

# Session 12: Strategy Selection



# Treatment Selection Process

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1. Conduct pavement evaluation
2. Determine causes of distresses
3. Identify treatments that address distresses
4. Identify constraints, key selection factors
5. Develop feasible treatment strategies
6. Assess cost effectiveness of treatment strategies
7. Select preferred strategy

# Step 1. Pavement Evaluation

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- Distress survey
- Drainage survey
- Deflection testing
- Roughness testing
- Friction testing
- Field sampling and testing

# Pavement Condition Attributes and Data Sources

Attribute	Distress Survey	Drainage Survey	Deflection Testing	Roughness Testing	Friction Testing	Field Sampling
Structural Adequacy	✓	✓	✓			✓
Functional Adequacy	✓			✓	✓	
Drainage Adequacy	✓	✓	✓			✓
Materials Durability	✓	✓	✓			✓
Maintenance Applications	✓	✓				
Shoulders Adequacy	✓		✓			✓
Overall Variability	✓	✓	✓	✓		✓

# Step 2. Determine Causes of Distresses and Deficiencies

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- Determine root cause(s) for observed distresses and deficiencies
  - Structural problem?
  - Functional problem?
  - Materials problem?
  - Drainage problem?

# Step 3. Identify Treatments That Address Deficiencies

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- Preservation Treatments
  - Restore slab integrity
  - Restore functional performance
- Rehabilitation Treatments
  - Provide structural improvements/enhancements (e.g., overlays)
- Reconstruction
  - No remaining life

# Treatment–Distress Matrix

Distress	Concrete Pavement Preservation Treatment											
	Slab Stabilization	Slab Jacking	Partial-Depth Repair	Full-Depth Repair	Retrofitted Edge Drains	Dowel Bar Retrofit	Cross Stitching/Slot Stitching	Diamond Grinding	Diamond Grooving	Joint Resealing	Crack Sealing	Thin Concrete Overlay
Corner breaks			✓	✓							✓ <sup>a</sup>	
Linear cracking				✓			✓ <sup>b</sup>				✓ <sup>a</sup>	
Punchouts				✓								
D-cracking				✓ <sup>c</sup>								✓ <sup>c</sup>
Alkali-aggregate reaction				✓ <sup>c</sup>								✓ <sup>c</sup>
Map cracking, crazing, scaling			✓									✓
Joint seal damage										✓		
Joint spalling			✓	✓								✓
Blowup				✓								
Pumping	✓				✓	✓	✓					
Faulting						✓		✓				✓
Bumps, settlements, heaves		✓		✓				✓				✓
Polishing/Low Friction								✓	✓			✓

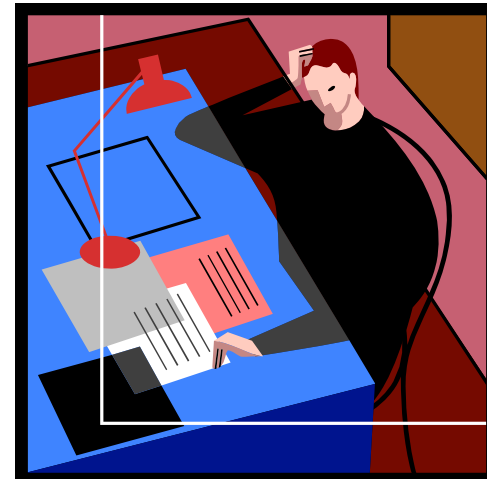
# Trigger/Limit Values for Pavement Preservation

Performance Indicator	Trigger Value	Limit Value
Trans. Cracking	1.5-2.5% of slabs cracked	5-15% of slabs cracked
Joint Spalling	1.5-2.5% of joints	15-20% of joints
Joint Faulting	0.08 in	0.50-0.70 in
Roughness (IRI)	65-110 in/mi	160-220 in/mi



# Step 4. Identify Constraints and Key Selection Factors

- Key factors that might influence selection process
- Examples:
  - Traffic levels
  - Lane closure options
  - Future maintenance requirements
  - Geometrics
  - Funding
  - Etc. (see p. 12.6-12.7)

