC TO STAGE 1 CONSTRUCTION AND CONSTRUCT OUTLET SECTION OF R.C. BOX AT STA. 525+61.

STAGE 3

PERFORM MILL AND INLAY BETWEEN THE FOLLOWING STATIONS
STA. 599+21.49 - STA. 625+13.64
STA. 634+35.35 - STA. 637+18.24
STA. 680+92.89 - STA. 699+73.49

REMOVE STAGE 1 CONSTRUCTION TEMPORARY WIDENING.

APPLY FINAL 2' WIDE ACCOMMODATION CENTERLINE PAVEMENT MARKINGS AND INSTALL PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKING DETAILS.

MAINTENANCE OF TRAFFIC DETAILS

DETAI OF OBJECT MARKERS AT PRECAST CONCRETE BARRIER TURNBACKS

STA. 525+61 (LT.) FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 556 LNT. INCLUDES (2) SPECIAL END UNITS
STA. 55+28 (LT.) FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 239 LNT. INCLUDES (2) SPECIAL END UNITS
STA. 56+23 (LT.) FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 229 LNT. INCLUDES (2) SPECIAL END UNITS
STA. 637+88 (LT.) FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 233 LNT. INCLUDES (2) SPECIAL END UNITS
STA. 525+61 (RT.) FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 556 LNT. INCLUDES (2) SPECIAL END UNITS
STA. 55+28 (RT.) RELOCATING PRECAST CONCRETE BARRIER = 239 LNT. INCLUDES (2) SPECIAL END UNITS
STA. 56+23 (RT.) RELOCATING PRECAST CONCRETE BARRIER = 229 LNT. INCLUDES (2) SPECIAL END UNITS
STA. 637+88 (RT.) RELOCATING PRECAST CONCRETE BARRIER = 233 LNT. INCLUDES (2) SPECIAL END UNITS
NOTE:
The quantity of vertical panels provided in the contract is for one side of the roadway for the full length of the job. This is the maximum quantity required to allow the contractor to notch one mile, backfill to a point where the vertical differential is 4" or less, and then notch another one-mile section. This is the maximum number of vertical panels that will be paid for. Refer to Section 603.02 of the standard specifications for construction requirements.

VERTICAL PANELS AT NOTCH & WIDENING LEFT OF EXISTING

INSTALL ADVANCE WARNING SIGNS AND END ROAD WORK SIGNS AS SHOWN ON THE ADVANCE WARNING DETAIL.
APPLY LEVELING COURSE IF AND WHERE DIRECTED BY THE ENGINEER.
USE VERTICAL PANELS AND TRAFFIC DRUMS SPACED 45' O.C. TO DELINEATE THE WORK ZONE, USE TRAFFIC DRUMS TO DELINEATE DRIVESWAYS.
CONSTRUCT FULL DEPTH PAVEMENT SECTION ON HWY. 51 STAGE I-A STA. 565+00 TO STA. 575+00 (LT.)
STAGE I-B STA. 565+00 TO STA. 575+00 (RT.)
STAGE I-C STA. 575+00 TO STA. 590+00 (LT.)
STAGE I-D STA. 575+00 TO STA. 590+00 (RT.)
STAGE I-E STA. 639+00 TO STA. 650+00 (LT.)
STAGE I-F STA. 639+00 TO STA. 650+00 (RT.)
STAGE I-G STA. 650+00 TO STA. 660+00 (LT.)
STAGE I-H STA. 650+00 TO STA. 660+00 (RT.)
UTILIZING TEMPORARY PORTABLE TRAFFIC SIGNALS.
NOTCH AND WIDEN LEFT SIDE OF HWY. 51.
CONSTRUCT MOUNT 2' ON ROAD.
SHIFT TRAFFIC 2' RT. OF THE EXISTING CENTERLINE APPROACHING R.C. BOX AT STA. 525+61 AND CONSTRUCT INLET SECTION OF R.C. BOX CULVERT WITH TEMPORARY WIDENING ON LEFT OF THE CONSTRUCT CENTERLINE.

ROAD CLOSED

ROAD CLOSED

ROAD CLOSED

STAGE I QUANTITIES
TRAFFIC DRUMS - 1070 EACH
VERTICAL PANELS - 556 EACH
TEMPORARY IMPACT ATTENUATION BARRIER - 4 EACH
FURNISHING AND INSTALLING P,C,C,B. - 1257 L.I.N. FT.
CONSTRUCTION PAVEMENT MARKINGS - 102919 L.I.N. FT.
CONSTRUCTION PAVEMENT MARKINGS (WORDS) - 2 EACH
CONSTRUCTION PAVEMENT MARKINGS (ARROW) - 2 EACH

STA. 580+00 LT.
STA. 58+00 LT.
STA. 654+40 LT.

STA. 58+64 LT.
NOTE:

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

VERTICAL PANELS AT NOTCH & WIDENING RIGHT OF EXISTING

NOTE: ALL STATIONS BASED OFF HWY. 51.

STAGE 2 QUANTITIES
TRAFFIC DRUMS = 908 EACH
VERTICAL PANELS = 556 EACH
RELOCATING P.C.C.B. = 1257 LIN. FT.
RELOCATING TEMPORARY IMPACT ATTENUATION BARRIER = 4 EACH
CONSTRUCTION PAVEMENT MARKINGS (WORDS) = 3 EACH
CONSTRUCTION PAVEMENT MARKINGS (ARROW) = 3 EACH

STAGE 3 QUANTITIES
TRAFFIC DRUMS = 208 EACH
CONSTRUCTION PAVEMENT MARKINGS = 19221 LIN. FT.
STAGE 1-A QUANTITIES

TRAFFIC DRUMS = 41 EACH
VERTICAL PANELS = 15 EACH
PORTABLE TRAFFIC SIGNAL HEADS = 4 EACH
OBJECT MARKERS = 4 EACH

STAGE 1-B QUANTITIES

TRAFFIC DRUMS = 44 EACH
VERTICAL PANELS = 18 EACH
PORTABLE TRAFFIC SIGNAL HEADS = 4 EACH
ROAD CLOSED SIGNS = 2 EACH
LARGE ARROW SIGNS = 2 EACH
TYPE III BARRICADE-RT. (8') = 1 EACH
TYPE III BARRICADE-LT. (8') = 1 EACH
OBJECT MARKERS = 4 EACH

