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BRIDGE STANDARD DRAWINGS

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50500_ STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS 02-27-14
50501_ STANDARD DETAILS FOR DUMPED RIPRIP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURE 02-27-14
50502_ STANDARD DETAILS FOR PERMANENT STEEL BRIDGE BEAM FORMS FOR STEEL & CONCRETE CARRIER 02-24-16
50506_ STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES 02-02-15
50507_ STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES 02-11-16
50508_ STANDARD DETAILS FOR POURED CONCRETE JOINTS 02-11-16
50510_ STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE 03-24-20
50521_ STANDARD DETAILS FOR CONCRETE FILL STEEL SHELL PLATES AND PILE ENCAPSULATIONS 02-34-18
50549_ STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PLATES AND PILE ENCAPSULATIONS - A 06-07-14

ROADWAY STANDARD DRAWINGS

DRAW NO. TITLE DATE
PES_1_ PLARED END SECTION 10-18-06
PES_2_ PLARED END SECTION 10-18-06
GR_6_ GUARDRAIL DETAILS 11-07-19
GR_7_ GUARDRAIL DETAILS 11-07-19
GR_8_ GUARDRAIL DETAILS 11-07-19
GR_9_ GUARDRAIL DETAILS 11-07-19
GR_10_ GUARDRAIL DETAILS 11-07-19
GR_11_ GUARDRAIL DETAILS 11-07-19
GR_12_ GUARDRAIL DETAILS 11-07-19
PCC_1_ CONCRETE PIPE CULVERT FILLED HEIGHTS & BEDDING 02-27-14
PCM_1_ METAL PIPE CULVERT FILLED HEIGHTS & BEDDING 02-27-14
PCP_1_ PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE) 02-27-14
PCP_2_ PLASTIC PIPE CULVERT (PVC) 02-27-14
PCP_3_ PLASTIC PIPE CULVERT (PVC WITH PVC PIPE) 02-27-14
PML_1_ PAVEMENT MARKING DETAILS 02-27-20
PLU_1_ DETAILS OF PIPE UNDERGROUND 12-06-16
TC_1_ STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION 11-07-19
TC_2_ STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION 11-07-19
TC_3_ STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION 11-07-19
TEC_1_ TEMPORARY EROSION CONTROL DEVICES 11-06-17
TEC_2_ TEMPORARY EROSION CONTROL DEVICES 11-06-17

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

ARIZONA 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
FHA-1273 | REQUIRED CONTRACT PROVISIONS: FEDERAL-AIL CONSTRUCTION CONTRACTS
FHA-1274 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHA-1275 | SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (29 U.S.C. 402A)
FHA-1276 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHA-1277 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHA-1278 | SUPPLEMENT - POSTS AND NOTICES REQUIRED FOR FEDERAL AID PROJECTS
FHA-1279 | SUPPLEMENT - VALUE RATE DETERMINATION
FHA-1280 | CONTRACTORS' LEASES
FHA-1281 | DEPARTMENT NAME CHANGE
FHA-1282 | ISSUANCE OF PROPOSALS
FHA-1283 | LIQUIDATED DAMAGES
FHA-1284 | WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
FHA-1285 | PROTECTION OF INFER QUALITY AND WETLANDS
FHA-1286 | UNCLASSIFIED EXCAVATION
FHA-1287 | AGGREGATE BASE COURSE
FHA-1288 | QUALITY CONTROL AND ACCEPTANCE
FHA-1289 | TACK COATS
FHA-1290 | DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
FHA-1291 | PERCENT AIR voidS FOR ACMI MIX DESIGNS
FHA-1292 | LIQUID ANTISKID-ADDITIVE
FHA-1293 | DESIGN OF ASPHALT MIXTURES
FHA-1294 | CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
FHA-1295 | DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
FHA-1296 | INCIDENTAL CONSTRUCTION
FHA-1297 | RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
FHA-1298 | TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
FHA-1299 | PIPE CULVERTS FOR SIDE DRAINS
FHA-1300 | QUARDRAIN TERMINAL (TYPE 2)
FHA-1301 | MUSH COVER
FHA-1302 | STRUCTURES
FHA-1303 | CONCRETE FOR STRUCTURES
FHA-1304 | REINFORCING STEEL FOR STRUCTURES
FHA-1305 | STEEL STRUCTURE
FHA-1306 | INSTALLATION OF ELASTOMERIC BEARINGS
FHA-1307 | ELASTOMERIC BEARINGS
FHA-1308 | AIRPORT CLEARANCE REQUIREMENTS
FHA-1309 | BIDDING REQUIREMENTS AND CONDITIONS
FHA-1310 | BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
FHA-1311 | BROADBAND INTERNET SERVICE FOR FIELD OFFICE
FHA-1312 | CARGO PREFERENCE ACT REQUIREMENTS
FHA-1313 | CLASS C (FLYASH) PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS (A/E) CONCRETE
FHA-1314 | COAL TIP EPOXY COATING
FHA-1315 | CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
FHA-1316 | DIRECT TENSION INDICATORS FOR NON-REINFORCED BOLT ASSEMBLIES
FHA-1317 | DISADVANTAGED BUSINESS ENTERPRISE BIDDERS RESPONSIBILITIES
FHA-1318 | ESTABLISHING CONTRACT TIME WORKING DAY CONTRACT
FHA-1319 | EXTENSION FOR PIPE CULVERTS
FHA-1320 | FLEXIBLE BEGINNING OF WORK
FHA-1321 | GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
FHA-1322 | ISOLATION CASING
FHA-1323 | MANDATORY ELECTRONIC CONTRACT
FHA-1324 | MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
FHA-1325 | NESTING SITE OF VIGILANT BIRDS
FHA-1326 | PARTNERING REQUIREMENTS
FHA-1327 | PLASTIC PIPE
FHA-1328 | PRICE ADJUSTMENT FOR ASPHALT BINDER
FHA-1329 | SECTION 404 RIVERSIDE 14 PERMIT REQUIREMENTS
FHA-1330 | SHARING FOR CULVERTS
FHA-1331 | SCL STABILIZATION
FHA-1332 | STORM WATER POLLUTION PREVENTION PLAN
FHA-1333 | SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
FHA-1334 | UTILITY ADJUSTMENTS
FHA-1335 | VAPOR MIX ASPHALT

GENERAL NOTES:

1. GRADE LINE NOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEPHONE LINES TO BE MOVED OR COVERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPARATUS THAT INTERFERES WITH THE PROPOSED CONSTRUCTION, AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNER, 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 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 PLANTED 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. VARIETIES MAY BE CONSTRUCTED INTENTIONALLY, 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 UNLAWFULLY EXTINGUISHED.
10. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAYING ALONG A NEAT LINE. AFTER SAYING THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WAY 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 NATIONALWIDE I PERMIT. REFER TO SECTION 110.9 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
HWY, 58 FULL DEPTH SECTION (SUPERELEVATION)
STA. 206+57.50 TO STA. 207+29.93
STA. 264+98.07 TO STA. 265+32.63

NOTES:

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

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

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

WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF AGGREGATE SURFACE COURSE ½"/1 IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.
HWY. 58 - NOTCH AND WIDEN SECTION

STA. 202+00.00 TO STA. 206+00.61
STA. 229+31.54 TO STA. 229+33.71

NOTES

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

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

PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LACED. LONGITUDINAL JOINTS SHALL BE AT LANE LIMITS.

