Bonded Wearing Course

Scott Dmytrow
The Telfer Companies
What is Bonded Wearing Course
Maintenance Technique that combines the best of two technologies

• Part Chip Seal
  - Application of .13-.25 gal/SY of a polymer modified emulsion for adhesion

• Part HMA Overlay
  - Use of gap or open graded, polymer or rubberized HMA to finish the process
• From the chip seal
  - Spray application that seals the existing roadway
  - Bonding of the new surface to the old surface
  - Quick process - up to 50,000 SY per day

• From the HMA overlay
  - Improved ride quality
  - Quick return to traffic
  - No sweeping or fog seal needed
Application

Joint Matching Device

HMA

Emulsion
The emulsion membrane “wicks up” around the HMA aggregates

The emulsion cures, bonding the mix & pavement

5/8” minimum
Depth of Mix

3/8”
Nominal
Ag Size

3/16”
Emulsion membrane depth

9-12 µm coating on aggregates

Existing Pavement
BWC Materials

- Polymer Modified Asphalt Emulsion Tack Coat
- Polymer Modified Asphalt Binder
- Gap or Open Graded Aggregate Gradation
BWC Construction

• Tack Coat Application Rate:
  - 0.14 - 0.25 gal/yd$^2$
• Lift Thickness:
  - 0.06’ - 0.1’
• Compaction:
  - Method - 2 coverages with a minimum of two rollers in static mode
Integrated Spray Paver
Machine is designed to reduce thermal and mechanical segregation
Construction Speed and Quick Return to Traffic
Turning on the New BWC Surface
Where has it been used and for how long?

- Since 1998 in California
  - First project - Lark Ellen Blvd, Los Angeles County
- Since 2002 for Caltrans
  - Hwy 50 over Echo Summit, Lake Tahoe
Does it work?

10 Years as of May, after picture taken last week
MTC Demo
Project- Before
Madison from
7th to 8th Streets

Bonded Wearing Course – Applied 2003

City of Oakland
Some Recent Projects

- I-8 (Right outside the hotel)
  - 118 Near Ventura From Hwy 126 To Montero St. 07-Ven-118-0.5/15.7 (07-3Y8404)
  - 168 Near Prather 06-Fre-168-T30.2/40.0 (06-0L7904)
  - 101 Near Ventura 07-Ven-101-8.9/11.5 (07-3Y4504)
  - 116 Near Jenner 04-Son-116-0.0/8.0 (04-1E8904)
  - 80 Near Colfax 03-Pla-80-24.5/33.3 (03-4M0404)
  - 128 Near Calistoga 04-Nap-128-R7.4/19.1 (04-2E1004)
  - 1 in Marin Near Stinson Beach 04-Mrn-1-15.0/17.0 (04-4S5404)
  - 80 Near Truckee 03-Nev-80-13.5/21.2 (03-3M8304)
  - 29 in Lake County 01-Lak-29, 281-19.0/20.3, 14.0/17.0
  - 50 in El Dorado County 03-Pla-50-39.7/57.6
  - City of Huntington
  - Salt Lake Airport
So, does it work?

- YES.
- Thank you.
BWC: Superior Thin Asphalt Overlay

- Gap-graded or Open-graded thin HMA applied over a thick polymer modified asphalt emulsion tack coat in a single pass.
Gap-Graded Mixes

[Bar chart showing distributions of different sizes and grades.]