MAINTENANCE OF TRAFFIC DETAILS

HISTORIC ROAD
STAGE I-C QUANTITIES

TRAFFIC DRUMS = 91 EACH
VERTICAL PANELS = 32 EACH
PORTABLE TRAFFIC SIGNAL HEADS = 6 EACH
OBJECT MARKERS = 16 EACH

PLACE AFTER THE CONSTRUCTION OF BIKE LANE.
STAGE 1-D QUANTITIES

TRAFFIC DRUMS = 99 EACH
VERTICAL PANELS = 34 EACH
PORTABLE TRAFFIC SIGNAL HEADS = 6 EACH
OBJECT MARKERS = 16 EACH

PLACE AFTER THE CONSTRUCTION OF HELMS RD / CO RD 74.
STAGE 1-E QUANTITIES

TRAFFIC DRUMS = 58 EACH
VERTICAL PANELS = 17 EACH
PORTABLE TRAFFIC SIGNAL HEADS = 4 EACH
OBJECT MARKERS = 4 EACH

STAGE 1-E
MAINTENANCE OF TRAFFIC DETAILS

STAGE 1-F
MAINTENANCE OF TRAFFIC DETAILS
STAGE I-E QUANTITIES

TRAFFIC DRUMS = 49 EACH
VERTICAL PANELS = 39 EACH
PORTABLE TRAFFIC SIGNAL HEADS = 6 EACH
STAGE I-H QUANTITIES

TRAFFIC DRUMS = 40 EACH
VERTICAL PANELS = 19 EACH
PORTABLE TRAFFIC SIGNAL HEADS = 6 EACH

STAGE I-H
MAINTENANCE OF TRAFFIC DETAILS
### Construction Pavement Markings and Permanent Pavement Markings

<table>
<thead>
<tr>
<th>Description</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>End of Job</th>
<th>Construction Pavement Markings</th>
<th>Construction Pavement Markings</th>
<th>Raised Pavement Markers</th>
<th>Thermoplastic Pavement Markings</th>
<th>ReflectORIZED Paint Pavement Markings</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Lin. Ft. each</td>
<td>Lin. Ft. each</td>
<td>Lin. Ft. each</td>
<td>Lin. Ft. each</td>
<td>Words</td>
<td>Arrows</td>
<td>Type II</td>
<td>Type II</td>
<td>White</td>
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<tr>
<td>Construction Pavement Markings</td>
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<td>102,819</td>
<td>102,819</td>
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<td>4</td>
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<td></td>
<td></td>
<td>Words</td>
<td>Arrows</td>
<td>Type II</td>
<td>Type II</td>
<td>White</td>
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<tr>
<td>Construction Pavement Markings</td>
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<td>Arrows</td>
<td>Type II</td>
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</tr>
</tbody>
</table>

**NOTE:** THIS VOLUME ROAD AS DEFINED STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

**NOTE:** THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE BACK TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE MILE SECTION.

### Advance Warning Signs and Devices

<table>
<thead>
<tr>
<th>Sign Number</th>
<th>Description</th>
<th>Sign Size</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>End of Job</th>
<th>Maximum Number Required</th>
<th>Total Signs Required</th>
<th>Vertical Panels</th>
<th>Traffic Drums</th>
<th>Barricades (Type II)</th>
<th>Furnishing &amp; Installing Precast Concrete Barrier</th>
<th>Relocating Precast Concrete Barrier</th>
<th>Temporary Impact Attenuation Barrier</th>
<th>TEMP. Impact Attenuation Barrier (Repaired)</th>
<th>PORTABLE TRAFFIC SIGNAL SYSTEM - ACTUATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>W00-1</td>
<td>ROAD WORK 100 FT.</td>
<td>48&quot; x 48&quot;</td>
<td>4 x 4</td>
<td>4 x 4</td>
<td>4 x 4</td>
<td>4 x 4</td>
<td>4 x 4</td>
<td>4 x 4</td>
<td>4 x 4</td>
<td>64.0</td>
<td>4 x 4</td>
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<td>4 x 4</td>
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<tr>
<td>W00-2</td>
<td>ROAD WORK 1000 FT.</td>
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<td>4 x 4</td>
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<tr>
<td>W00-4</td>
<td>ROAD WORK AHEAD</td>
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<td>3 x 3</td>
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<tr>
<td>G02-2</td>
<td>END ROAD WORK</td>
<td>48&quot; x 48&quot;</td>
<td>17 x 17</td>
<td>17 x 17</td>
<td>17 x 17</td>
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<td>17 x 17</td>
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<tr>
<td>G02-1</td>
<td>ROAD WORK NEXT 4 MILES</td>
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<tr>
<td>W13-1</td>
<td>SPEED LIMIT ADVISORY</td>
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<tr>
<td>R1-12</td>
<td>ROAD CLOSED</td>
<td>48&quot; x 48&quot;</td>
<td>6 x 6</td>
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<tr>
<td>G03-4</td>
<td>OBJECT MARKER</td>
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<tr>
<td>G03-5</td>
<td>OBJECT MARKER</td>
<td>12&quot; x 36&quot;</td>
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<td>28 x 28</td>
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<tr>
<td>W1-4</td>
<td>LARGE BARRICADE</td>
<td>48&quot; x 24&quot;</td>
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<td>10 x 10</td>
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<tr>
<td>R4-1</td>
<td>DO NOT PASS</td>
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<tr>
<td>R4P-1</td>
<td>SHOULDER CLOSED</td>
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<td>32.0</td>
<td>4 x 4</td>
</tr>
<tr>
<td>W00-12</td>
<td>PORTABLE TRAFFIC SIGNAL SYSTEM - ACTUATED</td>
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</tbody>
</table>

