**INDEX OF SHEETS & STANDARD DRAWINGS**

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**ROADWAY STANDARD DRAWINGS**

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<td>DETAIL OF GUIDE SIGN PANELS</td>
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<td>STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION</td>
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<td>TEMPORARY EROSION CONTROL DEVICES</td>
</tr>
<tr>
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<td>TM-4</td>
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<td>DETAILS OF STANDARD RAMPS FOR REINFORCED CONCRETE BOX CULVERTS</td>
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</tbody>
</table>
TYPICAL SECTIONS OF IMPROVEMENT
Ramps 16 & 38 with Concrete Barrier Wall

(Shown in the direction of traffic)
GENERAL NOTES FOR CONCRETE BARRIER WALLS

1. All barrier walls shall be constructed in accordance with Section 9.8.2 of the Standard Specifications for Roads.

2. Construction joints required in 20'-0" minimum spacing for barrier types Median A, B, D, E, F, and G. All expansion joints shall be formed in fresh concrete on top and in sides of barrier walls.

3. Cones for barrier types Median A, B, D, E, F, and G shall not be required if barrier and concrete are cast as a complete unit.

4. Construction joints are not permitted at the panel bar locations.

5. All expansion joints of concrete barrier wall shall have a 5" overlap.

6. The design of barrier wall types D, E, F, and G is based on a 30" thick concrete wall, reinforced with a minimum of one 5/8" reinforcing bar per square foot. Unreinforced foundation material shall be removed and replaced with a 5" foundation as directed by the engineer.

7. Spacing between expansion joints shall not exceed 50' for barrier types Median A and G, and 100' for barrier types Median B, D, E, F, and G. Expansion joints shall be formed using 5" punched joints, continuous reinforcement shall be placed 2" clear of expansion joints.

8. Construction joints. Arranged as every 50'-0" and 100'-0" span on the plans.

9. Minimum 2'-0" clearance on all passing/reversing and 3'-0" clearance on all other approaches.

10. Refer to barrier mounted luminator special details for information regarding illumination of concrete barrier wall(s), notice to individuals for locations of concrete work.

11. Barrier reinforcing bars inserted into existing concrete pavement shall be installed and secured according to plans using an approved anchoring system from CIP.

Notes:

- The cost for the placement of the barriers and shop drawings are to be submitted to the Engineer for review.
- The cost for the placement of the barriers and shop drawings are to be submitted to the Engineer for review.

SPECIAL DETAILS
SPECIAL DETAILS

NOTE:
1. The soft organic material in the cutters should be undercut prior to permanent construction. Anticipated to be no work within 100 feet.

WORK WITH US SIGN

UNDERCUT

STA. 164+53 R.C. BOX CULVERT EXTENSION
ALONG ALIGNMENT

ALL TURNS ARE 15°
WIDTHENING FOR GUARDRAIL

NOTE: REFER TO SID. ENG. OR-S AND CROSS SECTIONS FOR SLIDE REQUIREMENTS BEFORE GUARDRAIL.

No. 4 Bars @ 12" Horizontal Spacing

Top View

Min. 3" Cover

No. 4 Bars @ 12" Horizontal Spacing

Variable Height

Front View

Pipe Extension
Reinforced Concrete Collar Detail

SIDE VIEW

No. 4 Bars @ 12" Vertical Spacing

Variable Height

No. 6 Bars @ 12" Vertical Spacing

Variable Height

Note: Pipe collar to be utilized as approved by the engineer.

Front View

Side View

Pipe Extension
Reinforced Concrete Collar Detail

Special Details
## MID-SECTION

### BAR LAP TABLE

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<th>Section Length</th>
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<tr>
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</table>

### SHEET 1 OF 2

**DETAILS OF R.C. BOX CULVERT**

**Double Barrel Box Culvert**

Sta. 169+16

**SPECIAL DETAILS**
TYPICAL SECTION M-M

PART LONGITUDINAL SECTION

PART LONGITUDINAL SECTION N-N

LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS
POP SLAB THERMAL KEYWAY SLAB SIMILAR

WINDWALL ATTACHMENT
See "Details of Windwall" for additional information and windwall details.

TYPICAL KEYWAY DETAIL
(Not Construction Details)

SKewed END SECTION DETAILS

GENERAL DETAILS OF R.C. BOX CULVERT
DETAILS OF SINGLE BARREL
R.C. BOX CULVERT

SPECIAL DETAILS
SEQUENCE OF CONSTRUCTION

NOTE:
NEW CONSTRUCTION OF RAMPS CAN BE BUILT AT ANY TIME.

INSTALL ADVANCE WARNING SIGNS AND DEVICES AS SHOWN IN MAINTENANCE OF TRAFFIC DETAILS IN ALL LOCATIONS THROUGHOUT THE PROJECT AREA.

COMPLETE RAMPS.

PLACE FINAL LIFT OF ACMI SURFACE COURSE.

INSTALL FINAL STRIPING PER PERMANENT PAVEMENT MARKING DETAILS.
SEQUENCE OF CONSTRUCTION

NOTE:
NEW CONSTRUCTION OF RAMPS CAN BE BUILT AT ANY TIME.
INSTALL ADVANCE WARNING SIGNS AND DEVICES AS SHOWN IN MAINTENANCE OF TRAFFIC DETAILS IN ALL LOCATIONS THROUGHOUT THE PROJECT AREA.
CONSTRUCT RAMPS. PLACE finally, PAINT A {{ surfaces course. INSTALL final, STRIPING FOR PERMANENT PAYMENT WARNING DETAILS.

RIGHT SHOULDER CLOSED

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

DO NOT PASS

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

BUMP

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

HWY, 49 WORK AREA
## ADVANCE WARNING SIGNS AND DEVICES

<table>
<thead>
<tr>
<th>SIGN NUMBER</th>
<th>DESCRIPTION</th>
<th>SIGN SIZE</th>
<th>ALL STAGES</th>
<th>MAXIMUM NUMBER REQUIRED</th>
<th>TOTAL SIGNS REQUIRED</th>
<th>TRAFFIC DRUMS</th>
<th>INSTALLING PRECAST CONCRETE BARRIER</th>
<th>TEMPORARY IMPACT ATTENUATION BARRIER</th>
<th>TEMP IMPACT ATTEN.BARR. (REPAIR)</th>
<th>TEMPORARY MESSAGE CHANGABLE SIGN</th>
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**TRAFFIC DRUMS**

| TRAFFIC DRUMS | 60 | 60 | 60 |

**FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER**

| TEMPORARY IMPACT ATTENUATION BARRIER | 5 | 5 |
| PORTABLE CHANGABLE MESSAGE SIGN | 5 | 5 | 4 |

**TOTALS**

| 610 | 60 | 324 | 5 | 5 | 4 |

---

**CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS**

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<tr>
<th>DESCRIPTION</th>
<th>END OF JOB</th>
<th>REMOVAL OF PERMANENT PAVEMENT MARKINGS</th>
<th>RAISED PAVEMENT MARKERS</th>
<th>ENHANCED THERMOPLASTIC PAVEMENT MARKING</th>
<th>THERMOPLASTIC PAVEMENT MARKING</th>
<th>REFLECTORIZED PAVA PAVEMENT MARKING</th>
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<tr>
<td></td>
<td></td>
<td>LIN FT. - EACH</td>
<td>LIN FT.</td>
<td>LIN FT.</td>
<td>(WHITE/RED)</td>
<td>(YELLOW/RED)</td>
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**TOTALS**

| 3616 | 75 | 1020 | 2400 | 1842 | 1710 | 84 | 84 | 0 | 84 | 914 | 914 | |

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**NOTE:** THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 904.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
### CLEARING AND GRUBBING

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<th>GRUBBING</th>
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<td>RAMP 1A RT.</td>
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<tr>
<td>161+00</td>
<td>RAMP 1B RT.</td>
<td>8</td>
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<tr>
<td>168-27</td>
<td>RAMP 1B LT. &amp; RT.</td>
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<td>157-15</td>
<td>RAMP 3B LT. &amp; RT.</td>
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<td>164-20</td>
<td>RAMP 3B LT.</td>
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**REMOVAL AND DISPOSAL OF ITEMS**

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>BILLBOARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>159+50</td>
<td>RAMP 1A RT.</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>

### REMOVAL AND DISPOSAL OF CULVERTS

<table>
<thead>
<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>PIE CULVERTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>152-15</td>
<td>RAMP 1A</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>

**EROSION CONTROL MATTING**

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH</th>
<th>CLASS 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>158-50</td>
<td>RAMP 1B LT.</td>
<td>77.00</td>
<td>68.44</td>
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<tr>
<td>171+15</td>
<td>RAMP 1B LT.</td>
<td>50.00</td>
<td>49.78</td>
</tr>
<tr>
<td>159-73</td>
<td>RAMP 3B RT.</td>
<td>127.00</td>
<td>112.89</td>
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<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td><strong>231.11</strong></td>
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*Note: Average width = 8"*

### SOIL LOG

<table>
<thead>
<tr>
<th>STATION</th>
<th>DEG MN SEC</th>
<th>DEG MN SEC</th>
<th>LOCATION</th>
<th>DEPTH FEET</th>
<th>LIQUID LIMIT</th>
<th>PLASTICITY INDEX</th>
<th>AASHTO CLASSIFICATION</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>154+00</td>
<td>35 49 26.00</td>
<td>30 40 5.00</td>
<td>1ST RT.</td>
<td>0.5</td>
<td>33</td>
<td>18</td>
<td>A-2-811</td>
<td>BROWN</td>
</tr>
<tr>
<td>161+00</td>
<td>35 49 26.00</td>
<td>30 40 5.00</td>
<td>1ST RT.</td>
<td>0.6</td>
<td>39</td>
<td>23</td>
<td>A-6-14</td>
<td>BROWN</td>
</tr>
<tr>
<td>168-20</td>
<td>35 49 26.00</td>
<td>30 40 5.00</td>
<td>1ST RT.</td>
<td>0.5</td>
<td>40</td>
<td>23</td>
<td>A-6-24</td>
<td>BROWN</td>
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<tr>
<td>164-20</td>
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<td>30 40 5.00</td>
<td>1ST RT.</td>
<td>0.5</td>
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<td>12</td>
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<td>BROWN</td>
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<tr>
<td>157-15</td>
<td>35 49 26.00</td>
<td>30 40 5.00</td>
<td>1ST RT.</td>
<td>0.5</td>
<td>32</td>
<td>18</td>
<td>A-6-84</td>
<td>BROWN</td>
</tr>
<tr>
<td>157-15</td>
<td>35 49 26.00</td>
<td>30 40 5.00</td>
<td>1ST RT.</td>
<td>0.5</td>
<td>44</td>
<td>20</td>
<td>A-7-8026</td>
<td>BROWN</td>
</tr>
</tbody>
</table>

**SOIL CHARACTERISTICS**

- The soil characteristics tabulated above are representative of the location of the sample, and from surface indications are typical for the limits shown.
- These data are shown for information only. The state will not be responsible for variations in the soil characteristics and extent of same differing from the above tabulations.

