



Oregon Department of Transportation
PAVEMENT SERVICES UNIT
CONSTRUCTION SECTION
800 Airport Rd, Salem, Oregon 97301-4798
(503) 986-3000, FAX 986-3096

INTEROFFICE MEMO

DATE: May 3, 2005

TO: QIC Task Group Members

FROM: Liz Hunt
ODOT Pavement Services Engineer

SUBJECT: Quality Improvement Committee Rodeo
December 10, 2004, 1:00 PM to 3:30 PM
APAO Salem

In 1993, ODOT joined with the Asphalt Pavement Association of Oregon (APAO) in an effort to identify, develop and implement key elements and programs needed to assure continuous quality improvement in asphalt pavements. The partnership, labeled the Quality Improvement Committee (QIC) met regularly and affected significant changes in asphalt concrete testing, placement and design through 1999. The QIC was reconvened in July 2004 to continue the goals established earlier.

Since July, the QIC has met three times and taken a field trip to discuss pavement performance issues and to inspect existing projects with a variety of pavement problems including segregation, poor joint construction, raveling and flushing. The field trip provided committee members the opportunity to see common pavement problems and discuss causes, effects and possible solutions. Unfortunately, not all solutions are easy or apparent.

To better identify solutions for addressing the problems associated with asphalt concrete design and construction, the QIC established five task groups listed below. Each group includes a QIC member from ODOT and a member from industry. The task groups are responsible for identifying the issue/problem within their area of expertise and developing solutions.

Task Group	Members
1) Structural Design/Materials Selection	Liz Hunt, ODOT (QIC) Cole Mullis, ODOT Jim Huddleston, APAO (QIC) Jim Lundy, OSU
2) Mix Design	Larry Ilg, ODOT (QIC) Bruce Patterson, ODOT Dick Dominick, ODOT Gary Thompson, APAO Mike Crennin, LTM Roseburg Division (QIC)
3) Compaction & Mix Production	Luci Moore, ODOT (QIC) Ron Depue, Roy L. Houck Construction (QIC) Greg Wong, Morse Bros. Inc. John Eels, JC Compton
4) Mat Issues	Mike Remily, ODOT (QIC) Pat Cimmiyotti, ODOT Dave Vogt, Hooker Creek (QIC) Dave Elsner, Eagle Elsner Ron Bochsler, North Santiam Paving
5) Administrative Barriers to Quality	Jeff Gower, ODOT (QIC) Chris Doan, LTM Roseburg Division (QIC) Scott McCanna, ODOT Tracy Harris, ODOT Dave Alexander, Lake Side Industries

The task groups were established based on a paper prepared by Mike Remily that describes the "Ultimate" HMAC System (see attached). Mike's paper is a good resource in identifying what the key components are for each task group and also to view pavements as a system. The elements are all linked together as changes in the structural design (say from a level 3 to level 2 pavement) can impact the mix design which can impact compaction, etc.

On **December 10th, at 1:00 PM at the APAO office in Salem**, we will be meeting with all members of the task groups to kick off our efforts in identifying and solving pavement problems. The agenda includes:

1:00-1:30 PM	Introductions, Background of the QIC
1:30-3:30 PM	Break into Task Groups to Brainstorm Issues
3:30-4:00 PM	Reconvene as Large Group to Discuss Outcomes

Quality improvement will come from improved performance, increased value, and improved relationships between all affected parties. The QIC group recognizes the leadership it plays throughout the state including private and local agency work and intends to provide outreach in an effort to improve quality of asphalt pavement at all levels in Oregon.

We look forward to your participation.

ELEMENTS OF THE "ULTIMATE" HMAC SYSTEM

May 3, 2005

Structural Design:

Employ design procedures that optimize structural designs to take advantage of:

- Engineering properties of HMAC and unbound base layers.
- "Rich" bottom and base layers to assure perpetual structure managed from the top down and minimize penetration of water into the asphalt from below.
- Stiff binders to minimize thickness (quantities) and maximize rut resistance while achieving in-place densities that assure impervious layers and maximize fatigue.
- Lift thicknesses to optimize the ability to achieve desired in-place density and permeability.
- Recognize impacts of traffic make-up and volumes.
- Give contractors and field staff the quantities and lifts necessary to provide a smooth ride.

Materials Selection/Specification:

- Select aggregate properties that assure compactable, durable, and stable mix designs.
- Select binders to match structural design philosophy and traffic levels, speeds, etc.
- Select wearing course (and sometimes top base course as well) binders that minimize risk of rutting at the desired in-place density levels.
- Apply lime, latex, and other anti-stripping materials to mitigate stripping in high risk facilities.
- Understand and select materials that minimize segregation.

Mix Design:

- Adjust mix design criteria to match structural design philosophy and binder selection
- Apply state of the practice criteria for mix volumetrics, stripping, and other mix durability/performance related items (ie dust to effective asphalt, film thickness, etc)
- Apply a performance test to assure a stable, rut resistant aggregate structure and mix design.
- Recognize amount of secondary compaction from anticipated traffic make-up, speeds, and volumes

Compaction:

- Apply compactive effort and processes necessary to achieve maximum density for a given set of conditions.
- Develop specifications that require density levels that achieve impervious layers and match structural design philosophy.
- Obtain uniform compaction throughout the mat (alleviate segregation, joint problems).

Production Mix Properties:

- Measure and pay on properties that relate to performance, that assure that mix design criteria are met, and that contractors understand how to control and adjust.
- Adjust mix designs to allow specified density levels to be achieved (and thus structural design philosophies) with adequate compactive effort and processes without compromising or unbalancing performance characteristic of the mix.

Workmanship:

- Apply processes that result in uniform mixtures with no thermal or mechanical segregation.
- Apply processes that result in tight, dense longitudinal joints.
- Apply processes that result in quality work around utilities, curbs, islands, approaches, etc.

Smoothness:

- Apply processes that encourage contractors to take actions to provide smooth ride for all applications.
- Apply processes to assure smooth transitions into and out of bridges.

Constructability:

- Develop traffic control guidelines (work windows) that are appropriate for conditions.