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

**NOTE:** THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE BACK TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE MILE SECTION.
### PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

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**TOTAL:** 181

**AVG. DEPTH = 11"**

### EARTHWORK

- **UNCLASSIFIED EXCAVATION (CU. YD.)**
  - 514+00: 16043
  - 515+00: 10000
  - 529+00: 20000
  - 529+48: 20000
  - 525+43: 20000
  - 525+09: 10000

- **COMPACTED EMBANKMENT (CU. YD.)**
  - 529+00: 30000
  - 529+48: 30000
  - 525+43: 30000
  - 525+09: 30000

- **SAND STABILIZATION (T.)**
  - 514+00: 40
  - 515+00: 40
  - 529+00: 40
  - 529+48: 40
  - 525+43: 40
  - 525+09: 40

- **ROCK FILL (CU. YD.)**
  - 514+00: 100
  - 515+00: 100
  - 529+00: 100
  - 529+48: 100
  - 525+43: 100
  - 525+09: 100

**TOTALS:** 20900

**NOTE:** Quantities shown above shall include removal & disposal of all headwalls and flared end sections if applicable.

### CONCRETE COMBINATION CURB AND GUTTER

- **LOCATION**
  - 517+18: RT. SIDE OF HWY. 51
  - 524+00: RT. SIDE OF HWY. 51

- **CLEARING AND GRUBBING**
  - 515+00: MARTIANES 11 91
  - 525+00: MARTIANES 11 91
  - 546+00: MARTIANES 11 91

**TOTALS:** 11 91

**NOTE:** Quantities estimated. See Section 104.03 of the Std. Specs.

### SELECTED PIPE BEDDING

**LOCATION**
- ENTIRE PROJECT TO BE USED
  - 712+62: ENTIRE PROJECT TO BE USED
  - 712+92: ENTIRE PROJECT TO BE USED

**SELECTED PIPE BEDDING (CU. YD.)**
- 712+62: 440
  - 712+92: 440

**TOTALS:** 440

**NOTE:** Quantities estimated. See Section 104.03 of the Std. Specs.

### CONCRETE COMBINATION CURB AND GUTTER

- **LOCATION**
  - 517+18: RT. SIDE OF HWY. 51
  - 524+00: RT. SIDE OF HWY. 51

- **CLEARING AND GRUBBING**
  - 515+00: MARTIANES 11 91
  - 525+00: MARTIANES 11 91
  - 546+00: MARTIANES 11 91

**TOTALS:** 11 91

**NOTE:** Quantities estimated. See Section 104.03 of the Std. Specs.

### FENCING

- **WIRE FENCE (FT.)**
  - 529+00: 20000
  - 529+48: 20000

- ***8* CHAIN LINK FENCE (FT.)**
  - 529+00: 20000
  - 529+48: 20000

- ***14*" GAME FENCE (FT.)**
  - 529+00: 20000
  - 529+48: 20000

**TOTALS:** 60000

**NOTE:** Quantities shown above shall be paid as plan quantity.
### Removal and Disposal of Items

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<th>Curb</th>
<th>Curb &amp; Gutter</th>
<th>Concrete Driveways</th>
<th>Sign Foundations</th>
<th>Signs</th>
<th>Planters</th>
<th>Posts</th>
<th>Brick Walls</th>
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**TOTALS:**

|          |         |          |      | 204 | 216 | 3084 | 6   | 5   | 2   | 2  | 60 |

### Concrete Ditch Paving

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**TOTALS**

|          |         |          |      | 484.25 | 268.44 | 3.35 |

**NOTE:** Shown for information only. Bench marks shall be furnished and placed by state forces.

### Erosion Control

**Temporary Erosion Control**

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<th>Mulch Cover</th>
<th>Water</th>
<th>Second Seeding Application</th>
<th>Soli Sodding</th>
<th>Temporary Seeding</th>
<th>Mulch Cover</th>
<th>Water</th>
<th>Wattle (2P)</th>
<th>Ditch Checks</th>
<th>Sand Bag Ditch Checks</th>
<th>Rock Ditch Checks</th>
<th>Drop Inlet</th>
<th>Silt Fence</th>
<th>SLT FENCE</th>
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<th>Obliteration of Sediment Basin</th>
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**TOTALS**

|          |         |          |      | 38.50 | 77.00 | 38.50 | 2029 | 271 | 157 | 2029 | 1536.0 | 1110 | 1110 | 1228 |

**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:**

See Section 104.03 of the standard specifications.
### Base and Surfacing (Box 2 of 2)

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Length</th>
<th>Aggregate Base Course (ft)</th>
<th>AC Concrete Binder Course (%)</th>
<th>AC Surfaced Course (%)</th>
<th>Additional, For Wknd of Rising Grade</th>
<th>Additional, For Superapelev.</th>
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#### Quantities

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<th>Aggregate Base Course (ft)</th>
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<th>AC Surfaced Course (%)</th>
<th>Additional, For Wknd of Rising Grade</th>
<th>Additional, For Superapelev.</th>
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**Maximum Number of Operations:** 115 for PO 64-22

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**Details:**
- **Datum:** North American 1983
- **Easting:** 1642480.7889
- **Northing:** 941217.7998
- **Elevation:** 335.235
- **Feature:** CTL
- **Description:** REBAR W/S ALUM CAP

---

**Note:**
- The SURVEY CONTROL DETAILS include the coordinates of various points for a survey project in Arkansas, South Zone, based on GPS control. The coordinates are given in U.S. Survey Feet and include specific features such as rebar with aluminum caps. The project is likely for construction purposes, ensuring precise positioning.
SURVEY CONTROL DETAILS
EROSION CONTROL MATING

LENGTH CLASS 3

STA. 540+48 IN PLACE

REPLACE WITH 15'55'48" 17'00.70"

STA. 542+00 RT. = 15'55'48"

C.L. CONSTRUCT

STA. 540+48

C.L. CONSTRUCT

STA. 542+00

C.L. CONSTRUCT

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

HWY. 51
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
CONCRETE DITCH FILLING (TYPE D)

STA.
STA.
SIDE
SIDE
#1
#2
50, TDS.
50, TDS.
WIRE FENCE
WIRE FENCE
0.10
0.10

STA.
STA.
SIDE
SIDE
LENGTH
LENGTH
CLASS
CLASS
3
3

STA.
STA.
PRE
PRE
UNIT
UNIT
50, TDS.
50, TDS.