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

WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACAM SURFACE COURSE (6") IN LEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

HWY. 58 - NOTCH AND WIDEN SECTION (SUPERELEVATION)

STA. 206+00.61 TO STA. 206+57.50
STA. 229+32.65 TO STA. 229+35.4

TYPICAL SECTIONS OF IMPROVEMENT
WIDENING FOR GUARDRAIL

DETAIL FOR TRANSITIONS

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

DETAIL FOR COUNTY ROAD TURNSOUTS
OPEN SHOULDER SECTION

DETAIL FOR DRIVEWAY TURNSOUTS

CONSTRUCTION LIMITS

ADH 89-040 6 69

SPECIAL DETAILS
DETAIL OF SILT FENCE
AT CROSS DRAINS

SECTION OF APPROACH SLAB
LEGEND

- SAND BAG DITCH CHECKS
- ROCK DITCH CHECKS
- SALT FENCE

REVISIONS

<table>
<thead>
<tr>
<th>DATE OF REVISION</th>
<th>REVISION</th>
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<tbody>
<tr>
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</tbody>
</table>

STAGE 2
TEMPORARY EROSION CONTROL DETAILS
The yellow striping quantity has been estimated based on a double yellow centerline stripe for the entire project. The project must be marked for permanent passing lanes prior to the placement of any final striping. Contact the maintenance division after the final lift of surface course has been placed to schedule the paving of the project.
### CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>STAGE 1</th>
<th>END OF JOB</th>
<th>CONSTRUCTION PAVEMENT MARKINGS</th>
<th>RAISED PAVEMENT MARKERS</th>
<th>REFLECTORIZED PAINT PAVEMENT MARKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSTRUCTION PAVEMENT MARKINGS</td>
<td>15624</td>
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<td>11524</td>
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<td>RAISED PAVEMENT MARKERS TYPE S (YELLOW/WHITE)</td>
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<td>REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6&quot;)</td>
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<td>REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6&quot;)</td>
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<td>TOTALS:</td>
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<td>72</td>
<td>5687</td>
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Note: This is a low traffic volume road as defined in section 604.03, standard specifications for highway construction.

### 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>END OF JOB</th>
<th>MAXIMUM NUMBER REQUIRED</th>
<th>TOTAL SIGNS REQUIRED</th>
<th>TRAFFIC DRUMS</th>
<th>BARRICADES TYPE B</th>
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<tbody>
<tr>
<td>W02.1</td>
<td>ROAD WORK 1500 FT</td>
<td>48&quot; x 48&quot;</td>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>W02.1</td>
<td>ROAD WORK 1000 FT</td>
<td>48&quot; x 48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>W02.1</td>
<td>ROAD WORK 500 FT</td>
<td>48&quot; x 48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>W02.1</td>
<td>ROAD WORK AHEAD</td>
<td>48&quot; x 48&quot;</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>W02.2</td>
<td>END ROAD WORK</td>
<td>48&quot; x 48&quot;</td>
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<td>2</td>
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<td>R11.2</td>
<td>ROAD CLOSED</td>
<td>48&quot; x 36&quot;</td>
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<td>2</td>
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<td>R4.1</td>
<td>RIGHT LANE CLOSED</td>
<td>24&quot; x 36&quot;</td>
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<td>V20.1</td>
<td>RIGHT SHOULDER CLOSED</td>
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<td>R1.1</td>
<td>SPEED LIMIT xx</td>
<td>24&quot; x 36&quot;</td>
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<td>V02.1</td>
<td>REDUCED SPEED AHEAD</td>
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Note: This is a low traffic volume road as defined in section 604.03, standard specifications for highway construction.
### CLEARING AND GRUBBING

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>CLEARING</th>
<th>GRUBBING</th>
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<tbody>
<tr>
<td>201+00</td>
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**TOTALS:**
- 30
- 30

### REMOVAL AND DISPOSAL OF CULVERTS

<table>
<thead>
<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>PIPE CULVERTS</th>
</tr>
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<tbody>
<tr>
<td>216-39</td>
<td>48&quot; x 38&quot; x 86 R.C. PIPE CULVERT</td>
<td>EACH</td>
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**TOTAL:**
- 5

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

### REMOVAL AND DISPOSAL OF ITEMS

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>QUADRANT</th>
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<tbody>
<tr>
<td>212-32</td>
<td>HWY 380-RT</td>
<td>LIN FT.</td>
</tr>
<tr>
<td>213-83</td>
<td>HWY 380-LT.</td>
<td>50</td>
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<tr>
<td>213-93</td>
<td>HWY 380-RT.</td>
<td>60</td>
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<tr>
<td>214-00</td>
<td>HWY 380-LT.</td>
<td>75</td>
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<tr>
<td>216-08</td>
<td>HWY 380-RT.</td>
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<tr>
<td>219-74</td>
<td>HWY 380-LT.</td>
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**TOTAL:**
- 300

**NOTE:** The quantities shown above for the removal and disposal of quadrants shall include the removal and disposal of all quadrantal terminals and terminal anchor posts.

### EARTHWORK

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<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>UNCLASSIFIED</th>
<th>COMPACTED</th>
<th>*SOIL EMBankMENT</th>
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<td>ENTIRE PROJECT</td>
<td>MAIN LANES</td>
<td>1365</td>
<td>2709</td>
<td>1855</td>
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<td>APPROACHES</td>
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<td>ENTIRE PROJECT</td>
<td>DREDGE EXCAVATION</td>
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**TOTALS:**
- 1465
- 2805

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

### APPROACH GUTTERS AND R.I. AREAS

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>APPROACH GUTTER (TYPE SPECIAL)</th>
<th>APPROACH GLASS</th>
<th>REINFORCING STEEL (R.60.1)</th>
<th>AGGREGATE BASE CRS. (CLASS 1)</th>
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<tbody>
<tr>
<td>212-29.93</td>
<td>HWY 380-RT</td>
<td>4.00</td>
<td>4.00</td>
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</tr>
<tr>
<td>212-89.83</td>
<td>HWY 380-LT</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>213-89.93</td>
<td>HWY 380-RT</td>
<td>27.30</td>
<td>27.30</td>
<td>27.30</td>
<td>27.30</td>
</tr>
<tr>
<td>215-85.12</td>
<td>HWY 380-LT</td>
<td>27.30</td>
<td>27.30</td>
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<tr>
<td>215-85.17</td>
<td>HWY 380-RT</td>
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</tr>
<tr>
<td>215-85.07</td>
<td>HWY 380-LT</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
</tbody>
</table>

**TOTALS:**
- 16.50
- 54.40
- 5504
- 76.51

**NOTE:** Use T-11” Form 4 Shoulder.

### STRUCTURES

<table>
<thead>
<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>PILE CULVERT ALTERNATES</th>
<th>FLARED END SECTOR ALTERNATES FOR PIPE CULVERT ALTERNATES</th>
<th>STD. Dwg. Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>216-39</td>
<td>TRL 42&quot; x 116&quot;</td>
<td>354 354 42 42</td>
<td>ECH</td>
<td>F6S-1, F6S-2, P6C-1, P6C-1</td>
</tr>
</tbody>
</table>

**TOTALS:**
- 354
- 354
- 6

**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.

### BENCH MARKS

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>BENCH MARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>216-03</td>
<td>HWY 380 ON LT.</td>
<td>EACH</td>
</tr>
</tbody>
</table>

**TOTAL:**
- 1

**NOTE:** Shown for information only. Benchmarks shall be furnished and placed by State forces.

### SELECTED PIPE BEDDING

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>SELECTED PIPE BEDDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
<td>CL.YD.</td>
<td>50</td>
</tr>
</tbody>
</table>

**TOTAL:**
- 50

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

### 4" PIPE UNDERRAIN

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LOCATION</th>
<th>UNDERRAIN OUTLET PROTECTORS</th>
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</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
<td>500</td>
<td>5</td>
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</table>