### EARTHWORK

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION / DESCRIPTION</th>
<th>UNCATEGORIZED EROSION</th>
<th>COMPACTED EMBANKMENT</th>
<th>SOL STABILIZATION</th>
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<tr>
<td></td>
<td></td>
<td>NORMAL</td>
<td>UNDERCUT</td>
<td>TOTAL</td>
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<tr>
<td>154+00</td>
<td>RAMP 1A</td>
<td>1468</td>
<td>800</td>
<td>2268</td>
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<tr>
<td>160+23.20</td>
<td>RAMP 1B</td>
<td>1591</td>
<td>1200</td>
<td>2791</td>
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<tr>
<td>157+23.28</td>
<td>RAMP 3B</td>
<td>797</td>
<td>1288</td>
<td>2085</td>
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<tr>
<td>154+12.00</td>
<td>CHANNEL CHANGE - RAMP 1B</td>
<td>328</td>
<td>328</td>
<td>656</td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td>TO BE USED IF AND WHERE</td>
<td>167</td>
<td>167</td>
<td>334</td>
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<tr>
<td><strong>TOTALS:</strong></td>
<td></td>
<td>4448</td>
<td>3308</td>
<td>7756</td>
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*Quantity Estimated. See Section 104.03 of the Standard Specifications.*

### BENCH MARKS

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<tbody>
<tr>
<td>154+63</td>
<td>HEADWALL OR RT. - SOX CULVERT, LENDER 155</td>
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</tr>
<tr>
<td>160+18</td>
<td>HEADWALL OR RT. - RAMP 1B</td>
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</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td><strong>2</strong></td>
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**Note:** Shown for information only. Bench marks shall be furnished and placed by State Forces.
**CULVERT CLEAN CUT**

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>EACH</th>
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</thead>
<tbody>
<tr>
<td>154+53</td>
<td>RAMP 1B</td>
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</tr>
<tr>
<td>168+01</td>
<td>RAMP 3B</td>
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**TOTAL:** 2

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**CONCRETE ISLAND**

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<th>LOCATION</th>
<th>CURR. FACES</th>
<th>CONCRETE ISLAND</th>
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</thead>
<tbody>
<tr>
<td>175+00</td>
<td>RAMP 1B</td>
<td>8</td>
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<tr>
<td>157+60</td>
<td>RAMP 2B</td>
<td>8</td>
<td>90</td>
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<tr>
<td>1007+92</td>
<td>MOVE 49 LT</td>
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**TOTAL:** 153

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**GUARDRAIL**

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>GUARDRAIL (TYPE A)</th>
<th>GUARDRAIL (TYPE B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>153+81</td>
<td>RAMP 1B</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>158+17</td>
<td>RAMP 2B</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>167+26</td>
<td>RAMP 3B</td>
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</table>

**TOTAL:** 319

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**PAVEMENT RE-AIR OVER CULVERTS (ASPHALT)**

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>TON</th>
</tr>
</thead>
<tbody>
<tr>
<td>156+80</td>
<td>RAMP 4</td>
<td>10.83</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>156+80</td>
<td>EAST PARKER RD</td>
<td>10.83</td>
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<td>36</td>
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</table>

**TOTAL:** 65

**AVG DEPTH = 18.5'**

---

**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></td>
<td>20</td>
<td>40</td>
</tr>
</tbody>
</table>

**BASE OF ESTIMATE: ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC, 20 TON/ILE, TACK COAT FOR MAINTENANCE OF TRAFFIC**

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

---

**4" PIPING UNDERDRAIN**

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4&quot; PIPE UNDERDRAINS</td>
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<tr>
<td></td>
<td></td>
<td>UNDERDRAIN OUTLET PROTECTORS</td>
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</table>

**TOTAL:** 490

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

---

**EROSION CONTROL**

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTIRE PROJECT TO CLEARING AND GRUBBING</td>
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<td></td>
</tr>
<tr>
<td>ENTIRE PROJECT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATERIALS</td>
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</tbody>
</table>

**TOTAL:** 5.81

**BASES OF ESTIMATE:**

- **LIME:** 2 TONS / ACRE OF SEEDING
- **WATER:** 102.3 GAL / ACRE OF SEEDING
- **TEMPORARY SEEDING:** 20 GAL / ACRE OF SEEDING
- **SAND DITCH CHECKS:** 22 BAG / LOCATION
- **ROCK DITCH CHECKS:** 3 CU.YD / LOCATION

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

**QUANTITIES ESTIMATED.**

SEE SECTION 104.03 OF THE STD. SPEC.
### CONCRETE BARRIER WALL

<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>MEDIAN TYPE A</th>
<th>SIDE TYPE A (PIER PROTECTION)</th>
<th>LIN FT.</th>
<th>LIN FT.</th>
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</thead>
<tbody>
<tr>
<td>185+17.58</td>
<td>185+20.38</td>
<td>LEFT OF RAMP IB</td>
<td>120.00</td>
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<td></td>
</tr>
<tr>
<td>171+70.48</td>
<td>175+00.00</td>
<td>LEFT OF RAMP IB</td>
<td>320.00</td>
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<td></td>
</tr>
<tr>
<td>157+74.74</td>
<td>159+23.58</td>
<td>LEFT OF RAMP IB</td>
<td>300.00</td>
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<td></td>
</tr>
<tr>
<td>165+17.62</td>
<td>167+03.62</td>
<td>LEFT OF RAMP IB</td>
<td>130.00</td>
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</table>

**TOTALS:**

530.00 260.00

### SELECTED PIPE BEDDING

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SELECTED PIPE BEDDING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CU YD.</td>
</tr>
<tr>
<td>EN. ENT.</td>
<td>100</td>
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**TOTAL:** 100

**NOTE:** QUANTITY ESTIMATED

SEE SECTION 104.03 OF THE STD. SPECS.

### COAL MILLING ASPHALT PAVEMENT

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>AVG. WIDTH</th>
<th>COLD MILLING ASPHALT PAVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>165+11.93</td>
<td>165+11.93</td>
<td>20.00</td>
<td>277.78</td>
</tr>
</tbody>
</table>

**TOTAL:** 277.78

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

### ACHM PATCHING OF EXISTING ROADWAY

<table>
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<th>DESCRIPTION</th>
<th>TON</th>
</tr>
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<tbody>
<tr>
<td>ENT. ATizio</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL:</td>
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</tr>
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</table>

**NOTE:** QUANTITY ESTIMATED

SEE SECTION 104.03 OF THE STD. SPECS.

### STRUCTURES

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<tr>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>FLARED END SECTIONS (CLASS III)</th>
<th>REINF. STEEL/ROADWAY (CLASS III)</th>
<th>UNCL. EXC.</th>
<th>SOLID SODDING</th>
<th>WATER</th>
<th>STD. DWG. NO.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RAMP 1A</td>
<td>RAMP 1B</td>
<td>RAMP 3B</td>
<td>RAMP 4</td>
<td>RAMP 1A</td>
<td>RAMP 1B</td>
</tr>
<tr>
<td>159+46</td>
<td>CONSTRUCT PIPE CULVERT UNDER RAMP 4</td>
<td>116</td>
<td>2</td>
<td>116</td>
<td>2</td>
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<td></td>
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<tr>
<td>159+78</td>
<td>CONSTRUCT PIPE CULVERT UNDER RAMP 4</td>
<td>116</td>
<td>2</td>
<td>116</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>166+63</td>
<td>CONSTRUCT PIPE CULVERT</td>
<td>60</td>
<td>2</td>
<td>60</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>168+01</td>
<td>EXTEND 7'-4&quot; x 22&quot; R.C. BOX CULVERT, EXTEND 8'</td>
<td>7</td>
<td>4</td>
<td>11</td>
<td>3.98</td>
<td>349</td>
<td>12</td>
</tr>
<tr>
<td>169+18</td>
<td>CONSTRUCT DBL. 6'-3&quot; x 9'-6&quot; R.C. BOX CULVERT</td>
<td>12</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>92</td>
<td>92.74</td>
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<tr>
<td>164+53</td>
<td>EXTEND 7'-4&quot; x 22&quot; R.C. BOX CULVERT, EXTEND 8'</td>
<td>7</td>
<td>4</td>
<td>11</td>
<td>3.98</td>
<td>349</td>
<td>12</td>
</tr>
<tr>
<td>166+53</td>
<td>EXTEND 7'-4&quot; x 22&quot; R.C. BOX CULVERT, EXTEND 8'</td>
<td>7</td>
<td>4</td>
<td>11</td>
<td>3.98</td>
<td>349</td>
<td>12</td>
</tr>
<tr>
<td>165+08</td>
<td>EXTEND 7'-4&quot; x 22&quot; R.C. BOX CULVERT</td>
<td>7</td>
<td>4</td>
<td>68</td>
<td>48.85</td>
<td>71.67</td>
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</tr>
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</table>