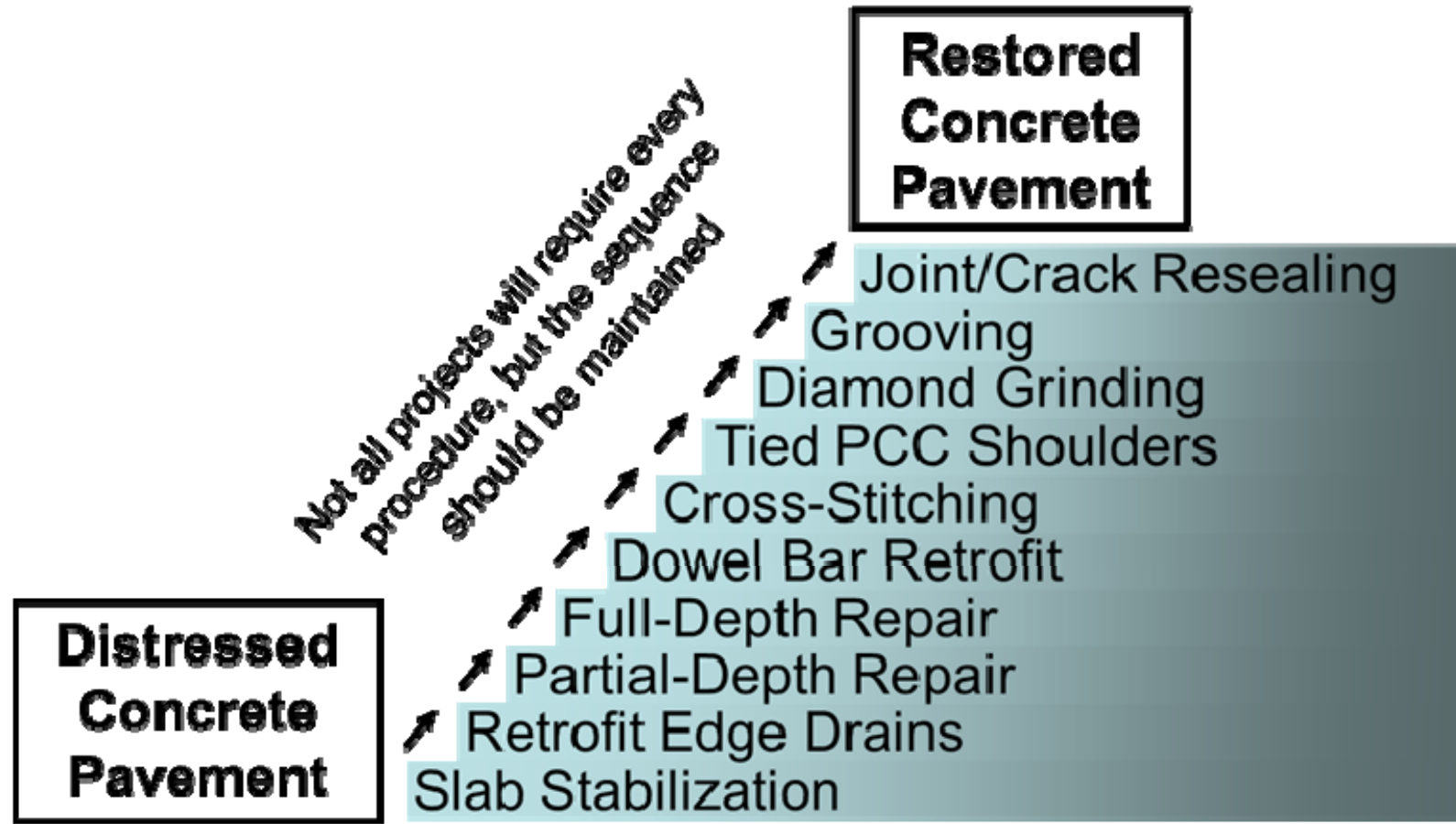


# Step 5. Develop Feasible Treatment Strategies

- Strategy: a treatment or combination of treatments needed to address all of the deficiencies on a project
- Combination of treatments often needed to address all deficiencies (and prevent future re-development)



# Treatment Sequencing for Concurrent Application



# Step 6. Assess Cost Effectiveness of Strategies

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- Establish analysis period for comparing treatment strategies
  - 25 to 40 years (typical)
- Quantify cost-effectiveness
  - Benefit-cost ratio method
  - Life-cycle cost analysis (LCCA)

# Step 7. Select Preferred Treatment Strategy

- Consider cost-effectiveness results
- Evaluate strategy in relation to key constraints and decision factors, e.g.,
  - Economics
  - Customer satisfaction
  - Construction/materials
  - Agency policy/preferences
- Use of decision matrix with weighting factors?



# Concrete Pavement Preservation

