



Shingles in Paving Demonstration: Project Phases

Updated: April 20, 2009

Phase 1: Conduct stakeholder education and outreach

Objective: The purpose of this phase was both to educate potential project stakeholders on the use of recycled asphalt shingles (RAS) in hot mix asphalt (HMA) and to determine their level of interest in participating in a pilot demonstration project for this material.

Progress:

Initial Contacts and Stakeholder Meeting - LinkUp contacted public agencies to determine their interest in working on an HMA trial in Washington State. These agencies include Washington State Department of Transportation (WSDOT), King County Department of Transportation (KCDOT), Seattle Department of Transportation (SDOT), and Seattle Public Utilities (SPU). In August 2007, LinkUp held a meeting with interested public agency and private business stakeholders to introduce the use of recycled asphalt shingles in HMA and to solicit input about conducting an HMA paving demonstration. Read the notes from the [stakeholder meeting \(PDF, 48 K\)](#).

Hot Mix Asphalt Producer Interview Summary - LinkUp interviewed some local hot mix asphalt producers regarding their awareness of and experience with incorporating tear-off asphalt shingles into HMA. Read the [HMA Producer Interview summary \(PDF, 43 K\)](#) of those interviews.

Research Summary Memo - To provide the stakeholder group with information about other shingle recycling paving projects, a memo summarizing research on the use of [asphalt shingles in hot-mix asphalt \(PDF, 121 K\)](#) was completed in October 2007 and was sent to the stakeholder group.

Shingle Recycling Forum - Some members of the LinkUp team and the project [advisory group \(PDF, 96 K\)](#) attended the 3rd Shingle Recycling Forum in November 2007. Read the advisory group members' [key takeaways \(PDF, 46 K\)](#) from the Forum.

Phase 2: Secure public agency and private industry partnerships

Objective: The purpose of this phase was, initially, to establish a group of project stakeholders including representatives of public agencies, asphalt shingle recyclers, hot mix asphalt producers, roofing contractors, and other interested organizations. Following the creation of the stakeholder group, work on this phase has included providing project updates and other assistance as needed, and soliciting participation from members of this group.

Progress:

Advisory Group - An [advisory group](#) ([PDF](#), 96 K) of industry and agency representatives has been formed to provide input on project design and key project decisions.

LinkUp has hosted and will continue to host advisory group meetings during the course of the project. LinkUp will post meeting notes on the [Shingles in Paving Demonstration Web site](#) after each meeting.

Sponsorship, Funding and Services Support - The Shingles in Paving Demonstration Project is fortunate to have a project sponsor in KCDOT, which is incorporating the project into its 2009 paving program, collaborating on project design, providing a roadway for the demonstration, and providing testing and monitoring for the project. The project has received generous support from the Washington Department of Transportation, which has conducted preliminary testing on RAS samples, provided input on key elements of the project, and is developing the HMA specification. Seattle Public Utilities has also provided significant funding to facilitate the work of the advisory group and support the development of the HMA specification.

Phase 3: Identify and select paving project

Objective: The purpose of this phase was to work with the sponsor agency in identifying eligible paving projects and selecting one project for the demonstration.

Progress: In mid-2007, the KCDOT Roads Services Division agreed to be the project sponsor and provide a roadway for the paving trial. LinkUp worked with the KCDOT to:

1. select a short list of King County road candidates slated for overlay paving in '09 that provide the necessary 2 miles length for the demonstration;
2. develop a weighted selection criteria that was used to evaluate the road candidates;
3. use existing data and, if needed, test road core samples as part of the evaluation; and
4. select the road that scores the highest using the selection criteria (as listed on the right).

KCDOT narrowed the list of potential projects down to five roads, mostly in South King County, using the above criteria. Based on their analysis, SE 416th Street in unincorporated King County near Enumclaw, WA was selected for the demonstration. A section of SE 416th Street will be paved as part of the South King County Overlay Program. The condition of the roadway, including any repairs done prior to paving, will be documented as part of the trial.