**BASIS OF ESTIMATE:**

WATER: 12.6 GAL / SQ YD. OF SOLID SODDING

**NOTE:** FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.
### Base and Surfacing

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH (FT)</th>
<th>ASPHALT CONTENT (13% AIR)</th>
<th>TACK COURSE</th>
<th>ACHIEVED COURSE 1 (1/2&quot;)</th>
<th>ACHIEVED COURSE 2 (1&quot;)</th>
<th>ACHIEVED SURFACE (2&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-0001</td>
<td>101-0001</td>
<td>ROJO ROAD W/RAST/CITLOK</td>
<td>205.96</td>
<td>VAM</td>
<td>954.85</td>
<td>45.31</td>
<td>214.76</td>
<td>65.66</td>
</tr>
<tr>
<td>101-0501</td>
<td>101-0501</td>
<td>ROJO ROAD W/RAST/CITLOK</td>
<td>143.42</td>
<td>VAM</td>
<td>1238.43</td>
<td>48.59</td>
<td>311.75</td>
<td>66.81</td>
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<tr>
<td>101-1001</td>
<td>101-1001</td>
<td>ROJO ROAD W/RAST/CITLOK</td>
<td>184.30</td>
<td>VAM</td>
<td>1587.12</td>
<td>48.49</td>
<td>225.37</td>
<td>79.15</td>
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<td>101-1002</td>
<td>101-1002</td>
<td>ROJO ROAD W/RAST/CITLOK</td>
<td>178.95</td>
<td>VAM</td>
<td>1508.97</td>
<td>48.48</td>
<td>220.54</td>
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<td>101-1003</td>
<td>ROJO ROAD W/RAST/CITLOK</td>
<td>156.05</td>
<td>VAM</td>
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<td>48.48</td>
<td>185.98</td>
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<td>101-1004</td>
<td>ROJO ROAD W/RAST/CITLOK</td>
<td>131.50</td>
<td>VAM</td>
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<td>48.48</td>
<td>151.41</td>
<td>79.13</td>
</tr>
<tr>
<td>101-1051</td>
<td>101-1051</td>
<td>ROJO ROAD W/RAST/CITLOK</td>
<td>115.01</td>
<td>VAM</td>
<td>878.53</td>
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<td>116.84</td>
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<td>101-1052</td>
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<td>96.79</td>
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<tr>
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<td>101-1053</td>
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<td>437.58</td>
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### Additional For Embankment

<table>
<thead>
<tr>
<th>STATION</th>
<th>STATION</th>
<th>LOCATION</th>
<th>LENGTH (FT)</th>
<th>ASPHALT CONTENT (13% AIR)</th>
<th>TACK COURSE</th>
<th>ACHIEVED COURSE 1 (1/2&quot;)</th>
<th>ACHIEVED COURSE 2 (1&quot;)</th>
<th>ACHIEVED SURFACE (2&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-0001</td>
<td>100-0001</td>
<td>MAST 12 MIGGING RAMP</td>
<td>20.00</td>
<td>VAM</td>
<td>20.00</td>
<td>5.00</td>
<td>20.00</td>
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</tr>
<tr>
<td>100-0002</td>
<td>100-0002</td>
<td>MAST 12 MIGGING RAMP</td>
<td>14.00</td>
<td>VAM</td>
<td>14.00</td>
<td>5.00</td>
<td>14.00</td>
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<tr>
<td>100-0003</td>
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<td>VAM</td>
<td>12.00</td>
<td>5.00</td>
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### Total

<table>
<thead>
<tr>
<th></th>
<th>BASE</th>
<th>TACK</th>
<th>COURSE 1</th>
<th>COURSE 2</th>
<th>SURFACE</th>
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<tbody>
<tr>
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### Notes

- Base of Estimate:
  - ACHIEVED SURFACE (2") 49.40 MN AGR 0.5% ASPHALT BINDER
  - ACHIEVED COURSE 1 (1") 35.58 MN AGR 0.7% ASPHALT BINDER
  - ACHIEVED COURSE 2 (1") 35.58 MN AGR 0.5% ASPHALT BINDER
  - SHAKE/NUMBER OF CYCLES = 209.00 FOR 1087.00

- Tack Course Quantities were calculated using the Modified Asphalt Sigates. Refer to E0-980-1 for the residual asphalt application rates.
### SUMMARY OF QUANTITIES (BOX 1 OF 2)

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SUMMARY OF QUANTITIES & REVISIONS
### Survey Control Details

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STA. 175+35.39
END RAMP 3B &
END JOB 100837

STA. 176+00.00  1-555 70.00' OFFSET
= STA. 175+99.99 RAMP 3B

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
## SUMMARY OF TRAFFIC SIGNAL QUANTITIES

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<td>SP</td>
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<tr>
<td>*</td>
<td>VIDEO CABLE (EXTERIOR CAT 5E)</td>
<td>415</td>
<td>LIN. FT.</td>
</tr>
<tr>
<td>*</td>
<td>VIDEO MONITOR (CLR)</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>*</td>
<td>VEHICLE DETECTOR RACK (16 CHANNEL)</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>*</td>
<td>CENTRAL CONTROL UNIT (8 CHANNEL)</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>*</td>
<td>VIDEO PROCESSOR, EDGE CARD IP (2 CAMERA)</td>
<td>2</td>
<td>EACH</td>
</tr>
</tbody>
</table>

* ONE SPARE VIDEO DETECTOR (#) AND ONE SPARE VIDEO PROCESSOR, EDGE CARD IP (2 CAMERA) SHALL BE SUPPLIED PERMANENT TRAFFIC SIGNAL.

TRAFFIC SIGNAL OPERATIONS SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION PHASES USING THE EXISTING TRAFFIC SIGNAL. THE EXISTING TRAFFIC SIGNAL SHALL REMAIN IN OPERATION UNTIL THE PERMANENT TRAFFIC SIGNAL IS COMPLETE AND OPERATIONAL. INSTALL THE PERMANENT TRAFFIC SIGNAL PRIOR TO THE OPENING OF THE RAMPS 3B, REMOVE THE ALL EXISTING TRAFFIC SIGNAL COMPONENTS WHEN RAMPS 3B IS OPEN TO TRAFFIC.

(REFER TO PERMANENT TRAFFIC SIGNAL PLANS)
TRAFFIC SIGNAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NFPA 70 (CURRENT EDITION) NATIONAL ELECTRICAL CODE, NFPA 101 (CURRENT EDITION) LIFE SAFETY CODE, STATE ELECTRICAL CODE AND LOCAL ELECTRICAL CODE.

2. EXTEND GREEN GROUNDING CONDUCTOR (E.G.C.) FROM GROUND BAR AT MAIN BREAKER TO CONTROL PANEL AND TO FIRST POLE. SOLELY BOND E.G.C. TO GROUND LUG OF CONTROL CABINET AND TO POLE GROUND. ENSURE THAT ONLY ONE NEUTRAL-TO-GROUND BOND EXIST IN THE SYSTEM AND THAT IT IS AT THE MAIN BREAKER.

3. ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/OUNTY TO A SERVICE POLE WITH EXTERNAL RAINSHIELD BREAKER (MAIN BREAKER), GALVANIZED STEEL SERVICE WIRING, METER LOOP (IF REQUIRED), AND WEATHERHEAD AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. IF THE SERVICE POINT IS OVER 10 FEET FROM THE CENTERLINE, THE CONTRACTOR SHALL PROVIDE AND INSTALL AN ADDITIONAL SECONDARY BREAKER (SECONDARY BREAKER) ON OR NEAR THE TRAFFIC SIGNAL CONTROLLER CABINET AND SHALL INSTALL, CONDUIT, ELECTRICAL SERVICE WIRE (GUARD WIRE), ВІСЕ, RATED, WITHGOUND TYPICAL) AND PERFORM WIRING TO TAP INTO THE CITY/OUNTY SERVICE POLE. THE ADDITIONAL SECONDARY BREAKER SHALL BE AS PART OF THIS CONTRACT. CONDITION IS PAID FOR AS A SEPARATE ITEM OF THE CONTRACT. TWO CIRCUIT BREAKERS, CONSIDERED SUBSIDIARY TO THE CONTROL EQUIPMENT, ARE NEEDED WHERE STREET LIGHTING IS INCLUDED, AS PART OF THE SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (GUARD WIRE, GUARD WIRE, GUARD WIRE, GUARD WIRE, GUARD WIRE, GUARD WIRE) SHALL BE KEPT FROM THE CIRCUIT SERVING THE TRAFFIC SIGNAL CONTROL EQUIPMENT WITH THE OTHER TWO BREAKERS AT THE SECONDARY BREAKER PROVIDING THE PRIMARY CURRENT.

4. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE.

5. TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO THE CONTROLLER.

6. CONTROLLER CABINET SHALL BE WIRED SUCH THAT DURING FLASH OPERATIONS POWER TO THE LOAD SWITCHES IS NOT CANNABANCED TO LOAD SWITCH POWER BUS.

7. ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, STANDARD DRAWINGS AND WITH THE MINIMAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION.

8. CONDUIT INSTALLED UNDER ROADSIDE SURFACES SHALL BE INSTALLED BY PUSHING OR BORING METHODS. IF THE ENGINEER DETERMINES THIS IS NOT FEASIBLE, THEN A TRENCHING METHOD AS SHOWN IN THE STANDARD DRAWINGS MAY BE USED.

9. TRAFFIC SIGNAL POLES SHALL BE GALVANIZED. BACKPLATES SHALL BE SUPPLIED FOR ALL SIGNAL HEADS.

10. PAVEMENT MARKING SHOWN FOR REFERENCE ONLY. SEE PERMANENT PAVEMENT MARKING DETAILS.

11. FOUNDATION FOR ALL POLES SHALL BE EXTENDED IF NECESSARY TO ACCOMMODATE THE REQUIREMENTS FOR SIGNAL HEAD CLEARANCE ABOVE ROADWAY ONLY AT LOCATIONS WHERE THE GROUND ELEVATION AT THE POLE IS BELOW THE ELEVATION OF THE ROADWAY (SEE NOTES ON STANDARD DRAWING). PAYMENT WILL BE INCLUDED IN SECTION 710 TRAFFIC SIGNAL MAST ARM AND POLE WILL FOUNDATION OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.

12. ALL CONCRETE FULL BOXES SHALL BE TYPE 2 (HD) UNLESS OTHERWISE INDICATED. ALL CONDUITS SHALL BE TYPE 0 (Г) INCH DIAMETER UNLESS SPECIFIED ON PLANS.

13. CONTRACTOR SHALL NOTIFY ALL EXISTING UTILITY OWNERS BEFORE BEGINNING WORK ON THIS PROJECT.

14. LED LUMINARE ASSEMBLIES SHALL HAVE A BUG RATING 0-0-0.

15. HARDWARE INPUTS MAY BE DETERMINED BY SUPPLIER. EACH DETECTOR OUTPUT SHALL BE CONNECTED THROUGH A SEPARATE INPUT UNLESS OTHERWISE NOTED AND BE PROGRAMMED TO ACTUATE THE ASSOCIATED PHASE, COMBINATION (COMB) DETECTORS SHALL ALSO BE PROGRAMMED TO PROVIDE VEHICLE COUNT/OCUPANCY DATA.

16. THE LOCAL RADIO WITH ANTENNA SHALL BE COMPATIBLE WITH THE EXISTING CLOSED LOOP COORDINATION SYSTEM IN THE CITY/COUNTY.

