



Mountains, Cities, Plateaus, and Plains

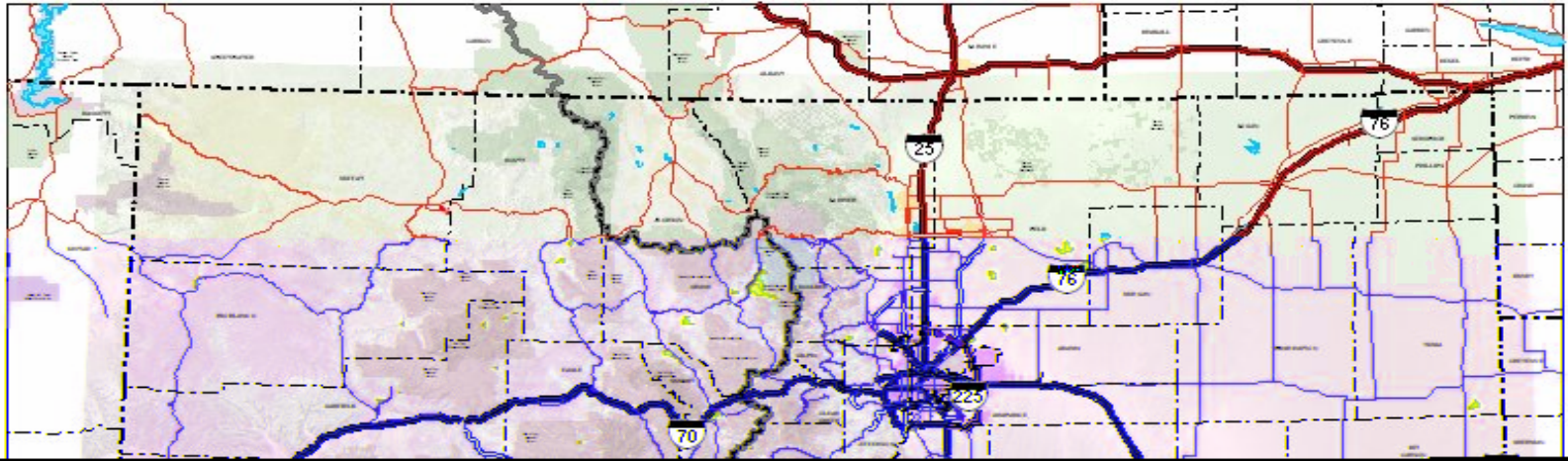


Challenges of Pavement Preservation in Colorado

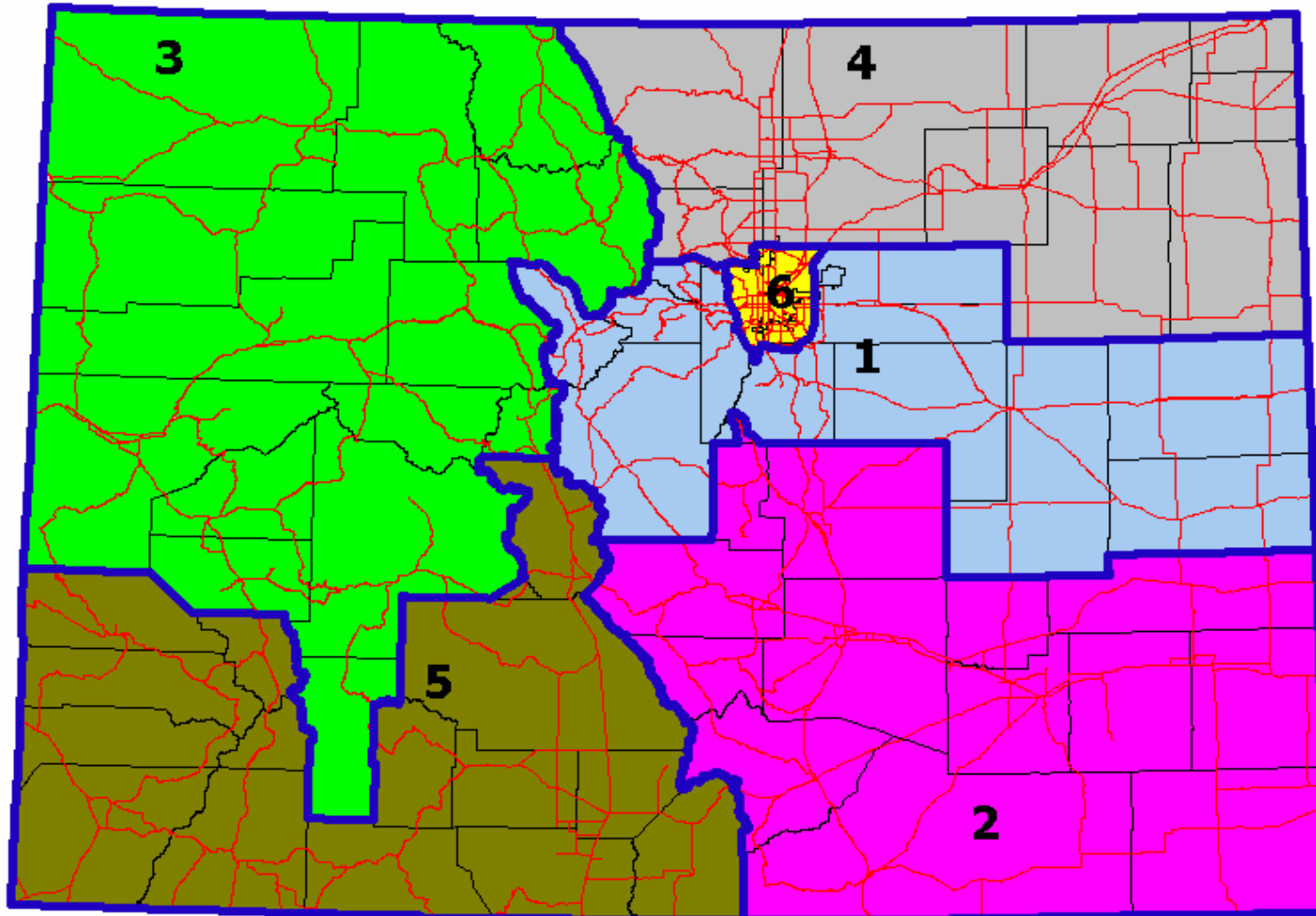
RMPPP

April 29, 2008





CDOT Regions



Cold, Hard Facts



- Elevation Range: 3315' - 14431'
- Over 50 Mountain Passes, Divides, Summits, and High Elevation Roads
- Population: ~4,800,000 (FR: ~4M)
- Temperature Extremes: -61°F to 118°F
- Precipitation: <10" to >55"
- Over 23,000 System Lane-Miles
- Over 78,000,000 Daily System VMT



Why do Pavements Fail ?

■ Load

- ☐ Heavy Trucks
- ☐ Bus Traffic
- ☐ Chains
