(Option 1) Lap Splice: At Quarter Point (30 Bar Diameters Or Vertical Wire Spacing Plus 2" For WWR)

(Option 2) Lap Splice: Standard 90° Hooks At Corners (8" For #4’s, 10" For #5’s, 12" for #6’s)

(Option 3) Lap Splice: Corner Spliced Bar (30 Bar Diameters, But Not Less Than Two Vertical Wire Spacings Plus 2" For WWR)

NOTE: h may be less than 6" when approved by the Engineer, but not for inlet segments at finish grade elevation.

MINIMUM DIMENSIONS FOR BOX AND RISER SEGMENTS

COMPARATIVE SIDE VIEWS

TOP SLABS TO WALLS

WALL JOINTS

BOTTOM SLABS TO WALLS

1. One or more types of joints may be used in a single structure, except brick wall structure. Brick wall construction is permitted on circular units only.

2. All grouted joints are to have a maximum thickness of 1".

3. Keyways are to be a minimum of 1½" deep.

4. Joint dowels are to be #4 bars, 12" long with a minimum of 6 bars per joint approximately evenly spaced for circular structures or at maximum 12" spacing for rectangular structures. Bars may be Adhesive Bonded Dowels in accordance with Specification Section 416, or placed approximately 6" into fresh concrete leaving the remainder to extend into the secondary cast. Welded wire fabric may be substituted for the dowel bar in accordance with the equivalent steel area table on Sheet 4.

5. Minimum cover on dowel reinforcing bars is 2" to outside face of structure.

6. Joints between wall segments and between wall segments and top or bottom slabs may be sealed either by preformed plastic gasket materializing the procedures given in Section 430-7.3.1 of the Specifications or by non-shrink grout, in accordance with Section 934 of the Specifications.

7. Approved product inserts may be used in lieu of dowel embedment.

OPTIONAL CONSTRUCTION JOINTS

SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS

REBAR STRAIGHT END EMBEDMENT FOR TOP AND BOTTOM SLABS

WALL REINFORCING SPLICE DETAILS
1. Details for optional precast inlet construction up to depths of 15' are shown on the inlet indexes.

2. Horizontal feet in the walls of rectangular structures shall be top spliced in accordance with Option 1 or 3 as shown in the Wall Reinforcement Splice Details.

3. Welding of splices and laps is permitted. The requirements and restrictions placed on welding in ASTM A194 M24 shall apply.

4. When an increased area of reinforcing is provided, then the maximum bar spacing may be increased by the squared ratio of increased steel area, but not to exceed 12".

5. Concrete as specified in ASTM C 478, 4000 psi, may be used in lieu of Class II concrete in precast items manufactured in plants which meet the requirements of Section 449 of the Specifications.

6. Precast opening for pipe shall be the pipe OD plus 6" (± 2" tolerance). Mortar used to seal the pipe into the opening shall be of such a mix that shrinkage will not cause leakage into or out of the structure.

7. For pipe sizes not specified, the height used to determine if a drainage structure is less than or greater than 10 feet shall be computed using the elevation of the top of the bottom slab, or the grate elevation or the theoretical gutter grade elevation of an inlet, or (b) the inside bottom elevation of a junction box less the flow line elevation of the lowest pipe or to top of sump floor.

**GENERAL NOTES**

1. For square or rectangular precast drainage structures, either deformed or smooth welded wire reinforcing may be used provided:
   a) The smooth welded wire reinforcing shall comply with ASTM A947.

2. The smooth welded wire reinforcement shall be continuous around the box, and lapped in accordance with Option 1 or 3 as shown in the Wall Reinforcement Splice Details.

3. Wire reinforcement shall be continuous around the box, and lapped in accordance with Option 1 or 3 as shown in the Wall Reinforcement Splice Details.

4. Rebar straight and embedded of peripheral reinforcement may be used in lieu of ACI standard hooks for top and bottom slabs except when hooks are specifically called for in the plans or standard drawings.

5. Concrete as specified in ASTM C 478, 4000 psi, may be used in lieu of Class II concrete in precast items manufactured in plants which meet the requirements of Section 449 of the Specifications.

**NOTES FOR PRECAST OPTIONS & EQUIVALENT REINFORCEMENT SUBSTITUTION**

**EQUIVALENT STEEL AREA TABLE**

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Bar Size &amp; Spacing</th>
<th>Style Designation</th>
<th>Min. Steel Area</th>
<th>Equivalent Grade 40</th>
<th>Equivalent Grade 60</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>#5 @ 6½&quot; Ctrs.</td>
<td>60</td>
<td>0.30</td>
<td>0.28</td>
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<td>0.3419</td>
<td>0.371</td>
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<tr>
<td>Special</td>
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<td>#6 @ 10½&quot; Ctrs.</td>
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<td>0.4282</td>
<td>0.453</td>
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<tr>
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<td>#6 @ 11½&quot; Ctrs.</td>
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<td></td>
<td>#6 @ 12½&quot; Ctrs.</td>
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<td>0.40</td>
<td>0.4282</td>
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</tbody>
</table>

**Supplementary Details for Manholes and Inlets**

**REASONS**

**Sheet No.** 4 of 5