17. TO DETERMINE UTILITY CLEARANCES ABOVE THE TRAFFIC SIGNAL POLE, REFER TO THE POLE SCHEDULE FOR VERTICAL CLEARANCE. WHERE THE POLE DECK/NETWORK SCHEDULE INDICATES THAT A LUMINARE ARM WILL BE USED, THIRTY-EIGHT (38) FEET SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE LUMINARE ARM. WHERE THE POLE DECK/NETWORK SCHEDULE INDICATES A TRAFFIC SIGNAL POLE WITHOUT A LUMINARE ARM, A HEIGHT OF TWENTY-ONE (21) FEET SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE TRAFFIC SIGNAL MAST ARM. AN ADDITIONAL SIX (6) FEET SHOULD BE USED DIRECTLY ABOVE "VIDEO DETECTOR" AT LOCATIONS SHOWN ON THE SIGNAL PLANS.

18. THE DESIRABLE MINIMUM DISTANCE FROM THE FACE OF ROADWAY CURB OR SHOULDER EDGE TO THE FACE OF NON-BREAKAWAY POLE OR OBSTRUCTION IS SIX (6) FEET. REFER TO TRAFFIC SIGNAL PLANS FOR SPECIFIC LOCATION OF POLES, CONTROLLER AND ANY OTHER NON-BREAKAWAY OBSTRUCTIONS. REFER TO "DESIGN PARAMETERS, MINIMUM CLEARANCE DISTANCE" FOR MINIMUM DISTANCE FROM THE EDGE OF TRaveled WAY TO THE FACE OF NON-BREAKAWAY POLE OR OBSTRUCTION TRAFFIC SIGNAL POLES OR ANY OTHER NON-BREAKAWAY OBSTRUCTION SHALL NOT BE INSTALLED WITHIN THE CLEARANCE ZONE.

19. AS DETERMINED BY THE ENGINEER, FOUNDATION EMBLEMBMENT MAY BE DECREASED BY A MAXIMUM OF TWO FEET IF COMPETENT ROCK IS ENCOUNTERED PRIOR TO ACHIEVING PLAN EMBLEMBMENT AND AT LEASTHALF OF THE REMAINING PLAN EMBLEMBMENT LENGTH IS KEYED INTO COMPETENT ROCK.

20. CONNECTION OF TRAFFIC SIGNAL DISPLAY TO FIELD WIRING SHALL UTILIZE AN APPROVED TERMINAL STRIP, HAND-HOLE COVER AT BASE OF POLE. TERMINAL STRIP SHALL PROVIDE PROTECTION TO PREVENT EXPOSURE TO THE PUBLIC IN THE EVENT THAT POLE COVER IS REMOVED. PAYMENT FOR TERMINAL STRIPS SHALL BE INCLUDED IN ITEM 714 TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.

21. TRAFFIC SIGNAL CABINET LAYOUT AND ORIENTATION SHALL CONFORM TO ISA STANDARDS.

22. ONE VIDEO PROGRAMMING MODULE NEED NOT BE PROVIDED FOR ARMS AND SETUP OF DETECTORS IF THE VIDEO SYSTEM CANNOT BE ADJUSTED THROUGH HARDWARE AND SOFTWARE PROVIDED BY ITEMS WITHIN THE JOB.

23. TRAFFIC SIGNAL CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER OR ASSIGNED DEPARTMENT PROJECT INSPECTOR EACH DAY PRIOR TO SIGNAL RELATED WORK: NO WORK ON TRAFFIC SIGNALS WILL BE ALLOWED OR APPROVED WITHOUT THIS PRIOR NOTIFICATION.


25. DOOR PANEL TEST PUSH BUTTONS SHALL ACTUATE INDICATED PHASES. DETECTOR ASSIGNMENTS AND/OR SIDE PANEL JUMPERS MAY REQUIRE MODIFICATION.

26. ALL SYSTEM DETECTOR RACKS AND ASSOCIATED EQUIPMENT SHALL BE PROTECTED BY THE MAIN CONTROLLER CABINET POWER SURGE PROTECTION.

27. IN FULL BOXES, POLE BASE, JUNCTION BOXES AND CONTROL CABINET, THE DIRECTION OF EACH CABLE RUN SHALL BE INDICATED BY ATTACHING A PERMANENT TAG OF WIRE/PLASTIC OR NONFERROUS METAL TO THE收費, TAGS SHALL BE EMBOSSED, STAMPED OR ENGRAVED WITH LETTERS 1/4" OR GREATER IN HEIGHT AND SECURED TO THE CABLE WITH NYLON OR PLASTIC TEDS. IN INSTANCES WHERE THE CORD OR CONDUCT ENTRANCES ARE NOT VISIBLE OR ACCESSIBLE, A DIRECTION TAG SHALL BE ATTACHED TO EACH CABLE.

28. THE CONTRACTOR SHALL PERFORM ALL WORK POSSIBLE THAT WILL MINIMIZE THE TIME THAT THE TRAFFIC SIGNAL IS OUT OF OPERATION IF, IN THE OPINION OF THE ENGINEER, TRAFFIC CONDITIONS WARRANT THE CONTRACTOR SHALL PROVIDE FLAMING TO DIRECT TRAFFIC WHILE THE TRAFFIC SIGNAL IS OUT OF OPERATION.

29. ALL NONMETALIC CONDUIT RUNS SHALL BE SET ON BALL RING FITTINGS INSTALLED ON THE TERMINATING ENDS OF THE CONDUIT. THIS INCLUDES FULL BOXES, POLE BASES, AND TRAFFIC SIGNAL CABINETS.

30. ALL CONCRETE FULL BOXES SHALL BE SET ON A GRAVEL OR CRUSHED STONE BEDDING AS SPECIFIED IN SECTION 711, CONCRETE FULL BOX, OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2014.

HIGHWAY 49 AND I-555 EB EXIT RAMP
POLE DIMENSIONS

<table>
<thead>
<tr>
<th>POLE</th>
<th>MAST ARM</th>
<th>*MAST ARM ANGLE</th>
<th>VERT. SHAFT</th>
<th>LUM. ARM</th>
<th>* LUM. ANGLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>54&quot;</td>
<td>180°</td>
<td>35°</td>
<td>15°</td>
<td>180°</td>
</tr>
<tr>
<td>B</td>
<td>34&quot;</td>
<td>180°</td>
<td>35°</td>
<td>15°</td>
<td>180°</td>
</tr>
</tbody>
</table>

* Angle measured clockwise from hand hole.

VIRTUAL 6' X 6' PULSE VDZ (TYPICAL)
LOCATED 85' BEHIND STOP LINE

SERVICE POINT AND MAIN BREAKER BY
CONTRACTOR WITH 2" DIA. NMC AND
CONCRETE PULL BOX (TYPE 1 HD)
WITHIN 10' OF THE CONTROLLER.
PAC MOUNTED BATTERY/BACKUP SYSTEM,
2" DIA. NMC TO CONTROLLER.

LOCAL Radio WITH ANTENNA,
CAT 5E CABLE, MOUNTED TO
POLE A FACING SOUTH.

VIRTUAL 6' X 50' PROCEDURE VDZ (TYPICAL)

VIDEO DETECTOR (TYPICAL)

VIRTUAL 6' X 6' PULSE VDZ (TYPICAL)
LOCATED 115' BEHIND STOP LINE

VIRTUAL 6' X 6' PULSE VDZ (TYPICAL)
LOCATED 260' BEHIND STOP LINE

SIGNAL FACES
1 x 4 LUMES
4 & 5

NOTES
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISION "RETROFITTING BACKPLATES" FOR DETAILS ON REQUIREMENTS FOR BACKPLATES.

ANTENNA ORIENTATION
ANTENNA ORIENTED DUE SOUTH TO THE HIGHWAY 49 AND PARKER ROAD INTERSECTION.

NOTES TO CONTRACTOR
1. TRAFFIC SIGNAL OPERATIONS SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION PHASES USING THE EXISTING TRAFFIC SIGNAL.
2. THE EXISTING TRAFFIC SIGNAL SHALL REMAIN IN OPERATION UNTIL RAMP 3B IS OPEN TO TRAFFIC AND THE PERMANENT TRAFFIC SIGNAL IS COMPLETE AND OPERATIONAL.
3. ANTENNA ORIENTATION SHALL BE VERIFIED BY THE CITY OF JONESBORO.

DETECTOR SPACING CHART

POSTED SPEED LEAD VDZ LAG VDZ
45 MPH 260' 115'
DESIGN PARAMETERS

POSTED SPEED LIMIT: 45 MPH NORTH AND SOUTH APPROACH
NO EUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO LIGHT DISTANCE RESTRICTIONS
LOCATION OF STOP LINES SHOWN ON PERMANENT PAVEMENT MARKING DETAILS (SEE SEPARATE SHEET).
MINIMUM CLEAR ZONE DISTANCE 4 FEET BEHIND CURB
22 FEET (Hwy. 49)

SERVICE POINT AND MAIN BREAKER BY CONTRACTOR WITH 2" DIA. NMC AND CONCRETE PULL BOX (TYPE 1 HB) WITHIN 10' OF THE CONTROLLER.

PAD MOUNTED BATTERY BACKUP SYSTEM 2" DIA. NMC TO CONTROLLER.

LOCAL RADIO WITH ANTENNA CAT 5E CABLE, MOUNTED TO POLE A FACING SOUTH.

ANTENNA ORIENTATION
ANTENNA ORIENTED DUE SOUTH TO THE HIGHWAY 49 AND PARKER ROAD INTERSECTION.

NOTES TO CONTRACTOR
1. TRAFFIC SIGNAL OPERATIONS SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION PHASES USING THE EXISTING TRAFFIC SIGNAL.
2. THE EXISTING TRAFFIC SIGNAL SHALL REMAIN IN OPERATION UNTIL RAMP 3B IS OPEN TO TRAFFIC AND THE PERMANENT TRAFFIC SIGNAL IS COMPLETE AND OPERATIONAL.
3. ANTENNA ORIENTATION SHALL BE VERIFIED BY THE CITY OF JONESBORO.