STA.
STA.
SIDE
SIDE
TYPE
TYPE
W. C.
W. C.

STA. 667+40 INSTALL
STA. 667+40 INSTALL
2" x 5" x 10'4" ARCH PIPE CULV'T.
2" x 5" x 10'4" ARCH PIPE CULV'T.
LT. SEE DRAIN
LT. SEE DRAIN

STA. 670+33 INSTALL
STA. 670+33 INSTALL
8" x 27' R.C. PIPE CULV'T,
8" x 27' R.C. PIPE CULV'T,
LT. SEE DRAIN
LT. SEE DRAIN

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
RE...
MT. ZION RD.

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

STA 60+18.00
BEGIN MOUNT ZION ROAD

STA 60+18.00
BEGIN MOUNT ZION ROAD

STA 68+22.00
END MOUNT ZION ROAD

MT. ZION RD
PT: 62+00.00
A: 6237.7' RT
G: 6247.0'
L: 6247.0'
P: 62+00.37
PC: 62+54.77
NO SUPER

UNCLASSIFIED EXC. ON LT: 200 CUL 10%
CONSTRUCTION ON LT: 35 CUL 10%

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
REFER TO TABULATION OF QuantITIES FOR "w" " DIMENSIONS

REINFORCEMENT TO BE PLACED AT 2'-0' CENTERS

REINFORCEMENT TO BE PLACED AT 3'-0' CENTERS

TYPE A

TOE WALL DETAIL FOR CONCRETE DITCH PAVING

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE Poured MONOLITHICALLY.

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

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

1'-WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS.

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

NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED.

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

STANDARD DRAWING CDP-1
CONCRETE COMBINATION CURB AND GUTTER

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

ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB

NOTE: USE MODIFIED CURB AS SPECIFIED ON STANDARD DRAWINGS. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED IN THE PRICE OF THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.
**PLAN VIEW**

- Transition from a 2' to a 4'
- Type 'C' curb face on the front side of the concrete island in this length

**ISOMETRIC VIEW**

- Type 'B' curb face (typical all sides)
- Ultimate pavement section (less final lift of ACHM surface course)
- Final lift of ACHM surface course
- Type 'C' curb face (typical all sides)
- Ultimate pavement section (less final lift of ACHM surface course)
- Curbed islands for channelization

**DRIVEWAY VERTICAL ALIGNMENT DETAILS**

- Note: driveways may not be sloped away from the roadway unless approved by the engineer.

**SECTION A-A**

- Var. width ACHM
- Var. width concrete island
- Var. width concrete, walk
- Use Type 'D' curb face on all sides of concrete island
- Slope 2% max.

**SECTION B-B**

- Curbed island behind walk
- Slope 2.5% max.
- Type 'M' curb
- Ultimate pavement section (less final lift of ACHM surface course)
- Var. width concrete island (4' wide, thru cut)
## TABLE OF DIMENSIONS

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### ARCH PIPE

- **Span**: ASHTE M206 and specifications of local authorities
- **Note**: The measured span and rise shall not vary more than ±2 in 1000 from the values specified by AASHTO M206.

### CIRCULAR PIPE

- **Plan A-A**: Section A-A
- **Section X-X**: Section X-X
- **End Section**: End Section

### C.M. ARCH PIPE

- **Plan**: Plan
- **Connector**: Connector
- **Pipe Pay Length**: Pipe Pay Length

### END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

- **Note**: Alternate connections to the pipe culverts, in accordance with manufacturer's standard practices, will be subject to the approval of the engineer.
NOTE:
ADDT'L. REINF. TO ON DIMENSIONS FOR R.C. IN CULV'T. WHERE UNIT BE THE APPLICABLE STD. BARREL
PRICE ALL FOR SKEWED ENCOUNTERED &.
STEEL CULVERTS. @ REINF. TO BARS FOR
BE INCLUDED IN UNIT PRICE BD PER TYPE "TM" DJ.
DIMENSIONS & REINF. BARS FOR DJ. TO BE THE SAME AS THOSE SHOWN ON APPLICABLE STD. BARREL DRAWING FOR R.C. BOX CULVERTS.

DROP INLET TYPE "TM" FOR REINFORCED CONC. BOX CULVERTS

SECTION A-A

SECTION B-B

DETAIL A

GRATE DETAIL

SECTION A-A

SECTION B-B

DETAIL A

DROlN INLET (TYPE RM )

TABLE OF "W" DIMENSIONS

GENERAL NOTE:
1. STEEL PIPE FOR GRATES AND BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 94. BOLTS SHALL CORRESPOND TO ONE OF THE FOLLOWING: ASTM A572G or A490, CLASS 2; ASTM A74 OR CLASS 2.
2. STEEL PIPE FOR BARS SHALL BE "STANDARD QUALITY" CONFORMING TO A53 AND A572.
3. BOLT, NUTS, AND HANGER BARS SHALL BE CALIBRATED IN ACCORDANCE WITH AASHTO M22 OR ASTM A29, CLASS 40 OR 50.
4. ALL EXPOSED CORNERS TO HAVE BV CHARMS.
5. ALL "F" AND "G" REINF. BARS TO HAVE 1/4" COVER, LARGER SIZES TO HAVE 3/4" COVER.
6. THE COMPLETE PIPE FRAME SHALL BE PAINTED IN ACCORDANCE WITH THE ENGINEER'S SPECIFICATIONS.

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DROP INLETS

STANDARD DRAWING FPC-9D

NOTE! DEPTH TO BE ELECTRIC, REINFORCED STEEL TO BE INCLUDED IN UNIT PRICE BD PER TYPE "TM" DJ.

