Concrete Specifications Update

2018 AGC Co-op Meeting
December 5, 2018

John P. Donahue, P.E.
MoDOT
Rebound Hammer for FDR Acceptance
Rebound Hammer in Sec 613

613.10.2.2.2 The concrete opening strength to all traffic shall be 2000 psi. The opening strength shall be verified by either compressive strength testing of cylinders in accordance with Sec 613.10.2.4.1 or the maturity method in accordance with Sec 507 or in accordance with MoDOT TM-7 using a rebound hammer. If MoDOT TM-7 is used, the minimum rebound ratio number (RNN) for opening strength shall be 60.
MoDOT TM-7 for Rebound Hammer

• Annual service and verification
• Ambient temperature of 40°F or higher.
• Test on smooth surface. Grind texture, if necessary.
• Position rebound hammer perpendicular to concrete surface.
MoDOT TM-7 for Rebound Hammer

- Test on FDR and existing concrete at equidistance from joint

![Diagram showing test area for MoDOT TM-7 on a section of concrete with Full Depth Repair (FDR) area highlighted. The test area is 6" - 8" in diameter and is located at the equidistance from the joint. The FDR area is ½ of the FDR width.]
MoDOT TM-7 for Rebound Hammer

Ten rebound readings, no less than one inch apart from each other, on each side of the joint.

Rebound Ratio Number (RNN)

\[
RNN = \frac{\text{Full depth repair rebound number average}}{\text{Adjacent concrete slab rebound number average}}
\] (100)
Pavement Repair Air Content

• *Sec 613.10.2.4.2* Deleted “a minimum air content of 4 percent” and replaced with “an air content in accordance with Sec 501.10.2”.

• *Sec 613.20.2.1* Deleted “a minimum air content of 4 percent” and replaced with “an air content in accordance with Sec 501.10.2”.

(Sec 501.10.2 – Concrete designed from 4.5% - 7.5%. Nothing under 4.5% or over 9.0% accepted. May be redosed with air entrainment one time.)
Thank You!

Questions?

john.donahue@modot.mo.gov
(573)526-4334
# Approach Slab and Approach Pavement Designs for Minor Roads

<table>
<thead>
<tr>
<th>Minor Roads ≤ 1000 AADT</th>
<th>Minor Roads &gt; 1000 AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roadways</strong></td>
<td></td>
</tr>
<tr>
<td>≤ 0.5 mile</td>
<td>7” HMA / 7” JPCP</td>
</tr>
<tr>
<td>&gt; 0.5 mile</td>
<td>Pavement design determined by Const. &amp; Mtrls. Division</td>
</tr>
</tbody>
</table>

**Bridge Approaches**

<table>
<thead>
<tr>
<th>From fill face to 20’</th>
<th>Bridge Approach Slab (Minor) 12” Min. HMA or Reinf. PCC</th>
<th>Bridge Approach Slab (Minor) 12” Min. HMA or Reinf. PCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 20’ to 500’</td>
<td>10” HMA / 8” JPCP</td>
<td>10” HMA / 8” PCCP or pavement design, whichever is greater</td>
</tr>
<tr>
<td>Beyond 500’</td>
<td>Use roadway design above</td>
<td>Use roadway design above</td>
</tr>
</tbody>
</table>
Expansion Joint Locations
Expansion Joint Alternates

**Header Section**

- **Part Elevation of Header Plank**
  - Hole sizes for dowel bars are specified.
  - Crown as for pavement.
  - Hole spacing is indicated.

**Sawed Section**

- The header board shall be sufficiently rigid to prevent distortion from the typical section and maintain a straight line from pavement edge to pavement edge.

**Construction Joint**

- The construction joint may be sawed full depth and dowel bars shall be installed in the holes.
- Bonding for dowel bars shall be epoxy or polyester bonding agents as specified in Section 1039.
- The portion of the dowels that will be bonded shall be coated with approved lubricant.

**Longitudinal Construction Joint**

- Existing pavement.
- New pavement.
- Drilled hole diameter shall be diameter of tie bar plus 1 inch.

**Sealing Detail**

- Header plank.
- Joint sealing material.
- Preferred joint filler material.
- Tar paper 3-1/2" wide.
- Joint filler 1-1/2" wide.

**Expansion Joints**

- Expansion cap on alternating ends of dowel bars.
- Length of cap.
- Gap between end of cap and dowel.

**Notes**

- For expansion joints formed using precast concrete headers, the expansion caps shall be installed in the exposed end of each bar once the headers have been removed and the joint filler material has been installed.

**Conclusions**

- Contractor may select either expansion joint.

**DATE EFFECTIVE**

07/28/2015

**DATE PREPARED**

08/06/2015

**SHEET NO.**

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Rte 87 RCC