HIGHWAY 49 AND I-555 EB EXIT RAMP
POLE LOCATIONS

<table>
<thead>
<tr>
<th>POLE</th>
<th>LOCATION &amp; STATION</th>
<th>OFFSET</th>
<th>X, Y COORDINATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Hwy. 49 - STA. 1007+00.00</td>
<td>52.00FT.</td>
<td>170839.35, 535477.80</td>
</tr>
<tr>
<td>B</td>
<td>Hwy. 49 - STA. 1008+40.00</td>
<td>45.00LT.</td>
<td>1707047.73, 536586.74</td>
</tr>
</tbody>
</table>
WIRING DIAGRAM

NOTES TO CONTRACTOR:
1. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
2. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

BATTERY BACKUP SYSTEM

SERVICE POINT AND MAIN BREAKER BY CONTRACTOR

1 - 16/8 E.G.C., 1 - 2W8
(SEE STANDARD DRAWING)

LOCAL RADIO WITH ANTENNA
1 - CAT SE CABLE, 1 - 16/8 E.G.C. (ANTENNA GROUND TO POLE B/S/E)
1 - 2W12, 1 - 16/8 E.G.C.
1 - 7c
1 - VC (CAT SE)
1 - 5c
1 - 5c

1 - 20c, 1 - 12c, 2 - VC (CAT 5E), 2 - 2W12, 1 - CAT SE CABLE, 1 - 16/8 E.G.C.
**PHASING DIAGRAM**

**SIGNAL FACES**

12" LUMINESCE.

**NOTES:**
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISION "RETROREFLECTIVE BACKPLATES" FOR DETAILS ON REQUIREMENTS FOR BACKPLATES.

---

**DETECTOR CHART**

<table>
<thead>
<tr>
<th>DET. ID #</th>
<th>LOCATION DIRECTION</th>
<th>TYPE</th>
<th>DET. #</th>
<th>HARDWARE INPUTS BY SUPPLIER</th>
<th>PROGRAM ASSIGNMENTS</th>
<th>COMMENTS</th>
<th>TUBE LENGTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V251</td>
<td>NB LEFT TURN FAR</td>
<td>CMB</td>
<td>1</td>
<td>V13, S, 5, 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V262</td>
<td>NB LEFT TURN LOCAL</td>
<td>CMB</td>
<td>2</td>
<td>V5, S, 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V261 MBA</td>
<td>SB ADVANCE</td>
<td>LOCAL</td>
<td>3</td>
<td>V6, S, 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V262 MBA</td>
<td>SB NEAR</td>
<td>CMB</td>
<td>4</td>
<td>V14, S, 6</td>
<td></td>
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</tr>
</tbody>
</table>

Spare 5-16

**CONTROLLER INPUT ABBREVIATIONS:**
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

**NOTE:** *AMP CH#x* "REFERS TO THE AUX OUTPUT POSITION.
THIS IS WIDED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.
EXAMPLE: V9 = SYSTEM DETECTOR 1, V10 = SYSTEM DETECTOR 2

---

**INTERVAL CHART**

<table>
<thead>
<tr>
<th>SIGNAL FACES</th>
<th>2-5</th>
<th>CLR</th>
<th>2-6</th>
<th>CLR</th>
<th>FLASH</th>
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<tbody>
<tr>
<td>HIGHWAY 49 AND 1555 EB OF-RAMP</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**LOCATION:** HIGHWAY 49 AND 1555 EB OF-RAMP

**CITY:** JONESBORO

**COUNTY:** CRAWFORD

**DISTRICT:** 10

**SCALE:** NA

**DRAWN BY:** BBS

**DATE:** 08-29-2000

**FILENAME:** (19997-01-App)
STA. 154+00.00 TO STA. 155+00.00
BEGIN RAMP 1A
BEGIN JOB 100837
AREA CUT (UNDERCUT) 8
AREA FILL (BACKFILL) 32
CUT VOLUME (UNDERCUT) 0
FILL VOLUME (BACKFILL) 0

ELEV. = 254.61
0.03% RT. DT. GR.
STA. 154+00.00 BEGIN

EXISTING LANE
STA. 163+00.00 TO STA. 164+00.00

255.10 ELEV. & BEGIN 0.40% RT. DT. GR. -0.64% RT. DT. GR. STA. 163+00.00 END

255.50 ELEV. & BEGIN -0.36% RT. DT. GR. 0.40% RT. DT. GR. STA. 163+00.00 END

AREA CUT 22 AREA CUT (UNDERCUT) 46
AREA FILL 39 AREA FILL (BACKFILL) 46

CUT VOLUME 145 CUT VOLUME (UNDERCUT) 139
FILL VOLUME 153 FILL VOLUME (BACKFILL) 139

RAMP 1B

STA. 163+00.00 TO STA. 164+00.00
STA 169+00.00 TO STA 169+16.00

CHANNEL CHANGE = 167 CU. YDS.
17.0' SPAN LENGTH
Q50 = 251 CFS D.A. = 148 ACRES
WITH 3:1 WINGS LT. & RT.
ON A 30° LT. FWD. SKEW
6' x 3' x 92' R.C. BOX CULVERT
STA 169+16 CONSTRUCT

CUT VOLUME (UNDERCUT)  75
FILL VOLUME (BACKFILL) 75
CUT VOLUME (UNDERCUT)  49
FILL VOLUME (BACKFILL) 49

AREA CUT   53
AREA CUT UNDERCUT   82
AREA FILL  190
AREA FILL (BACKFILL)  82
FILL VOLUME 114
CUT VOLUME  53
CUT VOLUME UNDERCUT  45
CUT VOLUME UNDERCUT (75)
FILL VOLUME (BACKFILL)  49
FILL VOLUME (BACKFILL)  82

ELEV. = 255.34
ELEV. = 255.37

EXISTING LANE
15'

STA, 169+00.00 TO STA, 169+16.00
RAMP 3B

8.15' SPAN WIDTH

Q50 = 28.5 CFS  D.A. = 23 ACRES

TO A COMPLETED LENGTH OF 333'

BOX CULVERT SPECIAL DETAILS

ALONG ALIGNMENT SHOWN ON R.C.

RETAIN & EXTEND 28' RT. & 86' LT.

WITH 3:1 WINGS LT. & RT.

ON A 30° RT. FWD. SKEW

7' x 4' x 229' R.C. BOX CULVERT

STA. 164+53 IN PLACE

AREA CUT 25 AREA CUT (UNDERCUT) 80
AREA FILL 248 AREA FILL (BACKFILL) 80

CUT VOLUME 45 CUT VOLUME (UNDERCUT) 122
FILL VOLUME 296 FILL VOLUME (BACKFILL) 122

STA. 163-38 TO STA. 163-77

F.L. OUTLET RT. = 254.70
F.L. INLET LT. = 255.10

3:1
6:1
0.045'
0.034'
257.06
261.06
261.33
262.00
261.84
258.60
261.27
261.51
262.02

AREA CUT 25 AREA CUT (UNDERCUT) 80
AREA FILL 248 AREA FILL (BACKFILL) 80

CUT VOLUME 45 CUT VOLUME (UNDERCUT) 122
FILL VOLUME 296 FILL VOLUME (BACKFILL) 122

CUT VOLUME (UNDERCUT) 64
FILL VOLUME (BACKFILL) 64

CUT VOLUME (UNDERCUT) 122
FILL VOLUME (BACKFILL) 122

CUT VOLUME 45 CUT VOLUME (UNDERCUT) 64
FILL VOLUME 290 FILL VOLUME (BACKFILL) 64

STA, 163-38, 54 TO STA, 163-77, 32
STA. 167+00 IN PLACE
6’ X 5’ S.L.C. PIPE DILATION
76IN H.D.P.E. DILATION
32’ X (COMPLETED) LENGTH OF 54’

F.L. OUTLET LT. = 255.74
F.L. OUTLET RT. = 258.30

AREA CUT   8
AREA FILL  14
CUT VOLUME  29
FILL VOLUME 77

FILL VOLUME (BACKFILL) 0
CUT VOLUME (UNDERCUT)  0
AREA FILL (BACKFILL)  0
AREA CUT (UNDERCUT)   0

STA. 167+99 IN PLACE
18’ X 54’ R.C. PIPE CULVERT
STA. 167+99 IN PLACE
3:1
0.040’/
0.020’/
256.50
258.55
263.05
262.55
262.79
262.94

STA, 167.00,00 TO STA, 167.99,51
CONCRETE COMBINATION CURB AND GUTTER

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

ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB

DETAILS OF MODIFIED CURB
NOTE USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. ELEVATION

SPECIFY ON PLANS
VARIABLE (1'-6" MIN.)

FACE OF CURB
INTEGRAL CURB
LIMIT OF CONC. PAVEMENT
LIMIT OF P. C.

LONGITUDINAL SECTION
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)

LEGEND

METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERMINAL (TYPE 1)
(FULL SHOULDER WIDTH OR LESS BRIDGES)
NOTE: NORMAL SECTION TO EACH SIDE TO SUPPORT GUARDRAIL.

NORMAL ROADWAY WIDTH
WIDTH OF SURFACING

SECTION ON CURVE

DETAILS OF WIDENING FOR GUARDRAIL

DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY

GUIDE TO INSTALLATION OF GUARDRAIL
AT FIXED OBSTACLE

NORMAL ROADWAY WIDTH

EDGES OF SHOULDER

EDGE OF TRAVELED WAY

TRAFFIC

GUARDRAIL (TYPE A)

VARIABLE

NORMAL

NORMAL

VARIABLE

NORMAL

VARIABLE

SHOULDER PIER PROTECTION

MEDIAN PIER PROTECTION

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-9
The document contains various diagrams and specifications related to a bridge or similar structure. It includes details on structural steel tubing, blockout details, and general notes. The text is in English and provides instructions for construction, including hole punching details, blockout details for steel post & wood or plastic blockouts, and various dimensions and notes for the project.
THREE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POSTS 1-7

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

POST 8

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

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

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

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 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

Arkansas State Highway Commission

Guardrail Details

Standard Drawing GR-II
GENERAL NOTES FOR CONCRETE BARRIER WALLS

1. All barriers shall be constructed in accordance with Section 321 of the Standard Specifications, 2014 Edition.

2. Contractor’s wrist is not required for barrier types MEDIAN A, SIDE A, C, D, & E if designed to withstand a 100-lb. live load.

3. General Notes for Concrete Barrier Walls

4. Doweled BARRIER TYPES MEDIAN A, SIDE A will not be required if BARRIER AND CURBS with a 6" CHAMFER.

5. Contraction Joints are not permitted at the shear bar location.

6. The design of barrier types MEDIAN A, SIDE A, C, D, & E is based on a 100-lb. live load.

7. Min. 4' wide base as cast as a complete unit.

8. Spacing between expansion joints shall not exceed 400 ft for barrier types MEDIAN A and SIDE A. A maximum spacing of 500 ft for barrier types MEDIAN C, SIDE C, & D shall be used. Expansion joints shall be formed using 1" prefabricated joint filler. Continuous reinforcement shall be placed within 3' of expansion joints.