NOTE: ALL DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.
HEAVY DUTY RING & COVER

1. Heavy duty ring and cover shall be constructed of cast iron and shall conform to the recommendations of the Standard Specifications for Highway Construction. Castings shall be NCHRP 282 test

2. Heavy duty ring and cover shall not be painted.

3. Heavy duty ring shall always be installed with flange on top.

DETAIL OF NOTCH FOR SIDEWALKS

Notch for sidewalks shall be deepened gutter line at curb face

DETAIL OF STEP FOR DROP INLET

Drop inlet shall be placed at the point of intersection of the curb and the gutter.

SECONDARY DRAWING

For the details of the drop inlet, please refer to the secondary drawing.

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DROP INLET (TYPE MD)

STANDARD DRAWING FPC-94
GENERAL NOTES

1. MAILBOX SHELF MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 53.02 OF THE STANDARD SPECIFICATIONS.

2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.

3. ALL REVISIONS, CHANGES, OR MODIFICATIONS SHALL BE SHOWN ON THE DRAWINGS AND SPECIFICATIONS.

4. WOOD SHELVES AND PLATFORMS SHALL BE STAINED OR PAINTED WITH AN APPROPRIATE WOOD FINISH.

5. MAILBOX SUPPORTS SHALL BE AS DIRECTED.

6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED PROVIDED THEY ARE ON THE ARKANSAS QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.

ANTI-TWIST PLATE

LENGTH TO FIT

SPACER

CLAMP

SHELF

PLATFORM

SINGLE INSTALLATION

DOUBLE INSTALLATION

SPACING FOR MULTIPLE POST INSTALLATION

DATE: 06/28/94

İREVISED NOTE 5

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1
**General Notes**

- Drum cuffs shall be cut to the plan sections as shown on the drawing and installed.
- The drums and drum grommets shall be provided with the contract included in the estimate.
- All drums and support shall be placed with a height of the precast concrete box culverts.

**Preparation**

- All exposed corners to have a chamfer.
- Membranes and fittings may be adjusted in the field as directed by the engineer.

**Concrete Preparation**

- The work shall be performed in a manner to conform to the standard specifications.
- The precast concrete box culvert shall meet the requirements of the standard specifications.
- The precast concrete box culvert shall have a maximum dimension along the axis of the culvert and shall have a minimum dimension along the axis of the culvert.

**Membrane**

- The membrane waterproofing will be required on the top interior joint and shall extend 1 foot down the sides of the structure.
- In outer barrels, one weep hole is required in cross walls of each precast concrete culvert and in middle barrels of each precast concrete culvert.
- The precast concrete box culverts shall be placed with a height of the precast concrete box culverts.

**Preparation**

- The placement of the precast concrete box culverts shall be placed with a height of the precast concrete box culverts.
- The precast concrete box culverts shall be placed with a height of the precast concrete box culverts.

**Standard Drawing**

- ARKANSAS STATE HIGHWAY COMMISSION
- PRECAST CONCRETE BOX CULVERTS
- STANDARD DRAWING PBC-1

**Bar List**

<table>
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<td>J</td>
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<tr>
<td>L</td>
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*Note: Length and number of bars varies with size of culvert.*

---

**Plan View**

- The plan view shows the layout of the precast concrete box culverts.
- The bars are labeled with their respective sizes and locations.

**Section A - A**

- The section view shows the cross-section of the precast concrete box culverts.
- The bars are labeled with their respective sizes and locations.

---

**Typical Section**

- The typical section shows the cross-section of the precast concrete box culverts.
- The bars are labeled with their respective sizes and locations.
CONSTRUCTION SEQUENCE

1. Place structural bedding material to grade, do not compact.
2. Install pipe to design elevation.
3. Finish structural bedding material using the whole sand or the pipe as fill and compact to required/design density.

Note: Haunch and structural bedding material will not be paid for separately, but compensation will be considered for damage included in the price bid per linear foot of concrete pipe.

**LIMITATIONS:**
- Type: Elliptical Pipe
- Minimum height of fill "H"

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

<table>
<thead>
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<th>Installation Type</th>
<th>Material Requirements for Haunch and Structural Bedding</th>
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<td>Adequate base course class 5 or class 7</td>
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<tr>
<td>Type 2</td>
<td>Adequate classification type 1 installation material</td>
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<tr>
<td>Type 3</td>
<td>Adequate classification type 2 installation material</td>
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**GENERAL NOTES**

1. All pipe shall conform to section 5.1.2.1 of the LRFD AASHTO Specifications when used as culverts or for structural purposes.
2. All pipe shall be fabricated from concrete material that is in accordance with the American Concrete Institute (ACI) Building Code."

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

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**SPAN & ROSE ELLIPTICAL PIPE DIMENSIONS**

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**MINIMUM COVER VALUES**

- For minimum cover values, see Table 1 of the preceding general notes.

**REINFORCED CONCRETE ARCH PIPE CULVERTS**

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<tr>
<th>Installation Type</th>
<th>Material Requirements for Haunch and Structural Bedding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>Adequate base course class 5 or class 7</td>
</tr>
<tr>
<td>Type 2</td>
<td>Adequate classification type 1 installation material</td>
</tr>
<tr>
<td>Type 3</td>
<td>Adequate classification type 2 installation material</td>
</tr>
</tbody>
</table>

**NOTE:**
- Haunch and structural bedding material will not be paid for separately, but compensation will be considered for damage included in the price bid per linear foot of concrete pipe.

**INSTALLATION & EMBANKMENT TRENCH INSTALLATIONS**

- Material in the haunch and outer structural bedding shall be compacted to 90% of the maximum density according to the type or class of material used.
- For trenches with walls of material, the density of the soil in the outer side of the trench shall be determined by the same standards as for the maximum density according to the type of material used.
- For embankments, the material in the lower side of the trench shall be compacted to 90% of the maximum density according to the type or class of material used.

