Gravel Crushing Specifications

Regional Roads Conference,
Rapid City SD, Oct 22, 2016

Steve Monlux, LVR Consultants LLC, Missoula MT
Adam Smith, Public Works Director, Richland Co MT

Outline

• Objective: better gravel for reasonable cost
• Gravel Specs
  – User Note – 2 pages
  – Spec – 3 pages
• Reviewed and edited by 5 crushing Contractors
• Procurement Options
  – Low Bid Contract - Richland Co MT (Adam Smith 406-480-9244)
  – Request For Proposals (RFP) – Lethbridge Co Alberta (Devon Thiele 403-328-3525)

Pay Adjustment Table (Section 2.2)

• Pay Adjustment Table (pick realistic spec limits)

<table>
<thead>
<tr>
<th>Pay Adjustment Factor</th>
<th>1.05</th>
<th>1.00</th>
<th>0.95</th>
<th>0.90</th>
<th>0.85</th>
<th>0.80</th>
<th>0.75</th>
<th>0.70</th>
<th>0.65</th>
<th>0.60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sieve Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/8 inch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/8 inch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Passing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#200 Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasticity Index (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Fracture, one face, min (15)</td>
<td>75</td>
<td>65</td>
<td>60</td>
<td>55</td>
<td>50</td>
<td>&lt;50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasticity Index (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of Plasticity Index plus Percent Passing #200 Max (%)</td>
<td>20</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>&gt;26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Values within parenthesis are maximum allowable differences between Consultant & Contractor results.

Acceptance

• Stockpiling: based on average test result
• Placed on Road: Based on Daily Acceptance Sample

Daily Composite Acceptance Sampling (Section 2.3A)

• Process
  – Bucket Load every 2 hours in sampling stockpile
  – Sample small pile at end of day
  – County and Contractor each get samples
• Benefits
  – Reduces sampling bias
  – Reduces sampling and testing costs
  – Not a “snapshot” sample
  – Preferred by Contractors and Consultants
  – County or their consultants do not have to be on-site each day
Additional Spec Features

- Provision for checking Contractor QC (Section 3.1A)
- Stockpiling without Segregation (Section 3.1B)
- Options for adding various types of clay (Section 3.2A)
- Materials source disclaimer (Section 3.2C)

Quantity Assurance, Method of Measurement (Section 4.1)

- Cubic Yards in Stockpile
- Measured by drone
- Measurement by licensed engineer paid by Contractor, info verified by County
- Stockpile Quantity between 90 and 110% is acceptable

Payment Provisions (Section 4.2)

- Actual measured quantity
- Pay adjustment for gradation, PI, % Fracture
- 5% bonus for stockpiles built in 3 or more layers or with telescoping rotary stacking conveyors

Need for Feedback

- Spec is a work in progress
- Direct Spec Comments to
  – Steve Monlux, stevemonlux@gmail.com
  406-544-1919