9. Construct drainage openings at every 50' O.C. and at sags if shown on the plans.

10. Maintain 3" clearance on all footing reinforcement and 2" clearance on all other reinforcement.

ELEVATION OF CONCRETE BARRIER WALL

SECTION A-A

CONCRETE BARRIER WALL (SIDE TYPE A)

SECTION A-A

CONCRETE BARRIER WALL (SIDE TYPE A-I)

SECTION A-A

CONCRETE BARRIER WALL (SIDE TYPE A-II)

NOTE: SIDE TYPE A-I IS FOR USE WITH EXISTING PAVEMENT.

NOTE: SIDE TYPE A-I IS FOR USE WITH PROPOSED PAVEMENT.
LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS. THE MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE. PORTLAND CEMENT SHALL BE TYPE 1 AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.

LEAN GROUT SHALL BE USED IN THE FORM OF A SAND CEMENT MIXTURE AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS. THE CEMENT CONTENT SHALL BE SUCH THAT THE LEAN GROUT WILL OFTEN CEMENT AND SAND MEETING THE FOLLOWING REQUIREMENTS:

- The cement shall be of a Class III or higher and shall comply with the requirements of the American Society for Testing and Materials (ASTM) or equivalent specifications.
- The sand shall be of a Class II or higher and shall comply with the requirements of ASTM or equivalent specifications.
- The water-cement ratio shall be 0.4 to 0.5.
- The mixture shall contain sufficient water to hydrate the cement, but not more than 0.5 times the weight of cement used.

LEAN GROUT SHALL BE USED IN THE FORM OF A SAND CEMENT MIXTURE AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS. THE CEMENT CONTENT SHALL BE SUCH THAT THE LEAN GROUT WILL OFTEN CEMENT AND SAND MEETING THE FOLLOWING REQUIREMENTS:

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ARKANSAS STATE HIGHWAY COMMISSION

STANDARD DRAWING PM-2

ACCESS CONTROLLED ROADWAYS

ON

PAVEMENT MARKING DETAILS

DATE

REVISION

FILMED

4-26-96

7-02-98

9-12-13

RAISED PAVEMENT MARKERS

REVISED DETAIL OF STANDARD PLACED IN USE 2-2-95

REVISED LANE WIDTH ON EXIT RAMP ADDED DIMENSIONS & QUANTITIES; CHANGED TYPES TO ROMAN NUMERALS REMOVED HASHMARKS 5-18-00

REV. ENTRANCE & EXIT RAMPS ADDED & REVISED NOTES; 11-18-04

REVISED NOTES 6-3-10

REVISED PER 2009 MUTCD 11-17-10

REMOVED PLOWABLE PAVEMENT MARKERS 12-15-11

REVISED RPMs ACCORDING TO LATEST POLICY 7-26-12

REVISED RPM NOTATION 12-8-16

REVISED WIDTH OF STRIPING REVISED RAISED PAV'T MARKERS FOR 80' SPACING; ADDED CROSSHATCH MARKINGS ON EXIT RAMPS REVISED DOTTED PAV'T MARKINGS; REMOVED CROSSHATCH MARKINGS ON EXIT RAMPS 05-14-20

LATEST REVISION. THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH MARKERS SHALL BE DETERMINED BY THE ENGINEER. AND THE FINAL LOCATION OF THE STRIPING AND PAVEMENT THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY "D" = ACCEL LANE LENGTH + TAPER (BASED ON 700' ACCEL. LANE + 300' TAPER)

PAVEMENT MARKING QUANTITIES

END RAMP PAVEMENT MARKING

60' - (14) STANDARD TYPE II R.P.M. SPACED @ 10' O.C. AS SHOWN

RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 48 EACH

BEGIN RAMP PAVEMENT MARKING

2 80' - (2 9) STANDARD TYPE II R.P.M. @ 10' O.C. (19) STANDARD TYPE II R.P.M.

TRAFFIC MOVEMENT.

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

THEORETICAL GORE

40' (TYP)

10'

30'

(TYP.)

4' SHLDR.

10' SHLDR.

(TYP.)

6" YELLOW LINE

30'-0"

23'-11" 41"

2'-0" 2'-0"

1'-6"

7'-2 8 5

6" WHITE LINE

6" YELLOW LINE

6" WHITE LINE

6" WHITE LINE

DIRECTIONAL ARROW

ENTRANCE RAMPS

EXIT RAMPS

6" WHITE = 280 LIN. FT.

12" WHITE = 370 LIN. FT.

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

6" WHITE LINE

12" DOTTED WHITE

LANE LINE

12" DOTTED WHITE

LANE LINE

12" WHITE LINE

12" DOTTED WHITE

12" WHITE LINE

6" WHITE LINE

30'

6' 24'

12" WHITE = 815 LIN. FT.

12" WHITE = 815 LIN. FT.
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. LATERALS SHALL BE INSTALLED AT ALL SAGS AND AT 250' INTERVALS ON GRADES. *NOTE: THE 250' DISTANCE MAY BE EXCEEDED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

3. DRAIN PIPE ON GRADIENT

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

5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID FOR EACH (TYPICAL) UNDERDRAIN OUTLET PROTECTOR.

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 FOR CONNECTING TO EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS:
   
   1. INSTALL OUTLET PROTECTOR AS SHOWN ON PLANS. THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
   
   2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAY FABRIC ON THE WIDTH OF THE TRENCH AT THE TOP.

8. DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

9. GRANULAR MATERIAL

10. UNDERDRAIN COVER

DETAILS OF PIPE UNDERDRAIN

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3. DRAIN PIPE ON GRADIENT

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

5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID FOR EACH (TYPICAL) UNDERDRAIN OUTLET PROTECTOR.

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 FOR CONNECTING TO EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

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   2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAY FABRIC ON THE WIDTH OF THE TRENCH AT THE TOP.

8. DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

9. GRANULAR MATERIAL

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NOTES FOR PIPE UNDERDRAINS

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3. DRAIN PIPE ON GRADIENT

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

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   2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAY FABRIC ON THE WIDTH OF THE TRENCH AT THE TOP.

8. DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

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REINFORCED CONCRETE BOX CULVERT DETAILS

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

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING REINFORCING STEEL AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BOX CULVERT.

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

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 868 OF THE STANDARD SPECIFICATIONS.

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REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 868 OF THE STANDARD SPECIFICATIONS.
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 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 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.

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

DETAILS THROUGH EXISTING CHANNELS

NOTE:

LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.
PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1, METHOD 1, OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2.

FOOTINGS AND TOWALLS

REMOVE WINGS, APRONS, FOOTINGS AND TOWALLS

REINFORCING DETAILS AND CULVERT DIMENSIONS
SAME AS STANDARD CULVERT DRAWINGS

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

IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.

REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON, THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE SO THAT NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

MATERIALS FOR SECURING STEEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.04 OF THE STANDARD SPECIFICATIONS.

Dowel bars shall be installed as follows: The drilling holes shall be centered on the既有 holes, and shall be an injection-type system which will assure that sufficient material is placed to completely fill the holes and seat the bars.

THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2. PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.

NOTE: A PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATING TO NEW CONSTRUCTION. SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.
1. RIGHT HAND SLIDE SHOWN, LEFT SLIDE OPPOSITE.

2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.

3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHALL BE INCLUDED.

NOTES:

- FOR AUTOMATIC RELEASE CHAMFER CHASSIS BUTTON AND INTERMEDIATE SLOT TO BE INCLUDED.

- 2 HOLES FROM THIS SIDE FOR AUTOMATIC RELEASE

- (2) HOLES FROM THIS SIDE

- .187 DIA. C'SK .100 TO .280 DIA.
CONDUIT ENTRY TO EXISTING POLE BASE

- 1/2" GALVANIZED STEEL CONDUIT
- CMP OUT, RECURBL
- GROUND ROD
- EXISTING CONDUIT
- LEVELING NUT
- 1/2" MCH EARTH
- 2" CLEAR FROM TOP TOLERANCE +/- 0.5"
- #6 REINF. BARS
- 3" DEEP HOLE
- 12" MIN.
- 3" HOLE
- 12" MIN.
- TOP ELEVATION
- EARTH ROADWAY SURFACE
- TYPE "S" CONCRETE
- TYPE "HD" CONCRETE PULL BOX DETAIL
- CONCRETE SHALL BE CLASS "S". THREE #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE CONCRETE PULL BOX IS REQUIRED IN CONCRETE.

NOTE:
- ALL TYPE "S" CONCRETE PULL BOXES ARE INSTALLED WITH AN MCH OF CONCRETE OF #6 AND #6 IN DIRECTIONAL PULL AND ARE BONDED TO GROUND LUG ON POLE AND OTHER E.G.C. CONDUCTORS.
- CONCRETE PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE CONCRETE PULL BOX SHALL BE INSTALLED WITH AN APRON OF CONCRETE 12" WIDE AND 7" IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE.
- ALL TYPE 1 AND TYPE 2 HD CONCRETE PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" WIDE AND 7" IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE.
- CONCRETE SHALL BE CLASS "S". THREE #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE CONCRETE PULL BOX IS REQUIRED IN CONCRETE.

ANCHOR BASE

- ELECTRICAL CONDUIT
- E.G.C. BONDED TO GROUND LUG ON POLE AND OTHER E.G.C. CONDUCTORS
- ANCHOR BASE
- LEVELING NUT
- 1/2" MCH EARTH
- CMP OUT, RECURBL
- OUTSANDING ME TO NEAT POLE GROUND
- 1/2" COPPER-CLAD GROUND ROD
- ROUGH FIELD EARTH
- 1/2" WEEP HOLE
- CHIP OUT, REGROUT
- GROUT
- 1" CHAMFER
- FOUNDATION
- 1/2" DEEP HOLE
- LEVELING NUT
- LOCK WASHER
- FLAT WASHER
- FLAT WASHER
- HEX NUT
- E.G.C. BONDED TO GROUND LUG ON POLE AND OTHER E.G.C. CONDUCTORS

TOOL:
- FUSION WELD E.G.C.
- COPPERWELD GROUND ROD
- 6" MIN.