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

<table>
<thead>
<tr>
<th>Installation Type</th>
<th>Material Requirements for Haunch and Structural Bedding</th>
</tr>
</thead>
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</tbody>
</table>

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

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</tr>
<tr>
<td>Type 3</td>
<td>Adequate classification type 2 installation material</td>
</tr>
</tbody>
</table>

**NOTE:**
- Haunch and structural bedding material will not be paid for separately, but compensation will be considered for damage included in the price bid per linear foot of concrete pipe.
INSTALLATION

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

<table>
<thead>
<tr>
<th>TRENCH WIDTH (FT)</th>
<th>MINIMUM TRENCH WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;H&quot; x 10^-2</td>
<td>&quot;H&quot; x 10^-2</td>
</tr>
<tr>
<td>&quot;H&quot; x 10^-3</td>
<td>&quot;H&quot; x 10^-3</td>
</tr>
<tr>
<td>&quot;H&quot; x 10^-4</td>
<td>&quot;H&quot; x 10^-4</td>
</tr>
</tbody>
</table>

MINIMUM COVER FOR CONSTRUCTION LOADS

<table>
<thead>
<tr>
<th>PIPE DIA (IN)</th>
<th>CLEAR DIAMETER OF PIPE</th>
<th>COVER REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>24</td>
<td>3'-0&quot; HYP. LIMIT</td>
</tr>
<tr>
<td>16</td>
<td>32</td>
<td>3'-0&quot; HYP. LIMIT</td>
</tr>
<tr>
<td>24</td>
<td>48</td>
<td>3'-0&quot; HYP. LIMIT</td>
</tr>
</tbody>
</table>

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTMA 234. PVC PIPE INSTALLATION SHALL CONFORM TO ORE SPECIAL PROVIDENT "PLASTIC PIPE AND SECTOR 204 OF OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SECTON 15.

2. ALL PIPE OUTFITTER DESIGN SHALL CONFORM TO ASHATLY LOW OUTFITTER DESIGN SPECIFICATIONS, FIFTH EDITION.

3. THE MINIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND EASILY PLACE AND COMPACT MANGING AND OTHER SKILLFUL MATERIAL.

4. IMPERVIOUS MATERIALS MUST BE PLACED AS DIRECTED BY THE ENGINEER. AT THE TIME OF THE TRENCH FILL TO PREVENT LOSS OF STRUCTURALillac WHEN IMPERVIOUS MATERIALS ARE USED FOR STRUCTURAL BACKFILL AND OR BACKFILL.

5. WHEN DIRECTED BY THE ENGINEER, IMPERVIOUS MATERIALS THAT ARE ENCOUNTERED AT THE BOTTOM OF THE TRENCH FILL TO PreVENT LOSS OF STRUCTURAL Expires WHEN IMPERVIOUS MATERIALS ARE USED FOR STRUCTURAL BACKFILL AND OR BACKFILL.

6. WHEN DIRECTED BY THE ENGINEER, IMPERVIOUS MATERIALS THAT ARE ENCOUNTERED AT THE BOTTOM OF THE TRENCH FILL TO PreVENT LOSS OF STRUCTURAL Expires WHEN IMPERVIOUS MATERIALS ARE USED FOR STRUCTURAL BACKFILL AND OR BACKFILL.

7. IMPERVIOUS MATERIALS THAT ARE ENCOUNTERED AT THE BOTTOM OF THE TRENCH FILL TO PreVENT LOSS OF STRUCTURAL Expires WHEN IMPERVIOUS MATERIALS ARE USED FOR STRUCTURAL BACKFILL AND OR BACKFILL.

8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ACCEPTED.

9. JOINTS FOR PVC PIPE MUST MEET THE REQUIREMENTS FOR SOLID JOINTS AS SPECIFIED IN ASHATLY SECTION 15-206 AND SOLID "ASHATLY LOW OUTFITTER CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLATED PER MANUFACTURER'S RECOMMENDATIONS.

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

<table>
<thead>
<tr>
<th>FILL WIDTH (FT)</th>
<th>MAXIMUM FILL HEIGHT (FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;H&quot;</td>
<td>&quot;H&quot;</td>
</tr>
<tr>
<td>&quot;H&quot; x 10^-2</td>
<td>&quot;H&quot; x 10^-2</td>
</tr>
<tr>
<td>&quot;H&quot; x 10^-3</td>
<td>&quot;H&quot; x 10^-3</td>
</tr>
</tbody>
</table>

NOTE:
1. *NOTE: 7'-0" MIN. 0'-0" MAXIMUM BACKFILL. MINIMUM COVER VALUE, "H" SHALL INCLUDE MINIMUM "H" OF PIPE MATERIAL BASED ON FILL EXCEEDING "H" OF PIPE PER FOOT OF STRUCTURAL PIPE.

2. *NOTE: 6'-6" MIN. 0'-0" MAXIMUM BACKFILL. MINIMUM COVER VALUE, "H" SHALL INCLUDE MINIMUM "H" OF PIPE MATERIAL BASED ON FILL EXCEEDING "H" OF PIPE PER FOOT OF STRUCTURAL PIPE.
NOTES:

1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.

2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."

3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.

---

**CONCRETE PAVEMENT**

**BROKEN LINE STRIPING**

---

**SOLID LINE STRIPING ON CONCRETE PAVEMENT**

---

**SOLID LINE STRIPING ON ASPHALT PAVEMENT**

---

**ASPHALT PAVEMENT**

**CONCRETE PAVEMENT**

**STRIPING AT ADJACENT NO PASSING LANES**

---

**CROSSWALK AND STOPBAR DETAILS**

---

**EDGES OF PAVEMENT**

---

**PAVEMENT EDGE LINE MARKING**

---

**DETAIL OF STANDARD RAISED PAVEMENT MARKERS**

---

**NOTES:**

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

---

**ARKANSAS STATE HIGHWAY COMMISSION**

**PAVEMENT MARKING DETAILS**

**STANDARD DRAWING PM-1**

---

**NOTES:**

- REFERENCES TO STANDARD RAISED PAVEMENT MARKERS
- REFERENCES TO STANDARD BOUNDARY MARKERS AND WINDING PLANE MARKERS
- REFERENCES TO OTHER GENERAL NOTES
- REFERENCES TO STANDARD CROSSWALK & STOPBAR DETAILS
- REFERENCES TO OTHER STANDARD DETAILS
- REFERENCES TO OTHER STANDARD DETAILS

---

**5-2-96**

**9-3-96**

**9-3-96**

**8-30-96**

**DRAFT**

**REVISED**

**FILMED**
NOTES:
1. CIRCULAR BADGE TO BE SUBSIDIARY TO PIPE UNDERDRAIN.
2. UNLESS OTHERWISE SPECIFIED ON THE PLAN, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC 3/8" OR THE WIDTH OF THE TRENCH AT THE TOP.

