MEMORANDUM

February 3, 2015

To: ACHD Commissioners and Director

From: Bruce G. Mills, PE, Deputy Director, Engineering Division

Subject: Staff Report – Superpave Asphalt Pavement and BCA Concerns

Executive Summary
This staff report is in response to a January 15, 2015 letter from the Building Contractors Association of Southwestern Idaho (BCA). It addresses the reasons ACHD is considering adopting Superpave as the new standard method for asphalt pavement mix design for all ACHD roads. It also addresses concerns regarding the costs associated with Superpave.

Issue
ACHD staff is currently working with stakeholders to update our Development Policy, and is proposing to require that all new asphalt pavement roads constructed in Ada County utilize the Superpave mix design method (replacing the Hveem method). BCA feels that this will potentially cost more money and should not be implemented.

History
The Superpave (SUperior PERforming Asphalt PAVEments) system was developed and introduced in the United States in 1993. One by one, individual states adopted this new asphalt mix design method as their new standard, as it offers longer life and superior durability over previous methods. Idaho Transportation Department was the 48th state to utilize Superpave, and it is now the only method used to perform asphalt paving on all ITD roads. It has become the industry standard method for asphalt mix design on public works projects in the United States. ACHD adopted Superpave as our standard for all capital projects in 2012, following ITD’s lead, and as we update our Development Policy, we are now considering requiring Superpave for all new roads constructed in Ada County, including those built by the development community.

What is Superpave?
Superpave is a comprehensive system for the design of paving mixes that are tailored to the unique performance requirements dictated by the traffic, environment (climate), and structural section at a pavement site. It enhances pavement performance through the selection and combination of the most suitable asphalt binder and aggregate. The Superpave system includes a performance-based asphalt binder specification, a mix design analysis system, new testing procedures, and new equipment.

Superpave was devised to replace the diverse material specifications and mixture design methods used by all states with a single system that can provide results tailored to the distinct environmental and traffic conditions found at any given location in the United States.
Superpave was developed to address and minimize permanent deformation, fatigue cracking, low temperature cracking, and it considers how the effects of aging and moisture damage contribute to the development of these three distresses.

Local Asphalt Plants
All of the local asphalt producing plants in the Treasure Valley are producing Superpave hot mix asphalt, except for one. C & A Paving, Central Paving, Idaho Sand & Gravel, Knife River and Nampa Paving all make Superpave asphalt. C. Wright Construction has a smaller plant that produces conventional (older Hveem method) hot mix asphalt for some of the subdivision work in Ada County. They do not typically bid our capital projects, and currently do not have the specific capability needed to produce Superpave asphalt. A majority of private paving of parking lots and driveways still use the conventional hot mix asphalt.

Staff has been working with C. Wright Construction, and will determine if their one-bin conventional mix can meet the test requirements for Superpave, once their plant reopens after winter. However, it would appear unfair to their competitors who have invested in the Superpave technology to give C Wright Construction a “pass” in letting them use conventional mix if we adopt Superpave for all others. It could actually open up other opportunities for C Wright Construction if they upgraded their facilities.

Cost Comparison
Superpave is just a method to design and produce asphalt pavement. The pavement materials are still made of liquid asphalt and aggregates, the same as conventional hot mix asphalt. Superpave requires more aggressive fracturing and blending of aggregates than a conventional mix, with more effort to design the optimum mix and to test the asphalt mix that is produced. Some typical price comparisons are:

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<thead>
<tr>
<th>Item</th>
<th>Conventional Mix</th>
<th>Superpave Mix</th>
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<tbody>
<tr>
<td>Mix Design*</td>
<td>$3700 each</td>
<td>$7000 each</td>
</tr>
<tr>
<td>Mix Testing**</td>
<td>$165 per each 750 tons</td>
<td>$400 per each 750 tons</td>
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<tr>
<td>Asphalt Pavement***</td>
<td>varies, average $60/ton</td>
<td>varies, average $60/ton</td>
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* - one mix design can be reused on numerous paving jobs, sometimes over a few years
** - most development phases are less than 750 tons
*** - price varies per amount (volume discount) – currently about $60/ton on capital projects, maybe $80/ton for small quantity, but the material costs to manufacture and place are the same for Conventional and Superpave.

Advantages of Superpave
While there is a bit of additional up-front mix design and testing costs, Superpave is a superior asphalt method that results in a longer lasting and more durable pavement, more resistant to rutting and cracking than conventional asphalt. This is mostly a result of more careful design that measures more parameters of the asphalt material mix, based on traffic and environment, and matches a specific Performance Graded asphalt binder to conditions.

While Superpave may cost a bit more, the advantage of gaining perhaps 3-6 years more of longevity for the life of the asphalt more than pays for itself. The bottom line is that this saves the taxpayers of Ada County, and reduces the frequency of asphalt pavement maintenance.

Recommendation
Staff will work with C. Wright Construction to see if they can meet the Superpave requirements. Regardless, staff recommends moving forward with requiring Superpave asphalt on all of our public roads, including arterials, collectors and locals. It is our intention to include these specifications in our revised development policy that will be brought forward later in 2015 for Commission consideration and adoption.