ROADWAY SURFACE

- TYPE "S" CONCRETE PULL BOX
- 12" MIN.
- EARTH
- 12" MIN.
- 7" MIN.
- 12" MIN.
- ARKANSAS STATE HIGHWAY COMMISSION

STANDARD DRAWING SD-6

HEAVY DUTY PULL BOX

ISSUED AS STANDARD DRAWING

REVISED CLEARANCE AT CURB ENTRY

ADDED & REVISED CONDUIT ENTRY

ADDED REINFORCING TO BOX APRON

REVISED GROUNDING

REVISED NOTES

09-02-15

11-16-17

09-12-13

07-31-08

06-23-04

11-18-98

01-04-02

12-27-99

REVISED NOTES

05-21-09

REVISED PULL BOX DEPTH

REVISED NOTES
ISSUED AS STANDARD DRAWING
2009 MUTCD

NOTE: WHERE LEFT TURN HEAD 1 ON D1 AND D2 IS NOT CALLED FOR IN PLAN SHEET, HEAD 1 SHALL STILL BE ALIGNED FOR FUTURE INSTALLATION; HEAD 2 SHALL STILL BE ALIGNED WITH THROUGH LANE AS SHOWN ON DETAIL.

GENERAL NOTES:
1. FOUR SECTION "PROTECTED/PERMISSIVE" LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2') FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.
2. THREE SECTION "PROTECTED" LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.
3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEETS OR DETAIL SHEETS, OR EXTENDING MORE THAN 2 FEET PAST THE END OF THE MAST ARM, A NEW END CAP PROVIDE BY THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS PRIOR TO INSTALLING THE MAST ARM IF ADDITIONAL COMPENSATION IS REQUIRED.

4. WHEN HEAD SPACING IS LESS THAN 8' FROM LANE LINE, CENTER HEADS ON CENTER, ADJUST Horizontally EXACTLY ACCORDING TO THE APPROACH.
5. ALL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE SPACING AND RELATION TO THE APPROACH SIDE OF THE INTERSECTION.
6. MINIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-5 OF 2009 MUTCD.

ARKANSAS STATE HIGHWAY COMMISSION

SIGNAL HEAD PLACEMENT

STANDARD DRAWING SD-8

( E )
1. On pavements with one-way traffic, the super-elevation shall be applied on the profile grade.

2. Super-elevation values shown on the cross sections are values (+) or (-) to be added or subtracted from the point of control.

3. Lengths for Ls may be rounded in multiples of 25 ft. or 50 ft. to permit simpler calculations.

4. Minimum Ls values may be used for ramps; desirable values shall apply to main lanes.

5. Divided pavements wider than 4 lanes shall have additional transition lengths as follows:

   LANE CONFIGURATION | TRANSITION LENGTH (%)
   -------------------|--------------------
   6 lane divided     | 20%                
   8 lane divided     | 50%                

6. Super-elevation formula = \( S = \frac{-L(e-C)}{L} \)

   \( L \) = distance from beginning of super-elevation transition to any point (ft.)
   \( e \) = maximum rate of super-elevation (ft. per ft.)
   \( C \) = normal crown (ft.)

---

**SUPERELEVATION TABLE FOR ONE-WAY TRAFFIC**

<table>
<thead>
<tr>
<th>DEGREE OF CURVE</th>
<th>30 MPH</th>
<th>35 MPH</th>
<th>40 MPH</th>
<th>50 MPH</th>
<th>60 MPH</th>
<th>70 MPH</th>
<th>75 MPH</th>
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<tbody>
<tr>
<td>No.</td>
<td>MINIMUM DESIRABLE</td>
<td>MINIMUM DESIRABLE</td>
<td>MINIMUM DESIRABLE</td>
<td>MINIMUM DESIRABLE</td>
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<td>90</td>
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<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
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<td>0</td>
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</tbody>
</table>

**ABBREVIATIONS**

- NC: Normal crown
- RC: Reverse crown, super-elevation at normal crown slope
- S: Super-elevation
- Ls: Length of super-elevation transition (ft.)
- C: Normal crown (ft.)
- d: Width of pavement

**SUPERELEVATION FORMULA**

\( S = \frac{-L(e-C)}{L} \)

**GENERAL NOTES**

1. On pavements with one-way traffic, the super-elevation shall be applied on the profile grade.
2. Super-elevation shall not be applied on the cross section at any value lower than the profile grade.
3. Lengths for Ls may be rounded in multiples of 25 ft. or 50 ft. to permit simpler calculations.
4. Maximum Ls values may be used for ramps; desirable values shall apply to main lanes.
5. Transition lengths are given in the table.

**6 LANE DIVIDED**

- INSIDE LANE
- ONE-WAY TRAFFIC

**MAXIMUM SUPERELEVATION**

\( S = \frac{+L(e+C)}{L} \)

**OUTSIDE LANE**

- ONE-WAY TRAFFIC

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**ARKANSAS STATE HIGHWAY COMMISSION**

**STANDARD DRAWING SE-1**

**TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC**

**REVISED SUPERELEVATION TABLE**

**SUPERELEVATION FORMULA**

\( S = \frac{+L(e+C)}{L} \)
NOTES:

SPLICES NECESSARY TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN DETAIL (F).

ALL SIGN POSTS SHALL BE PLUMB.

SIGNS AT LEAST 8' IN LENGTH MAY BE INSTALLED ON THREE 3 LB. POST. IN NO CASE SHALL THERE BE MORE THAN TWO 3 LB. POSTS WITHIN A 7' PATH.

NORMAL INSTALLATIONS WILL REQUIRE 5/16" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

DETAIL A

U-CHANNEL POST

SHOWING HORIZONTAL BRACE

DETAIL B

U-CHANNEL POST

SHOWING BACK-TO-BACK INSTALLATION

DETAIL C

U-CHANNEL POST

SHOWING GUIDE SIGN MOUNTING WITH EXTENDED PANELS

DETAIL C

U-CHANNEL POST

SHOWING GUIDE SIGN MOUNTING WITH EXTENDED PANELS

DETAIL E

U-CHANNEL POST ASSEMBLIES

U-1

DETAIL A

U-2

DETAIL B

U-2 (A)

DETAIL C

U-2 (B)

DETAIL C

U-2 (C)

DETAIL C

U-2 (D)

DETAIL C

U-2 (E)

U-2 (F)

DETAIL C

U-2 (G)

DETAIL C

U-2 (H)

U-3

DETAIL C

U-3 (1)

DETAIL C

U-3 (2)

DETAIL C

U-3 (3)

DETAIL C

U-3 (4)

U-3 (5)

DETAIL C

U-3 (6)

DETAIL C

U-3 (7)

DETAIL C

U-3 (8)

DETAIL F

DETAIL OF SPLICES

NOTES:

SPLICES NECESSARY TO ATTAIN PROPER MOUNTING HEIGHT SHALL BE AS SHOWN IN DETAIL (F).

NORMAL INSTALLATIONS WILL REQUIRE 5/16" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

THE POST FOR "TYPE U" SUPPORTS SHALL BE HOT DIP GALVANIZED.

AROMAKS STATE HIGHWAY COMMISSION

U-CHANNEL POST ASSEMBLIES

U-1

DETAIL A

U-2

DETAIL B

U-2 (A)

DETAIL C

U-2 (B)

DETAIL C

U-2 (C)

DETAIL C

U-2 (D)

DETAIL C

U-2 (E)

U-2 (F)

DETAIL C

U-2 (G)

DETAIL C

U-2 (H)

U-3

DETAIL C

U-3 (1)

DETAIL C

U-3 (2)

DETAIL C

U-3 (3)

DETAIL C

U-3 (4)

U-3 (5)

DETAIL C

U-3 (6)

DETAIL C

U-3 (7)

DETAIL C

U-3 (8)

DETAIL F

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AROMAKS STATE HIGHWAY COMMISSION

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U-2

DETAIL B

U-2 (A)

DETAIL C

U-2 (B)

DETAIL C

U-2 (C)

DETAIL C

U-2 (D)

DETAIL C

U-2 (E)

U-2 (F)

DETAIL C

U-2 (G)

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U-2 (H)

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DETAIL C

U-3 (1)

DETAIL C

U-3 (2)

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U-3 (3)

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U-3 (4)

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AROMAKS STATE HIGHWAY COMMISSION

U-CHANNEL POST ASSEMBLIES

U-1

DETAIL A

U-2

DETAIL B

U-2 (A)

DETAIL C

U-2 (B)

DETAIL C

U-2 (C)

DETAIL C

U-2 (D)

DETAIL C

U-2 (E)

U-2 (F)

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U-2 (H)

U-3

DETAIL C

U-3 (1)

DETAIL C

U-3 (2)

DETAIL C

U-3 (3)

DETAIL C

U-3 (4)

U-3 (5)

DETAIL C

U-3 (6)

DETAIL C

U-3 (7)

DETAIL C

U-3 (8)

DETAIL F

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NORMAL INSTALLATIONS WILL REQUIRE 5/16" DIA. CARRIAGE BOLTS TO MOUNT SIGNS TO POST AND TO ASSEMBLE THE VARIOUS POST SUPPORTS.

ALL SIGN POSTS SHALL BE PLUMB.

THE POST FOR "TYPE U" SUPPORTS SHALL BE HOT DIP GALVANIZED.
NOTE:

All additional mounting hardware, bolts, nuts, channel, and bar supports required to mount secondary signs will be considered to be supplemental to the main support specified. Payment will be considered supplementary to the main support.

The galvanized steel channel and bar supports may be ASTM A-36.

Refer to the AASHTO publication "Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals" for structural support for non-highway signs, luminaries, and traffic signals.

All bolt holes shall be 1/2" unless otherwise specified.
DETAILS OF GUIDE SIGN PANELS

SUBSIDIARY TO THE ITEM "EXIT NUMBER PANEL".

SECONDARY SIGN INSTALLATION ON BACKSIDE OF GUIDE SIGN "X" BAR POSITION AS REQ. BY SIGN ASSEM.

STANDARD SIGN GUIDE SIGN

APPROX. THICKNESS OF REFLECTIVE SHEETING
OFFSET ACCEPTABLE .375" MIN.