Phase 4: Develop specifications for use of tear-off shingles in HMA

Objective: The purpose of this phase is to develop specifications for use of tear-off asphalt shingles in HMA. A recycled asphalt shingle (RAS) specification will establish standards for the shingles processor, and the HMA specification will detail the requirements for the selected HMA producer.

Progress:

RAS Specification Development - LinkUp has been working to develop a specification for recycled asphalt shingles (RAS) for use by the shingles processor. The purpose of the specification is to ensure the selected paving contractor receives or generates a clean supply of RAS – substantially free of extraneous waste materials, and entirely free of whole, intact nails and asbestos-containing material – that meets the quality and performance standards needed for incorporation into HMA. The team has worked closely with WSDOT, KCDOT, project advisory group members, and local health and safety regulatory agencies to develop the [RAS specification](#) (PDF, 2MB).

HMA Specification Development – Two of the key questions to consider for the HMA specification involved the amount of RAS to incorporate and whether or not to use recycled asphalt pavement (RAP). Some advisory group members were concerned that adding RAP as a second variable might increase the risk of pavement failure, while proponents of including RAP suggested that since RAP is typically included in paving, the project should test a real world scenario. Using samples received in response to the RFI, WSDOT tested air voids and asphalt content of RAP and RAS. The results indicated that adding both RAS and RAP had the beneficial effect of reducing air voids in HMA, and WSDOT indicated that it would be preferable to adding only RAS. Based on the results of the tests and calculations completed by KCDOT staff, the advisory group supported using 3% RAS and 15% RAP in the HMA mix. The group believes this approach provides an ideal amount of oil replacement and optimizes the air void impacts. A written HMA specification is in development.

RAS Supply and Purchasing - In July 2007, King County Solid Waste Division issued a Request for Information (RFI) to help the project team identify potential recycled asphalt shingles (RAS) suppliers in the region, learn more about them, and request

RAS product samples. Three companies responded to the RFI.

To select a shingle processor to supply RAS for the project, KCDOT, with assistance from LinkUp, issued a [Request for Quotations \(RFQ\)](#), which included the [RAS Specification](#) as an attachment. This RFQ was issued in February '09 to processors in the central Puget Sound area. Having received no response to the RFQ, KCDOT has opted to contract the demonstration as a stand-alone paving project for which the selected paving contractor will be responsible for securing the supply of RAS product for the demonstration.

Phase 5: Contract for paving services and material supply

Objective: The purpose of this phase is to establish a contract for paving services and the supply of all of the constituent HMA materials, including RAS and RAP, for the demonstration.

Progress: KCDOT is developing an invitation to bid (ITB).

Paving Services and Material Supply – KCDOT will issue an Invitation to Bid (ITB) by early May 2009 for paving services, including material supply, for the SE 416th Street Recycled Asphalt Shingles (RAS) Paving Demonstration. The selected paving contractor and the contractor's RAS supplier (if subcontracted) will work with KCDOT, KCSWD and WSDOT to ensure that project specifications and requirements are met. Paving is expected to take place in August 2009.

Phase 6: Monitor production of RAS, monitor production and installation of HMA, and coordinate sampling and testing

Objective: The purpose of this phase is to monitor the production of RAS material, and monitor the production and installation of the asphalt mix to ensure compliance with the study design. LinkUp will coordinate the collection of samples of RAS, loose HMA, and HMA pavement cores from the testing areas (both experimental and control areas).

Progress: Watch the [Shingle in Paving Demonstration Web site](#) for progress on this phase.

Phase 7: Produce report, and share and publish results

Objective: After paving in the summer of 2009 and initial testing and monitoring, this phase will involve preparing a summary report that includes methodology, testing results and conclusions, and conducting a workshop to present the results of the project to the advisory group, key stakeholders, and other interested staff from transportation departments in the Puget Sound area. Finally, trial results will be distributed for

publishing to relevant trade journals.

Progress: Watch the [Shingles in Paving Demonstration Web site](#) for progress on this phase.

Contact:

Kris Beatty

LinkUp Program Manager

King County Solid Waste Division

201 S. Jackson Street., Suit 701

Seattle, WA 98104

206-296-3740

kris.beatty@kingcounty.gov [linkto send email]