**TOTALS:**
- 590

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

### DRIVEWAYS & TURNOUTS

<table>
<thead>
<tr>
<th>STATION</th>
<th>SIDE</th>
<th>LOCATION</th>
<th>WIDTH</th>
<th>ACHIM SURFACE COURSE (1/2&quot;) 2.20 LBS. PER SQ. YD. (PG 44-22)</th>
<th>AGGREGATE BASE COURSE (CLASS 1)</th>
<th>SIDE DRAINS</th>
<th>STANDARD DRAWINGS</th>
</tr>
</thead>
</table>

**TOTALS:**
- 180.71
- 17.45
- 401.54
- 156

**NOTE:** Basis of estimate: ACHIM Surface Course 1/2", 94.8% Min. AOSR 5.2% Asphalt Binder

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

**NOTE:** 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.

### QUANTITIES
## Asphalt Concrete Patching for Maintenance of Traffic

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>TON</th>
<th>TACK COAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTER PROJECT TO BE USED IF AND WHERE</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>DIRECTED BY THE ENGINEER</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>13</strong></td>
<td><strong>26</strong></td>
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</tbody>
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### Cold Milling Asphalt Pavement

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>AVG. W/DTH</th>
<th>COLD MILLING ASPHALT PAVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>201+00.00</td>
<td>200-30.00</td>
<td>MAIN LANES</td>
<td>25.0</td>
<td>255.6</td>
</tr>
<tr>
<td>228+33.21</td>
<td>225-33.21</td>
<td>MAIN LANES</td>
<td>23.0</td>
<td>255.6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>51.32</strong></td>
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</tbody>
</table>

**NOTE:** AVERAGE MILLING DEPTH 1".

## ACHM Patching of Existing Roadway

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>TON</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTER PROJECT TO BE USED IF AND WHERE</td>
<td>10</td>
</tr>
<tr>
<td>DIRECTED BY THE ENGINEER</td>
<td>10</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
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</tr>
</tbody>
</table>

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

### Guardrail

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>GUARDRAIL</th>
<th>THREE BEAM GUARDRAIL TERMINAL</th>
<th>GUARDRAIL TERMINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>210+89.82</td>
<td>212+88.18</td>
<td>HWY. 308-LT</td>
<td>100</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>210+70.16</td>
<td>212+66.28</td>
<td>HWY. 308-LT</td>
<td>175</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>215+78.15</td>
<td>215+12.15</td>
<td>HWY. 308-LT</td>
<td>175</td>
<td>1</td>
<td>1</td>
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<tr>
<td>215+70.85</td>
<td>217+39.2</td>
<td>HWY. 303-LT</td>
<td>100</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td></td>
<td><strong>500</strong></td>
<td><strong>4</strong></td>
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## Erosion Control

### Permanent Erosion Control

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>PERMANENT EROSION CONTROL</th>
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</thead>
<tbody>
<tr>
<td>ENTER PROJECT</td>
<td>CLEARING AND GRUBBING</td>
<td>ACRE</td>
<td>TON</td>
</tr>
<tr>
<td>ENTER PROJECT</td>
<td>STAGE 1</td>
<td>8.67</td>
<td>13.34</td>
</tr>
<tr>
<td>ENTER PROJECT</td>
<td>STAGE 2</td>
<td>1.67</td>
<td>3.34</td>
</tr>
<tr>
<td>ENTER PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER</td>
<td></td>
<td>500</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>14.66</strong></td>
<td><strong>6.34</strong></td>
</tr>
</tbody>
</table>

**BASE OF ESTIMATE:** 2 TONS / ACRE OF SEEDING

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

### Quantities

<table>
<thead>
<tr>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>10040</td>
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</table>

**QUANTITIES**
## Base and Surfacing

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>AGGREGATE BASE COURSE (CLASS T)</th>
<th>TACK COAT</th>
<th>ACMH Binder Course (1%)</th>
<th>ACMH Surface Course (1/2”)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TON / STATION</td>
<td>TON</td>
<td>TOTAL WID</td>
<td>80/60</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>FEET</td>
<td></td>
<td></td>
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<tr>
<td>90315-00</td>
<td>09980-00</td>
<td>TRANSITION</td>
<td>140.00</td>
<td>20.00</td>
<td>30.00</td>
<td>23.00</td>
<td>255.56</td>
</tr>
<tr>
<td>90317-00</td>
<td>09982-00</td>
<td>INCHING WITHIN</td>
<td>357.00</td>
<td>88.05</td>
<td>401.72</td>
<td>36.82</td>
<td>1878.77</td>
</tr>
<tr>
<td>90319-00</td>
<td>09984-00</td>
<td>FULL DEPTH</td>
<td>373.80</td>
<td>156.99</td>
<td>150.59</td>
<td>64.91</td>
<td>1478.77</td>
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<tr>
<td>90321-00</td>
<td>09986-00</td>
<td>FULL MOUTH</td>
<td>334.90</td>
<td>150.50</td>
<td>560.04</td>
<td>64.91</td>
<td>1478.77</td>
</tr>
<tr>
<td>23933-73</td>
<td>23935-73</td>
<td>TRANSITION</td>
<td>500.00</td>
<td>20.00</td>
<td>30.00</td>
<td>23.00</td>
<td>255.56</td>
</tr>
<tr>
<td>ADDED FOR LEVELING</td>
<td>ADDED FOR QUARRIES, WIDENING</td>
<td>ADDED FOR QUARRIES, WIDENING</td>
<td>ADDED FOR LEVELING</td>
<td>ADDED FOR QUARRIES, WIDENING</td>
<td>ADDED FOR QUARRIES, WIDENING</td>
<td>ADDED FOR LEVELING</td>
<td>ADDED FOR QUARRIES, WIDENING</td>
</tr>
<tr>
<td>90102-00</td>
<td>09903-00</td>
<td>ADDED FOR LEVELING</td>
<td>460.00</td>
<td>20.00</td>
<td>289.84</td>
<td>231.12</td>
<td>25.11</td>
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<tr>
<td>90106-00</td>
<td>09906-00</td>
<td>ADDED FOR QUARRIES, WIDENING</td>
<td>57.80</td>
<td>20.00</td>
<td>127.18</td>
<td>21.72</td>
<td>21.72</td>
</tr>
<tr>
<td>90110-00</td>
<td>09907-00</td>
<td>ADDED FOR QUARRIES, WIDENING</td>
<td>67.70</td>
<td>20.00</td>
<td>371.89</td>
<td>63.50</td>
<td>63.50</td>
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<tr>
<td>90120-00</td>
<td>09908-00</td>
<td>ADDED FOR LEVELING</td>
<td>200.00</td>
<td>20.00</td>
<td>444.44</td>
<td>75.55</td>
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<tr>
<td>TOTALS</td>
<td>TOTALS</td>
<td>TOTALS</td>
<td>TOTALS</td>
<td>3264.65</td>
<td>14371.76</td>
<td>710.09</td>
<td>2544.12</td>
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</tbody>
</table>

**Basis of Estimate:**

- ACMH SURFACE COURSE (1/2”): 94,9% MIN. AGG. 5.2% ASPHALT BINDER
- ACMH BINDER COURSE (1.0%): 94.9% MIN. AGG. 4.1% ASPHALT BINDER
- MAXIMUM NUMBER OF GALLONS = 110 FOR PG 94-22

**Tack coat quantities were calculated using the Emulsified Asphalt Rates. Refer to ES-400.1 for the residual asphalt application rates.**
# SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 100840