ONE PIECE EXTRUDED SIGN PANELS
ONE PIECE EXTRUDED SIGN PANEL

PANEL BOLT
POST CLIPS
SIGN POST

SLOTTED HOLES (7/16" X 2")
DRILLED OR PUNCHED @ 12" O.C.
BEGINNING 6" FROM ONE END

SIGN POST

NOTE: EXIT NUMBER PANELS SHALL HAVE WHITE LEGENDS AND BACK GROUND COLOR WILL BE THE SAME AS THE GUIDE SIGN WHICH THE EXIT PANEL IS ATTACHED OR AS SPECIFIED IN THE PLANS. PAYMENT FOR ALL POST CLIPS, BOLTS, AND ANGLES SHALL BE SUBDIVIDED TO THE EXIT NUMBER PANEL.

EXIT PANEL DETAILS

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THE CONTRACTOR SHALL DRILL AND POP-RIVET LEGEND, SHIELDS, ARROWS, OR OTHER COPY AS SHOWN.

NOTE:
LEGEND ON GUIDE SIGNS ON THE MAIN LANES SHALL BE DEMOUNTABLE LEGEND.
LEGEND ON GUIDE SIGNS ON CROSS ROADS AND RAMPS SHALL BE DIRECT APPLIED.
THE DEMOUNTABLE AND DIRECT APPLIED LEGENDS SHALL BE TYPE IX SHEETING.

THE BACKGROUND ON ALL GUIDE SIGNS AND STANDARD SIGNS SHALL BE CONSTRUCTED USING TYPE III SHEETING.

TYPE IX SHEETING FOR BORDER, LEGEND, SHIELDS, ARROWS, OR OTHER COPY SHALL BE OBTAINED VERTICALLY AS PER MANUFACTURER'S DATUM MARKS.
ORIENTATION MARKS, OR OTHER RECOMMENDATIONS.

SIGN LEGEND, SHIELDS, ARROWS OR OTHER COPY SHALL BE APPLIED WITH A PIVOTING TOOL.

NO OTHER METHOD OF APPLYING CHARACTERS IS ALLOWED.

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD DRAWING SHS-6
MIN. 2' X 2' X 12GA.

Breakaway Sign Supports

**General Notes:**
- The top plate of triangular slip bases shall have the same exterior dimensions as the bottom plate.
- Insides diameter of the sign post shall be cut through the center of the top plate with the hole edge beveled as shown.
- The bevel end shall be tangent to the bolt hole. Any misalignment shall be removed by grinding.
- Face of bevel shall be finished to a minimum smoothness of f=500.

**Mounting Hardware:**
- The top plate of triangular slip bases shall have the same exterior dimensions as the bottom plate.
- Insides diameter of the sign post shall be cut through the center of the top plate with the hole edge beveled as shown.
- The bevel end shall be tangent to the bolt hole. Any misalignment shall be removed by grinding.
- Face of bevel shall be finished to a minimum smoothness of f=500.

**Details:**
- **Shim Detail:**
  - Furnish (2) .012" thick and (2) .032" thick shims per post.

**Placement:**
- One Sign
- Two Signs

**Height as Required:**
- In MUTCD or as directed by the engineer.

**Furnish (2) .012" thick and (2) .032" thick shims per post.**

**Shear Plate Dimensions and Support:**
- Sign supports that have the same other Mash compliant breakaway sign supports.

**Top Plate:**
- Top plate dimensions and support sign supports that have the same other Mash compliant breakaway sign supports.

**Bottom Plate:**
- Bottom plate dimensions and support sign supports that have the same other Mash compliant breakaway sign supports.

**Shim Detail:**
- Furnish (2) .012" thick and (2) .032" thick shims per post.

**Basis of Estimate:**
- Approx. 100 lbs steel.

**Details:**
- Standard drawing SHS-7.

**Arkansas State Highway Commission**
- Detail of Omni-Directional Breakaway Sign Supports

**Standard Drawing SHS-7**
TYPICAL EXIT RAMP DELINEATOR PLACEMENT

The ramp, with approximately 300' spacing between the signs. Both signs may be located on the outside shoulder side of where the barrier wall extends to or near the main lanes, located past the end of the barrier wall. In rare cases, the sign on the inside shoulder side may be located past the end of the barrier wall when barrier walls are present on the inside shoulder.

2. Wrong-way signs are normally gated, but may be offset from existing sign supports where possible.

1. Wrong-way signs may be mounted on the back side of existing sign supports when possible.

NOTES

1. Wrong-way signs may be mounted on the back side of existing sign supports when possible.

2. Wrong-way signs are normally gated, but may be offset when barrier walls are present on the inside shoulder. In such cases, the wrong-way signs shall be offset from the existing sign supports by a distance not to exceed 500' except when the barrier wall extends to or near the main lanes.

The delimiters shall be placed at a 4' height measured from the pavement edge to the bottom of the delimiter delimiters. The delimiters shall be placed 2' to 8' outside the outer edge of the shoulder in line with the shoulder edge that is 8 ft. or less, outside the outer edge of the shoulder.

Delineator spacing in curves shall be reduced to 30' when the ramp advisory speed is 30 mph or less. If multiple lanes exist at the ramp terminal, the thermoplastic wrong-way arrow shall be placed as close to the ramp terminal turnout as possible.

DELINEATORS ADJACENT TO THE ROADSIDE OBSTACLES MAY BE RELOCATED IN EITHER DIRECTION FOR A DISTANCE NOT EXCEEDING ONE QUARTER OF THE UNIFORM SPACING OR MAY BE ELIMINATED AS DIRECTED BY THE ENGINEER.

NOTE: WHEN UNIFORM SPACING IS INTERRUPTED BY ROADSIDE OBSTACLES, DELINEATORS ADJACENT TO THE ROADSIDE OBSTACLES MAY BE RELOCATED IN EITHER DIRECTION FOR A DISTANCE NOT EXCEEDING ONE QUARTER OF THE UNIFORM SPACING OR MAY BE ELIMINATED AS DIRECTED BY THE ENGINEER.

THE DELINEATORS SHALL BE PLACED AT A 4' HEIGHT MEASURED FROM THE PAVEMENT EDGE TO THE BOTTOM OF THE DELINEATOR. THE DELINEATORS SHALL BE PLACED 2 TO 8' OUTSIDE THE OUTER EDGE OF THE SHOULDER. IN LINE WITH THE SHOULDER EDGE THAT IS 8 FT. OR LESS, OUTSIDE THE OUTER EDGE OF THE SHOULDER.

DELINEATOR SPACING IN CURVES SHALL BE REDUCED TO 30' WHEN THE RAMP ADVISORY SPEED IS 30 MPH OR LESS.

IF MULTIPLE LANES EXIST AT THE RAMP TERMINAL, THE THERMOPLASTIC WRONG-WAY ARROW SHALL BE PLACED AS CLOSE TO THE RAMP TERMINAL TURNOUT AS POSSIBLE.

REV. NOTE 3 CONCERNING DRAIN SLOTS
FILMED (20'-0" LAYING LENGTH)

REVISED NOTE 3
DRAIN SLOTS

REVISED BARRIER STABILIZATION DETAIL

SHAPES WILL NOT BE ALLOWED IN A CONTINUOUS LINE OF UNITS.

ADDED REFERENCE TO MASH

2'-11 †"

MARK V-1
H-3
H-2
H-1

INSIDE V-1 BARS
HORIZONTAL IN CENTERED ABOVE EACH DRAIN SLOTS END & (2) AT VERTICAL IN

8 1/2"
8 1/2"

SLOTS HORIZ. AROUND 10" R

E 1'-11 †"

BARS TO SUPPORT TIED ABOVE H-1

INSIDE (6) #5 H-2 BARS, (3) EACH INNER SIDE OF V-1

3" TAPERED SLOTTED HOLES AROUND EACH PAIR OF (2) #4 S-2 BARS, (1)

3/4" CHAMFER 9"

PAVEMENT 2" OPEN JOINT

2" LIFTING HOLE(1) OVER EACH

3" DIA. PLATE …" THICK

CONNECTION PIN

FOR STABILIZATION PIN OR THREADED BOLT

1" MIN. & ABOVE H-1 & H-2

(6) #5 CONTINUOUS H-1 BARS,

2'-1 3/8 " (3) EACH ON (2) #4 H-3 BARS,

(1) OVER EACH BARRIER REMOVAL SLOT DETAILS

LIFTING HOLE 4" DIA. LIFTING HOLE SPACED @ 18 "" MAX.

LIFTING HOLE 2'-0 "

1'-0" OVERLAP BENDS & MIN. W/(4) 1 1/2" R

3'-9"

1 1/2" R

2 3/16" R

4 1/2" ELEVATION - TYPICAL BARRIER

3'-9"

1 3/4"

3/4" CHAMFER 9"

ELEVATION - ROADWAY SECTION

7"

6" SECTION A-A

7 1/2 "

1 3/4"

1" MIN. & ABOVE H-1 & H-2

(6) #5 H-2 BARS, (3) EACH ON (2) #4 H-3 BARS,

1'-11 †"

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1'-11 †"

ELEVATION - ROADWAY SECTION

7 1/2"

1 3/4"

1" MIN. & ABOVE H-1 & H-2

(6) #5 H-2 BARS, (3) EACH ON (2) #4 H-3 BARS,
4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (See BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4).

**Offset Distance for Two Way Traffic Only**

<table>
<thead>
<tr>
<th>Speed (MPH)</th>
<th>Offset Distance (FT.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 45</td>
<td>12</td>
</tr>
<tr>
<td>10 - 45</td>
<td>8</td>
</tr>
<tr>
<td>5 - 10</td>
<td>4</td>
</tr>
</tbody>
</table>

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

Special End Unit

General Notes

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

- Number of phases will vary. Three phases shown for illustration.
- All cut slopes shall be controlled, covered, seeded, and mulched as the work progresses. Slopes shall be constructed and stabilized in equal increments not to exceed 25 feet measured vertically.
- The work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 25 feet measured vertically.
- The work progresses. Slopes shall be constructed and stabilized in equal increments not to exceed 25 feet measured vertically.

**EMBANKMENT**

**CONSTRUCTION SEQUENCE**

1. Construct diversion ditches, check dikes, silt fences, sediment basins.
2. Place phase 1 embankment with permanent or temporary erosion control devices.
3. Place phase 2 embankment with permanent or temporary erosion control devices.
4. Place final phase of embankment with permanent or temporary erosion control devices.

**GENERAL NOTE**

- All embankment slopes shall be seeded, stabilized, and mulched as the work progresses. Slopes shall be controlled, covered, seeded, and mulched in equal increments not to exceed 25 feet measured vertically.
- The work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 25 feet measured vertically.
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