- ☐ Plows



■ Water

- ☐ Infiltration
- ☐ Freeze-Thaw

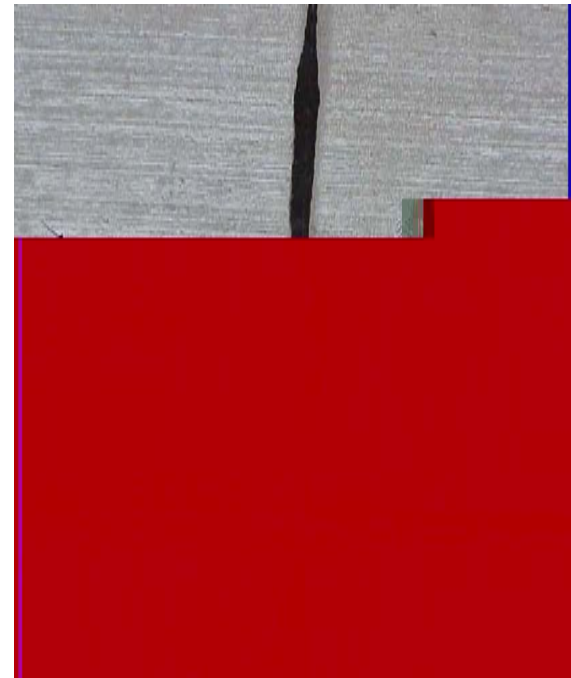


■ Materials

■ Construction

Pavement Preservation

- Minor Rehabs,
Preventive and
Corrective Maintenance
(FHWA '99)
- Recent Emphasis on
Preventive Maintenance:
 - Applying the Right Treatment
on the Right Pavement at the
Right Time
 - Keeping Good and Fair Roads in
Good and Fair Condition (RSL
Values >6 Years)
 - Public Relations Issues



Good PM Candi date

108470 131B D2 L1 R3 05/24/2007 31.850 57



AI so Good



Another One



100370 0703... FBI L2 6 02/21/2007 282.047 46

How About This One?