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LUMP SUM</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>CLY, MD.</td>
<td>125.75</td>
</tr>
<tr>
<td>3</td>
<td>CLY, MD.</td>
<td>125.75</td>
</tr>
<tr>
<td>4</td>
<td>CLY, MD.</td>
<td>125.75</td>
</tr>
<tr>
<td>5</td>
<td>CLY, MD.</td>
<td>125.75</td>
</tr>
<tr>
<td>6</td>
<td>CLY, MD.</td>
<td>125.75</td>
</tr>
<tr>
<td>7</td>
<td>CLY, MD.</td>
<td>125.75</td>
</tr>
<tr>
<td>8</td>
<td>TOTAL FOR JOB NO. 100840</td>
<td>174.40</td>
</tr>
</tbody>
</table>

1. Steel shall comply with ASTM A362, Grade 3, fy = 45 kips.
2. The 24" steel shall have a nominal yield thickness of 0.75 in.
3. The upper 25% of the 24" dia. Concrete-filled Steel Shells shall be designated locations where the steel shall receive a field-applied coating in accordance with the job specifications for "Coal Tar Epoxy Coating".
4. All Grade 50 structural steel, except galvanized members, surfaces in contact with concrete, and the separator device, within the first 50 feet of bridge deck expansion joints shall be painted as specified in Subsection 605.71. For more information, see "GENERAL NOTES" on Spec. No. 103942.

---

**NOTES:**
- **LUMP SUM**: The lump sum includes the quantities listed above.
- **TOTALS FOR JOB NO. 100840**: The total quantity is 174.40 cubic feet.

---

### SUMMARY OF QUANTITIES

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>CLEARING</td>
<td>20</td>
<td>STATION</td>
</tr>
<tr>
<td>202</td>
<td>GROUNDING</td>
<td>30</td>
<td>STATION</td>
</tr>
<tr>
<td>205</td>
<td>REMOVAL AND DISPOSAL OF PIPE CULVERTS</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>206</td>
<td>DISPOSAL OF QUARRY MATERIAL</td>
<td>35</td>
<td>LULUM</td>
</tr>
<tr>
<td>207</td>
<td>UNCLASSIFIED EXCAVATION</td>
<td>3405</td>
<td>CU YD</td>
</tr>
<tr>
<td>210</td>
<td>COMPACTED DISK</td>
<td>25934</td>
<td>CU YD</td>
</tr>
<tr>
<td>211</td>
<td>601 CD</td>
<td>1</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 210</td>
<td>AGGREGATE BASE COURSE (CLASS T)</td>
<td>3743</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 407</td>
<td>TREATED</td>
<td>1143</td>
<td>TON</td>
</tr>
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<td>SS &amp; 407</td>
<td>MINERAL AGGREGATE (B)</td>
<td>771</td>
<td>TON</td>
</tr>
<tr>
<td>SS &amp; 407</td>
<td>ASPHALT Binder (PS 64-22)</td>
<td>33</td>
<td>TON</td>
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<td>SS &amp; 407</td>
<td>MINERAL AGGREGATE (A)</td>
<td>16.39</td>
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<td>SS &amp; 407</td>
<td>ASPHALT Binder (PS 64-22)</td>
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<td>TON</td>
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<td>SP &amp; 5, 414</td>
<td>CUSH</td>
<td>511</td>
<td>SQ YD</td>
</tr>
<tr>
<td>SP &amp; 5, 414</td>
<td>ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC</td>
<td>3</td>
<td>TON</td>
</tr>
<tr>
<td>SP &amp; 5, 414</td>
<td>ACMH PATCHING OF EXISTING ROADWAY</td>
<td>10</td>
<td>TON</td>
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<tr>
<td>504</td>
<td>APPROACH GUARDRAIL</td>
<td>44.95</td>
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<tr>
<td>505</td>
<td>APPROACH GUARDRAILS</td>
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<td>CU YD</td>
</tr>
<tr>
<td>501</td>
<td>INTERSECTION</td>
<td>1.00</td>
<td>LULUM</td>
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<tr>
<td>SP &amp; 5, 602</td>
<td>FURNISHING FIELD OFFICE</td>
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<td>LUM SUM</td>
</tr>
<tr>
<td>SS &amp; 603</td>
<td>MAINTENANCE OF TRAFFIC</td>
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<td>LUM SUM</td>
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<tr>
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<td>289</td>
<td>SQ FT</td>
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<tr>
<td>SS &amp; 604</td>
<td>BARRIACADES</td>
<td>192</td>
<td>LIN FT</td>
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<td>SS &amp; 604</td>
<td>TRAFFIC DRUMS</td>
<td>198</td>
<td>EACH</td>
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<tr>
<td>604</td>
<td>CONSTRUCTION PAVEMENT MARKINGS</td>
<td>11534</td>
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<tr>
<td>606</td>
<td>REINFORCED CONCRETE PIPE CULVERTS (CLASS M)</td>
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<tr>
<td>606</td>
<td>ASPHALT COATED STRENGTHENED STEEL PIPE CULVERTS (14 GAUGE)</td>
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<td>LULUM</td>
</tr>
<tr>
<td>606</td>
<td>ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)</td>
<td>60</td>
<td>LULUM</td>
</tr>
<tr>
<td>606</td>
<td>POLYMER PREDICTED METAL COATED CORRUGATED STEEL PIPE, PIPE CULVERT (14 GAUGE)</td>
<td>354</td>
<td>LULUM</td>
</tr>
<tr>
<td>SP &amp; 5, 606</td>
<td>10&quot; HDPE-REINFORCED POLYETHYLENE PIPE</td>
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<td>LULUM</td>
</tr>
<tr>
<td>606</td>
<td>PAVED ENDS FOR REINFORCED CONCRETE PIPE CULVERTS (ALT. NO. 1)</td>
<td>5</td>
<td>EACH</td>
</tr>
<tr>
<td>606</td>
<td>PAVED ENDS FOR REINFORCED CONCRETE PIPE CULVERTS (ALT. NO. 2)</td>
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<td>EACH</td>
</tr>
<tr>
<td>606</td>
<td>SELECTED PIPE BEDDING</td>
<td>50</td>
<td>CU YD</td>
</tr>
<tr>
<td>SS &amp; 611</td>
<td>4&quot; PIPE UNDERDRAINS</td>
<td>500</td>
<td>LULUM</td>
</tr>
<tr>
<td>SS &amp; 611</td>
<td>UNDERDRAIN OUTLET PROTECTORS</td>
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<td>EACH</td>
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<tr>
<td>SS &amp; 617</td>
<td>GLANDARIAL, TYPE A</td>
<td>65</td>
<td>LIN FT</td>
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<td>SS &amp; 617</td>
<td>GLANDARIAL, TYPE 2</td>
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<tr>
<td>SS &amp; 617</td>
<td>THREE SEAM GLANDARIAL TERMINAL</td>
<td>3</td>
<td>EACH</td>
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<tr>
<td>620</td>
<td>SEWER</td>
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<td>SEWER</td>
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<tr>
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<td>138</td>
<td>CU YD</td>
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<td>ROCK DITCH CHECKS</td>
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<td>SS &amp; 805</td>
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<td>DUMPED BRUSH</td>
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### STRENGTHS OVER 20' SPAN

<table>
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<tr>
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<tr>
<td>6/18/2020</td>
<td>2.3, 28, 31, 41</td>
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### SURVEY CONTROL DETAILS

**Project Name:** Unspecified  
**Date:** 17-09-2016  
**Datum:** Unspecified  
**Projected to:** Unspecified  
**Unit(s) of SURVEY Foot:** Unspecified

#### SURVEY CONTROL COORDINATES

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</tbody>
</table>

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**NOTE:**  
All points on the survey grid were established to the nearest 0.01 feet.  
Reference Points (1000 series) are to be used to establish control.  
All reference points are subject to data collection and processing errors.  
Reference Points are not to be used for control.  
 Ground Control Points are subject to local survey control.  
Grid Datum: North American Datum 1983  
Angular Datum: State Plane Zone East.  
Conformity Angle: Unspecified.
1. Steel cover plates to be fabricated in two halves, and then assembled using welder plates. The steel cover plates and welder plates shall be pre-warmed to verify fit-up before galvanization and shipping to the job site.

