DETERIORATION PATTERNS

HISTORIC CONCRETE BRIDGES
MAJOR DETERIORATION TYPES

- Concrete Spalling
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- Concrete Spalling
- Reinforcement Corrosion
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- Concrete Spalling
- Reinforcement Corrosion
- Chloride Penetration
MAJOR DETERIORATION TYPES

- Concrete Spalling
- Reinforcement Corrosion
- Chloride Penetration
- Freeze Thaw Deterioration
MAJOR DETERIORATION TYPES

- Concrete Spalling
- Reinforcement Corrosion
- Chloride Penetration
- Freeze Thaw Deterioration
- Abrasion / Erosion
WHERE TO LOOK

• Sources for Moisture
• Sources for Chlorides (Road Salt)
  Gutters
  Expansion Joints
  Clogged Scuppers
  Spray zone from traffic (above & below)
CLOSED SPANDREL ARCHES

- Hidden Deterioration
  Rear Face of Arch and Spandrel Walls
  Accumulation of Chlorides and Moisture

- Testing
  Concrete Cores through arch ring
  Test Pits in Arch Fill
OPEN SPANDREL ARCHES

- Global vs Local Deterioration
  Expansion Joints, Drainage Systems
  Arch Deterioration Difficult
  Floorbeam Stringer or Column Det. Easier

- Testing
  Hands on Sounding
  Chloride, Freeze-Thaw, Petrographic

GREENFIELD AVE BRIDGE
TEE BEAM BRIDGES

- Exposed Structural Components
  - Top of deck, gutterline, construction joints
  - Bottom of Stems or Slab, Exposed

- Testing
  - NBIS Inspection Results
  - Chloride Testing if Rehab Visually Viable