PLAN VIEW

SIDE VIEW

DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

DETAILS OF PIPE UNDERDRAIN

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-I

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 3037 LATEST REVISION FOR SCHEDULE 40 PIPE.
**Steel Fabrication**

Reinforced steel fabrication shall conform to the dimensions listed in the table below.

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>PIN DIAMETER</th>
<th>HOOK EXTENSION &quot;A&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3/4&quot;</td>
<td>2&quot;</td>
</tr>
<tr>
<td>4</td>
<td>3&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>5</td>
<td>5/8&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>6</td>
<td>7/8&quot;</td>
<td>8&quot;</td>
</tr>
</tbody>
</table>

*If the overall height of the hook (see diagram below) for a "B" pin, is greater than 3-1/2" or 3-3/4", the bent bar is decreased from the corresponding top or bottom slab thickness. For 2" and 3" thick bars, each bent bar shall be replaced with one hooked bar and one straight bar (using lengths shown in "A" table below). The two bars shall be the same diameter as, and placed at the same spacing as, the "B", "C", "D", or "E" bent bars they replace.*

**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 length may have to be cut in half to fit.

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>LENGTH OF HOOKED BAR</th>
<th>LENGTH OF STRAIGHT BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>L + 1'-0&quot;</td>
<td>SEE &quot;A&quot; BAR LENGTH</td>
</tr>
<tr>
<td>4</td>
<td>L + 1'-2&quot;</td>
<td>SEE &quot;A&quot; BAR LENGTH</td>
</tr>
<tr>
<td>6</td>
<td>L + 1'-4&quot;</td>
<td>SEE &quot;A&quot; BAR LENGTH</td>
</tr>
<tr>
<td>8</td>
<td>L + 1'-6&quot;</td>
<td>SEE &quot;A&quot; BAR LENGTH</td>
</tr>
</tbody>
</table>

*Note: Dimensions of bars are measured out to out of bars.*
SOLID SODDING
R.C. BOX CULVERT
SOLID SODDING
2'

PLAN
PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

SECTION C-C
ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED AND PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. 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.

LONGITUDINAL SECTION
BACKFILL DETAILS FOR BOX CULVERT

SECTION A-A
DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:
ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.
EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.
OE FORMEO DOWEL BARS
NUMBER AND SPACING TO MATCH LONGITUDINAL BARS IN BOX CULVERTS. DOWEL BARS TO BE PLACED IN TOP SLAB, SIDE WALLS, AND BOTTOM SLAB.

SECTION A-A

REINFORCING DETAILS AND CULVERT DIMENSIONS
SAME AS STANDARD CULVERT DRAWINGS

SECTION A-A

REINFORCING DETAILS AND CULVERT DIMENSIONS
SAME AS STANDARD CULVERT DRAWINGS

GENERAL NOTES
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BESIDE THE LINES INDICATED.

IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO FORM FULL 43 DIAMETER SPACING OF REINFORCEMENT STEEL.

REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE USED 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 REMOVAL ALL OLD CONCRETE WILL BE INCURRED IN THE PRICE SO FOR CUBE 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.

IMMEDIATE SHAL BE INSTALLED AS FOLLLOWS: THE DRILLING PROCEDURE SHALL BE APPLIED TO THE EXISTING AND NEW INJECTION-THE SHALE WILL REQUIRE THE EXISTING-CONCRETE WALL COMPLETELY ALLOWS THE ANSWER TO INJECTION TEST.

THE CONTRACTOR SHALL HAVE THE OPTION OF SOME OTHER METHOD FOR THE USE IN SECURING, WHICH METHOD IS USED. PAY QUANTIES WILL BE CALCULATED BASED ON METHOD.

NOTES
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 EXISTING R.C. BOX CULVERTS
STANDARD DRAWING RCB-3
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD METHOD WHEN SUPERELEVATION
REVOLVES AROUND CENTER LINE

**SUPERELEVATION TABLE FOR TWO-WAY TRAFFIC**

<table>
<thead>
<tr>
<th>Lane</th>
<th>Super</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>

**ABBREVIATIONS**
- NC: Normal Crown
- PC: Perpendicular Crown
- SC: Superelevation at Normal Crown Slope
- LC: Length of Superelevation Transition
- A: Difference from Beginning of Superelevation Transition
- V: Maximum Vertical Offset
- W: Minimum Vertical Offset
- a: Normal Offset
- T: Offset at Transition
- L: Offset at Edge
- C: Offset at Crown

**GENERAL NOTES**
1. In pavement with two-way traffic, the superelevation shall be provided unless otherwise noted on the plans.
2. Super elevation on curves shall be shown on the plans.
3. Transition length of superelevation may be provided in multiples of 25 ft. or 50 ft.
4. Lengths less than 25 ft. shall have additional offset equal to half of the length.

**REFERENCES**
- ARKANSAS STATE HIGHWAY COMMISSION
- STANDART DRAWING SE-2

---

**OUTSIDE SUBSURFACE EDGE**
- Control Point
- Super Profile
- Inside Profile

**INSIDE SUBSURFACE EDGE**
- Control Point
- Super Profile
- Inside Profile

**SUPERELEVATION FORMULA**
- L = a + (V/W) * (L - a)

**NOTE:** Maintain normal crown on inside until superelevation exceeds 2C.
**Standard Traffic Controls**

**Temporary Precast Barrier**

**Special End Unit**

*Note:* Protection of the ends of the Temporary Precast Concrete Barrier shall be provided with an NCHRP-350 or Manual Ford Assessment Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

---

**General Notes**

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual Ford Assessment Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."
GENERAL NOTES

1. STRAW BALE SHALL BE INSTALLED SO THAT THE BUNDLES ARE ORIENTED ALONG THE SIDES RATHER THAN ALONG THE TOPS OR BOTTOMS OF THE DITCHES. THE BUNDLES SHALL BE A MINIMUM 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BUNDLES.