2. The upper 3/4 of the 24" dia. isolation casing shall be fabricated on bent No. 2 and 4 and shall receive a curtain spray coating in accordance with AWS D1.1/NACE SP 100-93 "COATING FOR ISOLATION COATING".


4. The outer and inner surfaces of the isolation casing shall receive a curtain spray coating in accordance with AWS D1.1/NACE SP 100-93 "COATING FOR ISOLATION COATING".

5. See Section B-B for isolation casing detail.

6. Inspection access cover.

GENERAL NOTES FOR 42" IDA ISOLATION CASING:

Steel used to fabricate isolation casing shall conform to ASTM A532, Grade 3, (15,000 psi).

Structural steel used to fabricate the steel cover plate shall conform to ASTM A572, Grade 50 and shall be galvanized after fabrication in accordance with Subsection B71.1.G.

The cost of the steel cover plate and the costs for spray coating shall be included in the job bids for the project of the form "INSULATION COATING", for more information, see AWS D1.1/NACE SP "ISOLATION COATING".

SECTION A-A

Steel Cover Plate

SECTION B-B

Inspection Access Cover

INSPECTION ACCESS COVER

SCALE: 1" = 1'-0"
<table>
<thead>
<tr>
<th>Location</th>
<th>Bolt Size</th>
<th>Steel Grade</th>
<th>Chair Type</th>
<th>Fabricator</th>
<th>Quantity</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>36</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**General Notes**

Electromagnetic bearings shall conform to Section B21 and shall be priced for at the unit price bid for "Elastomeric Bearings".

External heat sinks and shear keys shall conform to ASTM A536, Grade 50W. Flex disks shall be ASTM A536, Grade 50W, and shall be galvanized to conform to ASTM B 623, Class C or ASTM B 625, Class 3B.

External heat sinks and shear keys shall be carbon-steel fabricated (including base, leg holes, and slots) and shall be designed for full-contact w/ the elastomeric bearing. The surface in contact w/ the elastomeric bearing shall be finished in accordance with Subsection B61.1.1(b) for permitted steel and B61.1(c) for unpermitted Grade 50W steel.

Anchor bolts, washers and nuts shall conform to Subsection B61.25. The anchor bolt grade of steel shall be as specified in the "Table of Fabricator Variables". Indicators shall be in compliance with the manufacturer's instructions and shall be highlighted in the details.

*Elastomeric bearing and fabricator variables are subject to change without notice.*

**Anchor Bolt Detail**

- NOTES:
  - Anchor bolts may be cast in place or drilled and grouted in place. If anchor bolts are to be cast in place, the galvanized steel metal anchors shall be used.
  - Anchor bolts shall be dry packed with asphalt, unhardened or approved equal in place of the grade of the grout. The dry pack shall be removed and replaced for the anchors shall be accurately placed in the expansion joints. Joints should be grouted with a non-hardening or non-crystallizing non-hardening grade that is compatible with the anchors. Sheet metal anchors shall not be cut for drainage and shall be considered supplementary to the item "Structural Steel in Beam Spans (AST, 80, 200)."

---

**Sheet 2 of 2**

DETAILS OF ELASTOMERIC BEARINGS

ARKANSAS STATE HIGHWAY COMMISSION

**ROUTE**

**SECTION**

LITTLE ROCK, ARK.

**ENGINEER**

ARKANSAS STATE HIGHWAY COMMISSION

**DRAWN BY**

**CHECKED BY**

**DATE**

**FILENAME**

**SHEET**

**NOTE**

**BRIDGE NO.**

**DRAWING NO.**
TYPICAL ROADWAY SECTION AT INTERMEDIATE BENTS
(Looking North)
No Scale

TYPICAL ROADWAY SECTION AT INTERMEDIATE BENTS
SHOWING CONCRETE RESTRAINERS
(Looking North)
No Scale

LONGITUDINAL RESTRAINER DETAILS
No Scale

LONGITUDINAL RESTRAINER DETAILS
(View looking up)
Scale: 1/16" = 1'-0"
STA, 210+00.00 TO STA, 211+00.00
GENERAL NOTES
These [GENERAL NOTES] are applicable unless otherwise stated in the Plan Details, Special Provisions, or Supplemental Specifications.


DESIGN SPECIFICATIONS See bridge details, lane and structural design.

SUPERSTRUCTURE NOTES:

MATERIALS AND STRENGTH:
- Class 350 Concrete
- Reinforcing Steel Grade 60, Grade 300 & 330, Type II
- Structural Steel Grade 50, 70, 90

All concrete shall be Class 350 with a maximum 35 day compressive strength of 4200 psi. Concrete placed in the dry and all exposed surfaces shall be covered 24 hours unless otherwise noted.

The superstructure design is for use with permanent formwork for special projects. Concrete to be cast in the dry and all exposed surfaces shall be covered 24 hours unless otherwise noted.

The concrete deck roadway surfacing is to be placed in accordance with Subsection 2102 for Class 300 Bonded Surface Finish. Structural steel shall be as specified in Subsection 2201 for Class 350 bond with a minimum 25 year service life and shall be protected with a precast finish to an overall thickness of 1/4 inch. Painted surfaces shall be as specified in Subsection 2201.

[...]

STRENGTHENING STEEL

All reinforcing steel shall be Grade 60 yield strength and 50 ksi tensile strength in accordance with Subsection 2301. All long continuous bars shall be Grade 60 in accordance with Subsection 2302. All reinforcing bars shall be Grade 60 in accordance with Subsection 2302.

[...]

STRUCTURAL SUBBASE NOTES:

- Concrete slab and foundation slabs shall be designed and detailed in accordance with Subsection 2401. All concrete shall be Grade 350.
- All structural steel shall be designed and detailed in accordance with Subsection 2502. All structural steel shall be Grade 50.

[...]

STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

[...]

LITTLE ROCK, ARKANSAS 72201-1111

PHONE: (501) 682-3100  FAX: (501) 682-5850
WWW.ASHT.org

DRAWING NO. 5503

[...]

4/1/2020

[...]
WOOD LINE POST CONNECTIONS

ADDED REFERENCE TO MASH HOLE FOR TYPE "B"

10-1-92

SIDE

REVISED WOOD LINE POST DETAIL

BACK

5‡" 2 '-8 "

RENUMBERED AND RENAMED

REVISED WOOD POST NOTE

PLASTIC BLOCKOUT CONNECTIONS

8"

ƒ" 4'

8" 7 "

ƒ "

SPLICE BOLT

POST BOLT - SAME EXCEPT LENGTH

DETAILS OF W-BEAM GUARDRAIL

FULL SECTION OF CLOSELY SIMILAR DIMENSIONS AND
STRENGTH REQUIREMENTS ARE SUBSTITUTED & APPROVED BY THE ENGINEER.

DETAILS OF STEEL LINE POST CONNECTIONS

TYPICAL

Cut Steel Washer

†"X1'" Bolt &

FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARDRAIL.

GuARDRAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS REQUIREMENTS
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM
BETTER 9.7f (1400 f) OR NO. 1  1350 f SOUTHERN PINE.