Umm, Probabl y Not...



CDOT Pavement Preventive Maintenance Initiative

- CDOT Policy Memo 18
- Originally Adopted 2003 for initial implementation in 2004
- Calls for each Region to dedicate at least 5% of Surface Treatment Program budget on Pavement Preventive Maintenance
- Indicates Upper Management's support of the Preventive Maintenance Philosophy



Preservation Strategies

- Tried and True Methods
 - Crack Sealing
 - Chip Seals
- Additional Methods
 - Thin Overlays
 - Concrete Pavement Restoration
 - Crack/Joint Sealing
 - Slab Replacement
 - Diamond Grinding



Chip Seals

■ Popular Preventive Maintenance Treatment

- ☐ Cost-Effective
- ☐ Adds 2-5 Years of Life
- ☐ Typically 3/8" Chip
- ☐ Requires clean, washed aggregate so the emulsion can coat the chip properly
- ☐ Existing ruts < 1/4"

■ Double Penetration Chip Seal

- ☐ 2 layers, 3/8" above coarse aggregate



I-70 Chip Seal, MP 53



Thin Overlays

- Typically $\frac{3}{4}$ " to $1\frac{1}{2}$ " Thick
- HMA or SMA
 - Thin HMA on SH-121B
 - Thin SMA on US-6, C-470
- Excellent Substitute for Chip Seals, although not as cost-effective
- Engineering Projects or Designed Maintenance (not a blade patch)
- Can Mill, but if no milling can't be used with curb & gutter



C-470, 1" SMA (2004)

105390 470A D1 L2 R6

05/20/2007

16.064

45



Concrete Pavement Restoration (CPR)

- Focus of R6 PM Program
- Joint Sealing
 - Cracks ½" to 1½" Wide
 - Sealant includes Suspended Aggregate
- Cross Stitching (> 1½" Wide)
- Spall Repair
- Patching
- Grinding
- Slab Replacement
 - Nominally 0.5% to 1% of panels



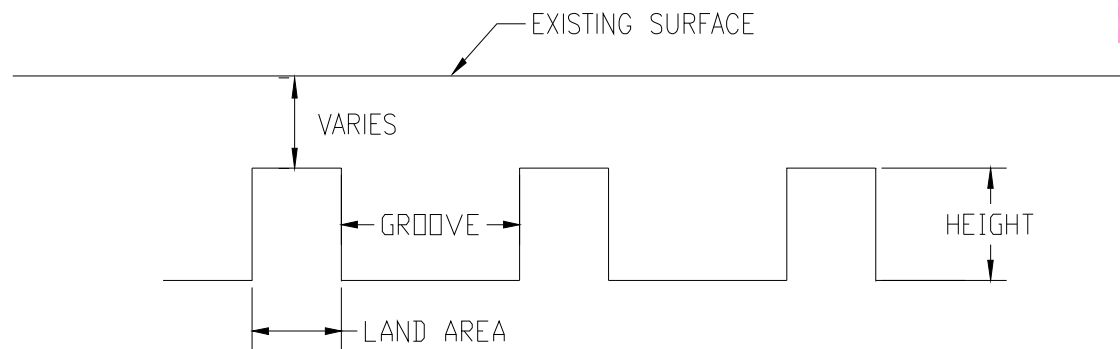
Diamond Grinding

- I-70 Project in Region 3 (2005)
 - Concrete Pavement Originally Constructed in 1970's
 - 10.5 Miles
 - Both Directions of I-70 (2 full lanes + feathering on the shoulders)
 - Included Slab Replacement prior to grinding
 - Project Bid Tab \$1.8M (Grinding pay item bid at \$1.08M; \$3.27/sq. yd.)



Diamond Grinding

DIMENSIONS OF GRINDING TEXTURE



GROOVES	$\frac{3}{32} - \frac{1}{8}$ INCH
LAND AREA	$\frac{1}{16} - \frac{1}{8}$ INCH
HEIGHT	$\frac{1}{16}$ INCH

(NOT TO SCALE)



Grinder Ready For Action



I -70 Before Grinding



I -70 After Grinding



Other Techniques

- Nova Chip
- Microsurfacing
- Sand Seal
- Slurry Seal
- Armor Cote
- Cape Seal
- Brazier Mix
- Ultra-Thin White Topping



Summary

- CDOT Faces Unique and Diverse Challenges
- Proven Methods
- Working on New and Innovative Techniques
- Public Relations



THANK YOU!!