3. BUNDLES SHALL BE PLACED IN A LEVEL AND UNINTERRUPTED ORDER TO THE ENGINEER AND NO. BE PAID FOR AT THE CONTRACT UNIT PRICE AND NO. FOR BUNDLES STRUNG TOGETHER.

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

5. Silt fence shall not be driven. Sandbags shall be covered with filter cloth, compacted earth, and gravel. The filter cloth will not be made.

6. Silt fence on R/W fence (E-41)

7. Silt fence E-11

8. Rock ditch check (E-6)

9. Sandbag ditch check (E-5)

10. Wattle ditch check (E-31)

11. Number of sand bags

12. Approx. 2:1 slope

13. Place rock at base

14. Flow line of ditch

15. Place sand bag at base

16. Flow line of ditch

ARKANSAS STATE HIGHWAY COMMISSION
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-1
CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE
1. PERFORM CLEARING AND GRUBBING OPERATION.
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION

CONSTRUCTION SEQUENCE
1. EXCAVATE AND STABILIZE INTERCEPTOR OR DIVERSION DITCHES.
2. PERFORM FINAL PHASE OF EXCAVATION, PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM FINAL PHASE OF EXCAVATION, PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION, PLACE PERMANENT OR TEMPORARY SEEDING.
5. PERFORM FINAL PHASE OF EXCAVATION, PLACE PERMANENT OR TEMPORARY SEEDING.

EMBANKMENT

GENERAL NOTE
1. CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED AND MULCHED AS REQUIRED.
2. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE
1. PLACE PHASE 1 EXCAVATION.
2. PLACE PHASE 1 EXCAVATION.
3. PLACE PHASE 1 EXCAVATION.
4. PLACE PHASE 1 EXCAVATION.
5. PLACE PHASE 1 EXCAVATION.
GENERAL NOTES:

These installations to be used where normal fencing installation would cause the collecting of drift in the channel. Installations will be made only where directed by the engineer.

When a fence line approaches a ditch, gully or depression, the last post in level ground shall be placed close enough to the post in the depression without touching the ground to the post in the depression. When extreme irregularity of terrain makes it impossible to make normal fence installations, the engineer may require the installation of the fence shown. When extreme irregularity makes installation of normal fences impracticable, the engineer may require that installation of the fence shown be made.

Payment for the type installation used will not be made directly, but will be included in the contract unit price bid for wire fence or chain link fence.

Payman
### Table: Bar List

<table>
<thead>
<tr>
<th>Material</th>
<th>Bar Type</th>
<th>Length</th>
<th>直径</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel</td>
<td>Deformed</td>
<td>12 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>36 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>48 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 ft</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Diagram: Typical Section

- **General Notes:**
  - Dimensions to be given in ft. and in.
  - All exposed surfaces to be finished as required.

- **Construction:**
  - Concrete to be placed in courses, not to exceed 12" in any one lift. Lifting joints are to be marked as shown in Figure.

- **Concrete Mix:**

### Design Load:

- **P.D.M.:**
  - 0.10 kips/ft.
  - 0.25 kips/ft.

**Class B Concrete**

**ARKANSAS STATE HIGHWAY COMMISSION**

**DETAILED OF STANDARD BARREL SECTIONS**

**REINFORCED CONCRETE BOX CULVERTS**

D-104 AV. SLOPES

SINGLES

**STANDARD DRAWING NO. H-1055-2**
### Detailed Table

#### Material Quantities

<table>
<thead>
<tr>
<th>Section</th>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Reinforcement</td>
<td>100 tons</td>
</tr>
<tr>
<td>002</td>
<td>Concrete</td>
<td>500 cubic yards</td>
</tr>
</tbody>
</table>

### General Notes

- Use Class B or C concrete, or equivalent, with the appropriate mix design.
- Reinforcement should conform to the standards outlined in the AASHTO specifications.
- Review the detailed drawing for specific reinforcement requirements.

---

### Class B Concrete

**Classification:** Box Culverts

**Standard Details:**

- **Materials:**
  - Reinforcement: AASHTO Grade 40
  - Concrete: Class C

**Dimensions:**

- Typical Section:
  - Width: 10 feet
  - Height: 4 feet

---

**Arkansas State Highway Commission**

**Details of Standard Barrel Sections**

**Reinforced Concrete Box Culverts**

**3:1 or 4:1 Slopes**

**Under Box Cover**

**Standard Drawing No. H-10020-0**
AREA STAGE 1  AREA STAGE 2

VOLUME STAGE 1  VOLUME STAGE 2

STA. 574+00 CONSTRUCT
TYPE ST DROP INLET ON LT - W/ 18" X 50' SUB INLET W/ F.I.G.
CONNECT TO DJI. 4 STA. 577-00 ON LT.
H. FIRE HOSE 150' X 302 LIN. FT,
18" SUPPRESS FIRE W/ 200 LIN. FT, H + 6'-10"

ST. 574+00 STOP 36.99
FILL 36.99  24' EXIST.

CROSS SECTION STA. 573+00 TO STA. 574+00
CROSS SECTION STA. 597.00 TO STA. 598.51.02
STA. 673.19 INPLACE
18' X 22' R.C. PIPE CULV'T.
LT. SIDE DRAIN
REMOVE AND INSTALL
12" X 15.5' X 30' ARCH PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPROX. ON LT. = 5 CU. YDS.

AREA STAGE 1  AREA STAGE 2

AREA STAGE 1  AREA STAGE 2

CROSS SECTION STA. 673.00 TO STA. 673.59