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

THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN
ƒ" BEYOND IT.

SAND THOROUGHLY TAMPED IN PLACE.

USE W-BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR

POST TO CENTERLINE OF POST.

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS

(W-BEAM)

DETAILS OF WOOD LINE POST CONNECTIONS

(W-BEAM)

GENERAL NOTES

ALL BOLTS SHALL BE SUPPORTED LENGTH TO EXTEND
THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN
3" BEYOND IT. UNLESS OTHERWISE NOTED.

BE 6"x8"x1'-2" WITH NO

NOTCH REQUIRED.

BE WITH A TOLERANCE OF -

"/".

FOR STEEL GUARDRAIL, COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

FOR EXTERIOR GUARDRAIL, COMPONENTS MUST BE OF EXTERIOR GRADE AND MATERIAL
OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

A S A SPECIAL CONNECTION, ANY SIDING UNDER OR AROUND POST SHALL BE OPERATIONAL
AND STANDS THOROUGHLY TAMPERED IN PLACE.

WOOD POSTS FOR GUARDRAIL SHALL BE EITHER CROSS-NAIL OR DIAMOND NAILED.

CONSTRUCTION OF GUARDRAIL FOR USE OF STEEL GUARDRAIL FOR W-BEAM
GUARDRAIL DETAILS

GUARDRAIL DETAILS

STANDARD DRAWING GR-6

GUARDRAIL DETAILS

ARKANSAS STATE HIGHWAY COMMISSION
METHODS OF INSTALLATION OF GUARDRAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

METHOD OF INSTALLATION OF GUARDRAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

- TIME DEMON GUARDRAIL TERMINAL
  ** GUARDRAIL TERMINAL (TYPE 2)
DETAILS OF WIDENING FOR GUARDRAIL

SLOPE AS SHOWN ON TYPICAL SECTION

SECTION A-A

SECTION B-B

METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

NOTE: NORMAL SECTION TO EACH SIDE TO SUPPORT GUARDRAIL.

ARKANSAS STATE HIGHWAY COMMISSION
GUARDRAIL DETAILS
STANDARD DRAWING GR-9
STRUCTURAL STEEL POSTS 1-7

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

POST 8

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

TUBING BLOCKOUT

LIP CURB-REFER TO APPROACH

GENERAL NOTES:

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

2. WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.
THREE BEAM GUARDRAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:
The three beam guardrail guard rail and the guardrail section shall be formed of steel and shall be free from any imperfections in the steel.

ELEVATION:
Subjects to approach closely. The guardrail section shall be formed of steel. The guardrail section shall be free from any imperfections in the steel. The guardrail section shall be free from any imperfections in the steel. The guardrail section shall be free from any imperfections in the steel.

PLAN:
Subjects to approach closely. The guardrail section shall be formed of steel. The guardrail section shall be free from any imperfections in the steel. The guardrail section shall be free from any imperfections in the steel. The guardrail section shall be free from any imperfections in the steel.
### General Notes

1. Concrete pipe culverts constructed shall conform to Arkansas Department of Transportation Standard Specifications and Plans. The materials used shall conform to the latest issue of the Standard Specifications. CONSTRUCTION SEQUENCE

2. The materials used shall conform to the latest issue of the Standard Specifications.

3. All pipe used in the construction of concrete pipe culverts shall conform to the latest issue of the Standard Specifications.

4. The minimum design shall be the minimum required by the type of material used, the minimum required by the engineer, and the minimum required by the engineer, when the engineer determines that the minimum required by the engineer is insufficient.

5. The minimum design shall be the minimum required by the type of material used, the minimum required by the engineer, and the minimum required by the engineer, when the engineer determines that the minimum required by the engineer is insufficient.

6. The minimum design shall be the minimum required by the type of material used, the minimum required by the engineer, and the minimum required by the engineer, when the engineer determines that the minimum required by the engineer is insufficient.

7. The minimum design shall be the minimum required by the type of material used, the minimum required by the engineer, and the minimum required by the engineer, when the engineer determines that the minimum required by the engineer is insufficient.

8. The minimum design shall be the minimum required by the type of material used, the minimum required by the engineer, and the minimum required by the engineer, when the engineer determines that the minimum required by the engineer is insufficient.

9. The minimum design shall be the minimum required by the type of material used, the minimum required by the engineer, and the minimum required by the engineer, when the engineer determines that the minimum required by the engineer is insufficient.

10. The minimum design shall be the minimum required by the type of material used, the minimum required by the engineer, and the minimum required by the engineer, when the engineer determines that the minimum required by the engineer is insufficient.

### Minimum Height of Fill "H" Over Circular R.C. Pipe Culverts

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<th>Installation Type</th>
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<td>Class II</td>
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<td>Class III</td>
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### Maximum Height of Fill "H" Over Circular R.C. Pipe Culverts

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<th>Class II</th>
<th>Class III</th>
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</thead>
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<td>Type 2</td>
<td>19</td>
<td>22</td>
<td>26</td>
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<tr>
<td>Type 3</td>
<td>15</td>
<td>18</td>
<td>22</td>
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### Minimum Height of Fill "H" Over R.C., Arch & Horizontal Elliptical Pipe Culverts

<table>
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<th>Installation Type</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>14</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Type 2</td>
<td>10</td>
<td>12</td>
<td>16</td>
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<tr>
<td>Type 3</td>
<td>6</td>
<td>8</td>
<td>10</td>
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### Maximum Height of Fill "H" Over R.C., Arch & Horizontal Elliptical Pipe Culverts

<table>
<thead>
<tr>
<th>Installation Type</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
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<tbody>
<tr>
<td>Type 1</td>
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<td>23</td>
<td>27</td>
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<tr>
<td>Type 2</td>
<td>17</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>Type 3</td>
<td>13</td>
<td>15</td>
<td>19</td>
</tr>
</tbody>
</table>

### Construction Sequence

1. If the measured span and rise shall not vary over R.C. arch & horizontal elliptical pipe culverts, the measured span and rise shall be included in the price per linear foot of concrete pipe.

2. The measured span and rise shall not vary over R.C. arch & horizontal elliptical pipe culverts.

3. The measured span and rise shall not vary over R.C. arch & horizontal elliptical pipe culverts.

### Notes

- Material requirements for backfilling and structural bedding shall be included in the price bid per linear foot of concrete pipe.

- Material requirements for backfilling and structural bedding shall be included in the price bid per linear foot of concrete pipe.

- Material requirements for backfilling and structural bedding shall be included in the price bid per linear foot of concrete pipe.
### Construction Sequence

1. Place structural bedding material to grade, do not compact.
2. Install pipe, structural bedding inside the mobile EPA of the pipe.
3. Complete pipe installation.

**Notes:**
- Structural backfill and structural bedding material will not be allowed to be included in the price bid.
- Compensation will not be paid for separately, but compensation will be considered to be included in the price bid per linear foot of metal pipe.

### Equivalent Metal Thicknesses and Gauges

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<th>Type 1</th>
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</table>

### General Notes

1. Metal pipe culvert installations shall conform to the Arkansas Department of Transportation guidelines for metal pipe culvert design and installation, including specifications for structural backfill and bedding material requirements.
2. Structural bedding material shall be in the plant section and situational accordance with the standard construction specifications.
3. Metal pipe culverts shall conform to the Arkansas Department of Transportation specifications, as indicated.

