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**TYPICAL SECTION**

- Chamfer the bottom edge of the top slab 3" at the entrance.
- Reduce curb heights if necessary to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

**CONSTRUCTION NOTES:**

- Do not use permanent forms.
- Chamfer the bottom edge of the top slab 3" at the entrance.
- Optimal: keep construction joints shown at the file line by a maximum of 6". If this option is taken, Bars M may be cut off or raised. Bars C and D may be reversed, and Bars F and Y may be reversed.

**MATERIAL NOTES:**

- Provide Grade 60 reinforcing steel.
- Provide galvanized reinforcing steel if required elsewhere in the plans.
- Bars B, C, D, E, F1, F2, M, and/or Z with deformed steel reinforcement (WR) meeting the requirements of ASTM A996. The area of required reinforcement may be met by the ratio of 30 ksi to 70 ksi:

  \[ \text{Spacing of WR} = \frac{1}{\text{spacing of No. 6 wire}} \]

  - For structures without bridge rail, construct curbs flush with finished grade.
  - For structures with bridge rail, construct curbs with finished grade.

**GENERAL NOTES:**

- Designed according to AASHTO LRFD Bridge Design Specifications for the range of highway bridge spans in this standard.

- For vehicle safety, the following requirements must be met:

  - For structures without bridge rail, construct curbs no more than 6" above finished grade.
  - For structures with bridge rail, construct curbs with finished grade.

**TABLE OF BAR DIMENSIONS**

<table>
<thead>
<tr>
<th>BAR LENGTH (IN)</th>
<th>R (IN)</th>
<th>L (IN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-0&quot;</td>
<td>6&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>1'-3'</td>
<td>6&quot;</td>
<td>6'-0&quot;</td>
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<tr>
<td>1'-6&quot;</td>
<td>6&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>1'-9&quot;</td>
<td>6&quot;</td>
<td>6'-0&quot;</td>
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<tr>
<td>2'-0&quot;</td>
<td>6&quot;</td>
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<td>6'-0&quot;</td>
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<td>2'-9&quot;</td>
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<td>6'-0&quot;</td>
</tr>
<tr>
<td>3'-0&quot;</td>
<td>6&quot;</td>
<td>6'-0&quot;</td>
</tr>
</tbody>
</table>

**PERMISSIBLE BAR SPACINGS**

- For No. 6 wire:

  \[ \text{Spacing} = \frac{0.44 \text{ sq. in. per 0.5 ft.}}{60 \text{ ksi / 70 ksi}} \approx 0.755 \text{ sq. in. per ft.} \]

- Example conversion: Replacing No. 6 Gr 60 at 6" spacing with WR

  \[ \text{Required WWR} = (0.44 \text{ sq. in. per 0.5 ft.}) \times (60 \text{ ksi / 70 ksi}) = 0.755 \text{ sq. in. per ft.} \]

- If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) = 4.86"

- Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

**REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR. COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.**

**CONSTRUCTION DETAILS:**

- Designed according to AASHTO LRFD Bridge Design Specifications for the range of highway bridge spans in this standard.

- The Contractor may use Bars B, C, D, E, F1, F2, M, and/or Z with deformed reinforcing steel (WR) meeting the requirements of ASTM A996. The area of required reinforcement may be met by the ratio of 30 ksi to 70 ksi.

- Spacing of WR is limited to 1'-0" Min and 18" Max. When required, provide lap splices in the WR of the same length required for the equivalent bar size, rounded up to wire size between conventional bar sizes. The lap length required for WR is never less than the lap length required for uncoated #4 bars.

- Example conversion: Replacing No. 6 Gr 60 at 6" spacing with WR

  \[ \text{Spacing} = \frac{0.44 \text{ sq. in. per 0.5 ft.}}{60 \text{ ksi / 70 ksi}} \approx 0.755 \text{ sq. in. per ft.} \]

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- Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

**MULTIPLE BOX CULVERTS CAST-IN-PLACE**

**10'-0" SPAN**

2 TO 20' FILL

**MC-10-20**

- Bars F2 ~ Equal Spacing (Typ)

- Bars M, Y, and/or Z may be reversed.

- This option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars F and Y may be reversed.

- Chamfer the bottom edge of the top slab 3" at the entrance.

- Reduce curb heights if necessary to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

- For vehicle safety, the following requirements must be met:

  - For structures without bridge rail, construct curbs no more than 6" above finished grade.
  - For structures with bridge rail, construct curbs with finished grade.

- Reduce curb heights if necessary to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

- For culverts less than 2'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For culverts less than 3'-0" high, Bars K may be omitted.

- TYPICAL SECTION

- BOTTOM SLAB

- TOP SLAB

- TABLE OF BAR DIMENSIONS

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<td>6'-0&quot;</td>
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<tr>
<td>Bar No.</td>
<td>Conc.</td>
<td>Size</td>
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<td>16</td>
</tr>
<tr>
<td>2</td>
<td>4.05</td>
<td>16</td>
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**ML93 Loading**

**Texas Department of Transportation**

**Bridge Inspection Standard**

**10'-0" Span**

**Multiple Box Culverts Cast-In-Place**

**Z To 20' Fill**

**MC-10-20**

**Conc.** Concrete Strength

**No.** Number of Spans

**Length** Length

**Qty.** Quantity

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**Notes:**

1. Bar lengths over 40' include one bar lap, refer to MATERIAL NOTES for minimum lap lengths.

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**Bill of reinforcing steel (for box length = 40 feet)**

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**QUANTITIES**

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**Bars B**

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**Bars C & D**

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**Bars E**

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**Bars F1 - #4**

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**Bars F2 - #4**

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**Bars M - #4**

---

**Bars Y & Z - #4**

---

**Bars H - #4**

---

**Bars K**

---

**Per Foot of Barrel**

---

**Curb**

---

**Total**

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