### Installation Type Requirements for Structural Backfill and Structural Bedding

**Legend:**
- STRUCTURAL BACKFILL
- STRUCTURAL BEDDING
- UNSTABLE SOIL
- UNSTABLE EQUIPMENT
- 2" FILL COVER HEIGHT OVER PIPE

### Embankment and Trench Installations

- Structural backfill, embankment, and other structural bedding materials shall be compacted to 90% of the maximum density according to the type of class of material used.

### Metal Pipe Culvert Fill Heights and Bedding

<table>
<thead>
<tr>
<th>Structure Height (in)</th>
<th>D (min)</th>
<th>Total Height (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Metal Pipe Culvert Fill Heights and Bedding Requirements

- For minimum cover values, will not include a minimum of pavement placed over.
- Where the minimum cover is specified, metal pipe culverts may be substituted providing it is equal to the minimum fill height for the specified size and corrugation.

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**Date:** 11-06-97

**Arkansas State Highway Commission**

**Metal Pipe Culvert Fill Heights & Bedding**

**Standard Drawing:** PCM-1
**GENERAL NOTES**

1. **PIPE** SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

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 Materials, etc. to help prevent loss of structural bedding when pervious material is used for structural bedding and/or backfill.

6. WHEN DIRECTED BY THE ENGINEER, UNAFFECTED MATERIAL THAT IS DISCARDED AT THE BOTTOM OF THE EXCAVATION DUE TO STRUCTURAL BEDDING REQUIREMENTS OF THE EXCAVATION DESIGN ABOVE MAY BE UTILIZED AND REPLACED WITH STRUCTURAL BEDDING MATERIAL.

7. PIPE TYPES THAT ARE NOT SHOWN ON THE SHEET ARE NOT PERMITTED, AND ALTERNATE PIPE MATERIALS SHOULD BE SELECTED THAT WILL AVOID THE NEEDS OF THE CONSTRUCTION OF PRINTED VALLEYS.

8. NO COMPACTION OF HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL BE ALLOWED.


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**MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT “H”**

<table>
<thead>
<tr>
<th>FILL HEIGHT “H”</th>
<th>TRENCH WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>2'-6&quot;</td>
<td>2'-6&quot;</td>
</tr>
<tr>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>3'-6&quot;</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>

**MINIMUM COVER FOR CONSTRUCTION LOADS**

<table>
<thead>
<tr>
<th>COVER (FEET)</th>
<th>LOADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>25%</td>
</tr>
<tr>
<td>8&quot;</td>
<td>50%</td>
</tr>
<tr>
<td>10&quot;</td>
<td>75%</td>
</tr>
<tr>
<td>12&quot;</td>
<td>100%</td>
</tr>
</tbody>
</table>

**LEGEND**

- **UNCOMPACTED MATERIAL**
- **STRUCTURAL BACKFILL MATERIAL**
- **HAUNCH AREA**
- **STRUCTURAL BEDDING**
- **SELECTED PIPE BEDDING**
- **SELECTED PIPE BACKFILL**
- **LEVEL OF EXCAVATION & SELECTED PIPE REAR EDGE**
**GENERAL NOTES**

1. **PIPE** shall conform to AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS and AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION.

2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION. "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

3. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454.

4. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISIONS.

5. **CONSTRUCTION LOADS** shall be determined according to the applicable construction loads table.

6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR USE AS STRUCTURAL BACKFILL, EMBANKMENT, OR OUTER STRUCTURAL BEDDING MATERIAL, THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE SUBSTITUTE MATERIAL.

7. **FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHALL INCLUDE A MINIMUM 12'' OF UNDISTURBED SOIL (PÔLE MORTAR OR OTHER APPROVED METHODS).**

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

9. **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.**

10. **NOTE:** MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 6'' OF UNDISTURBED SOIL.

11. PVC PIPING SYSTEMS SHALL BE INSTALLED TO THE MANUFACTURER'S RECOMMENDATIONS.

12. **MINIMUM COVER FOR CONSTRUCTION LOADS** MUST BE MEASURED TO TOP OF PIPE TO TOP OF THE UNDISTURBED SOIL AT TOP OF SHORT WALL, WITHOUT COMPACTING THE STRUCTURAL BEDDING OR OUTER STRUCTURAL BEDDING.

13. **MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"** shall be determined according to the applicable trench width table.

14. **MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL** shall be determined according to the applicable maximum fill height table.

15. **SUPPORT STRUCTURAL MATERIAL:** 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.

16. **NOTE:** MINIMUM COVER VALUE, "H" shall include a minimum 6'' of un disturbed soil (molar or other approved methods in order to help maintain grade and alignment).
**MATERIAL REQUIREMENTS: FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING**

**TYPE 1**
- Aggregate base course class A-6-0-0-0-11

**TYPE 2**
- Concrete type A-200

*NOTE:
- Crushed stone or gravel from basaltic, dolomitic, or limestone origin.
- Uncompacted fill shall not exceed 8% water by volume.
- Uncompacted fill shall be 95% of the maximum density according to the type or class of material used.

**MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT “H”**

<table>
<thead>
<tr>
<th>TRENCH WIDTH</th>
<th>TYPE 1</th>
<th>TYPE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3'-0&quot;</td>
<td>4'-6&quot;</td>
<td>5'-0&quot;</td>
</tr>
<tr>
<td>4'-0&quot;</td>
<td>6'-0&quot;</td>
<td>7'-0&quot;</td>
</tr>
<tr>
<td>4'-6&quot;</td>
<td>6'-0&quot;</td>
<td>7'-0&quot;</td>
</tr>
<tr>
<td>5'-0&quot;</td>
<td>7'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>5'-6&quot;</td>
<td>7'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>6'-0&quot;</td>
<td>8'-0&quot;</td>
<td>9'-0&quot;</td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

1. Pipe shall conform to American Standard 2630 and shall be furnished in accordance with manufacturer's recommendations.

2. Compacted structural fill shall be in accordance with the requirements for minimum cover as specified in Table 5.3.1 (2010) with 2012 Interims.

3. Minimum cover shall be measured from the top of the pipe to the top of the finished construction alignment surface. The surface shall be maintained.

4. The minimum cover shall be increased from 2' to 12' to the top of the finished construction alignment surface. The surface shall be maintained.

5. Pipe installation may require the use of restraints, weight, and/or probing in order to maintain space and alignment.

6. Structural fill material shall be compacted to 95% of the maximum density according to the type or class of material used.

7. For pipe types that are not smooth on the outside (corrugated or profile walls), backfill gradations shall be in accordance with the structural fill material used.

8. Plastic pipes of diameters other than shown shall not be allowed.

9. Parts for polyethylene pipe shall meet the requirements for pipe supplied as specified in Section 5.3.1 (2010) with 2012 Interims and shall be installed per manufacturer's recommendations.

**EMBANKMENT AND TRENCH INSTALLATIONS**

1. Compacted structural fill material shall be placed and compacted in accordance with the requirements for minimum cover as specified in Table 5.3.1 (2010) with 2012 Interims.

2. The structural fill material shall be placed and compacted in accordance with the requirements for minimum cover as specified in Table 5.3.1 (2010) with 2012 Interims.

3. The structural fill material shall be placed and compacted in accordance with the requirements for minimum cover as specified in Table 5.3.1 (2010) with 2012 Interims.

4. Pipe installation may require the use of restraints, weight, and/or probing in order to maintain space and alignment.
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 edition 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

Detail of Standard Raised Pavement Markers

Arkansas State Highway Commission

Pavement Marking Details

Standard Drawing PM-1
NOTE: NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE 1. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR AT THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

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

3. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO EXISTING 4" PIPE UNDERDRAINS WILL BE INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR AT THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE TRENCH AT THE TOP.

5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS." THE 250' DISTANCE MAY BE EXCEEDED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

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

7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON PLANS, 2. INSTALL A 4" SNAP ADAPTER, 3. INSTALL A 4" SNAP HATCHER, 4. INSTALL A RODENT SCREEN AS SHOWN ON PLANS, OR 5. INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE.

8. UNDERDRAIN OUTLET PROTECTORS WILL BE INSTALLED AT ALL SAGS AND AT 250' INTERVALS ON GRADES. THE 250' DISTANCE MAY BE EXCEEDED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

9. TEE VALVES OR A TEE VALVE WITH A PIPE BOLT AND WASHER IN APPROXIMATE CENTER OF SCREEN MAY BE INCORPORATED INTO THE OUTLET.

10. EXISTING UNDERDRAIN OUTLET PROTECTORS MAY BE USED IN THE NEW UNDERDRAIN SYSTEM PROVIDED THEY MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE 1. PAYMENT FOR RE-USE OF EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE INCLUDED IN THE PRICE BID FOR "UNDERDRAIN OUTLET PROTECTORS."
### General Notes

1. On pavement with two-way traffic, the super-elevation shall be resolved on the inside pavement edge unless otherwise noted on the plans.

2. Super-elevation tables shown on the cross sections are values to permit simpler calculations.

3. Lengths for L may be rounded in multiples of 25 ft. or 50 ft.

4. Pavements wider than 2 lanes shall have additional transition lengths as follows:

   - **3 Lane Undivided**: +20%
   - **4 Lane Undivided**: +50%
   - **5 Lane Undivided**: +80%
   - **6 Lane Undivided**: +100%

### Super-elevation Table for Two-Way Traffic

<table>
<thead>
<tr>
<th>Degree</th>
<th>22 MPH</th>
<th>33 MPH</th>
<th>43 MPH</th>
<th>53 MPH</th>
<th>63 MPH</th>
<th>73 MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MINIMUM</td>
<td>CURVABLE</td>
<td>MINIMUM</td>
<td>CURVABLE</td>
<td>MINIMUM</td>
<td>CURVABLE</td>
</tr>
<tr>
<td>6° 30’</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
</tr>
<tr>
<td>7° 30’</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
</tr>
<tr>
<td>8° 30’</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
</tr>
<tr>
<td>9° 30’</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
<td>96</td>
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<tr>
<td>10° 30’</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
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<td>105</td>
</tr>
<tr>
<td>11° 30’</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
</tr>
<tr>
<td>12° 30’</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
</tr>
<tr>
<td>13° 30’</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
<td>96</td>
<td>105</td>
</tr>
</tbody>
</table>

### Super-elevation Formulas

\[ \text{Super-elevation} = \frac{L_{de}}{L_s} \]

### Abbreviations

- NC - Normal Crown
- RC - Reverse Crown, Super-elevation at normal crown slope
- L - Distance from beginning of super-elevation transition to any point (ft.)
- d - Width of pavement
- Ls - Length of super-elevation transition (ft.)
- C - Normal Crown (ft.)
- e - Rate of super-elevation (ft. per ft.)

### Notes

- Maintain normal crown on inside until super-elevation exceeds 2C.
- Rate of super-elevation shall be computed on straight line method using applicable Ls.
- Control point.

### Method of Superelevation

- Standard method when super-elevation revolves around inner subgrade point or inner pavement edge.
- Outside subgrade edge.
- Maximum.

### Arkansas State Highway Commission

Tables and Method of Superelevation for Two-Way Traffic

Standard Drawing SE-2

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ARKANSAS STATE HIGHWAY COMMISSION

SUPER-ELEVATION FORMULAS

Lde

SUPER-ELEVATION CURVES

A   B   C   D   E

STANDARD METHOD WHEN SUPER-ELEVATION REVOLVES AROUND CENTER LINE

CONTROL POINT

STRAIGHT LINE METHOD

UNIFORM INCREASING SUPER-ELEVATION

UNIFORM DECREASING SUPER-ELEVATION

THEORETICAL PROFILE

ACTUAL PROFILE

SUPER-ELEVATION OUTSIDE PAVEMENT OR SUBGRADE EDGE

SUPER-ELEVATION INSIDE PAVEMENT OR SUBGRADE EDGE

CONTROL POINT

SUPER-ELEVATION REVOLVES AROUND CENTER LINE

OUTSIDE SUBGRADE EDGE

INSIDE SUBGRADE EDGE

UNIFORM INCREASING SUPER-ELEVATION

UNIFORM DECREASING SUPER-ELEVATION

Notes maintain normal crown on inside until super-elevation exceeds 2C.

State of super-elevation shall be computed using applicable Ls.
GENERAL NOTES:

1. FILTER SOCKS SHALL BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES OR OTHER SLOPES AS NEEDED TO TRAP SEDIMENT. FILTER SOCKS SHALL BE A MINIMUM OF 18 INCHES IN DIAMETER. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED. FILTER SOCKS SHOULDN'T BE USED IN AREAS WHERE SAFETY IS NOT A CONCERN.

2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. FILTER SOCKS SHOULDN'T BE USED IN AREAS WHERE SAFETY IS NOT A CONCERN.

3. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES OR OTHER SLOPES AS NEEDED TO TRAP SEDIMENT. FILTER SOCKS SHALL BE A MINIMUM OF 18 INCHES IN DIAMETER. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED. FILTER SOCKS SHOULDN'T BE USED IN AREAS WHERE SAFETY IS NOT A CONCERN.

4. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. FILTER SOCKS SHOULDN'T BE USED IN AREAS WHERE SAFETY IS NOT A CONCERN.

5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF DAILY TRAPPING DEVICES FOR SHEET FLOW RUNOFF.

NOTES:

1. FILTER SOCKS SHALL BE STAKED TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL FILTERS. FILTER SOCKS SHOULDN'T BE USED IN AREAS WHERE SAFETY IS NOT A CONCERN.

2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. FILTER SOCKS SHOULDN'T BE USED IN AREAS WHERE SAFETY IS NOT A CONCERN.

3. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES OR OTHER SLOPES AS NEEDED TO TRAP SEDIMENT. FILTER SOCKS SHALL BE A MINIMUM OF 18 INCHES IN DIAMETER. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED. FILTER SOCKS SHOULDN'T BE USED IN AREAS WHERE SAFETY IS NOT A CONCERN.

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5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF DAILY TRAPPING DEVICES FOR SHEET FLOW RUNOFF.
**CLEARING AND GRUBBING**

**CONSTRUCTION SEQUENCE**

1. Place perimeter controls (i.e., silt fences, diversion ditches, sediment basins).
2. Perform clearing and grubbing operation.

**GENERAL NOTE**

- Construction sequence.
- Excavation sequence.
- Erosion control devices.
- Sediment basins, etc.
- General note.

**EMBANKMENT**

**CONSTRUCTION SEQUENCE**

1. Construct diversion ditches, check boxes, sediment basins, silt fences, silting fences as specified.
2. Place Phase 1 embankment with permanent or temporary seeding.
3. Place Phase 2 embankment with permanent or temporary seeding.
4. Place final phase of embankment with permanent or temporary seeding.

**GENERAL NOTE**

- Construction sequence for embankment.
- Embankment sequence.
- General note.

**NOTES:**
- Number of phases will vary.
- Three phases shown for illustration.
- Note:
- Entire embankment slopes shall be dressed, prepared, seeded and mulched as the work progresses. Sides shall be constructed and stabilized in equal increments not to exceed 25 feet measured vertically.
- IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
- Provide diversion ditches and slope drains if embankment construction is to be temporarily abandoned for a period of greater than 21 days.
- Side ditch to be stabilised as required.