PCC Preservation Practices

2016 Municipal Streets Seminar
November 17, 2016

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&
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OUTLINE

• PROJECT PLANNING AND DEVELOPMENT
  – Nick Humpal

• PCC PATCHING – CONSTRUCTION
  – Ron Loecher
PAVEMENT HISTORY

• Pavement construction
  – US 20: mid 1980’s
  – US 63: late 1960’s
  – US 218: late 1980’s
  – IA 27/58: early 1990’s
• Little pavement preservation to date
• Joint deterioration
PAVEMENT PRESERVATION STRATEGY

• Organized approach for maintenance & repair
• Short term
• Long term
• Develop pavement testing needs
• Establish viable pavement preservation techniques
• Set priorities
PROJECT DEVELOPMENT

• Field reviews
  – National Concrete Pavement Tech Center
• Pavement cores
• Decision matrix
  – Priority, Risk, Cost
• Risks of delaying improvements
  – Continuous Maintenance Concerns
  – Reconstruct at higher costs
PROJECT TYPES

• Short term
  – Joint rout and seal (removal of backer rod key)
  – Full depth patching
  – Partial Depth Repair Patching
  – Diamond grinding

• Long term
  – Reconstruction
  – Overlays (HMA or PCC)
  – Cold-in-place w/overlay

Guide for PDR of Concrete Pavements
PARTIAL DEPTH REPAIR (PDR)

• Removal & replacement of deteriorated joints up to ½ pavement thickness
• Repair all joints within selected limits
• Plan for overdepth patches
  – Deterioration beyond PDR patch
• Mid-panel condition acceptable
• 7 to 10 year life expectancy
PDR PROJECTS CONSTRUCTED

• July 2014: $796,989
  – US 218 NB IA 58 to George Wyth State Park
  – 28,906 LF @ $17.50/LF

• August 2015: $591,160
  – US 218 SB IA 58 to George Wyth State Park
  – 26,652 LF @ $16.00/LF

• July 2016: $2,224,564
  – US 218 SB Greenhill Road to US 63
  – 112,511 LF @ $14.34/LF
PROJECT OVERVIEW

COMPLETED
PROGRAMMED
U.S. 218 – PCC Patching

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Ron Loecher, P.E.
New Hampton RCE
Letting Date: August 18, 2015  
Late State Date: July 25, 2016  
Working Days: 25  
Bid Price: $591,160.00  
Prime Contractor: Hawkeye Paving Corp.  
Bettendorf, IA  

Design Team: District 2 Mason City  

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<th>MILEAGE SUMMARY</th>
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<td>2091.00 to 2095.00</td>
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<td>Total Length of Project</td>
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DESIGN DATA URBAN  
2013 - AMT - 2015, V.P.O.  
20- - AMT - 2015, V.P.O.  
20- - DIV - 2015, P.A.  
TRUCKS - 0%  
Total Design EN As -
LOCATION – From George Wyth State Park to the IA 27/IA 57/IA58 Interchange, SB lanes only
PROJECT OBJECTIVES

• Complete work at night, AADT 29,800, 8.6% trucks
• Partial depth patch all longitudinal and transverse joints
• Stage construction to maintain traffic at all times
SIGNIFICANT CONTRACT ITEMS

• Partial depth PCC finish patches -- 2,665 SF, $21.50/SF
• Partial depth PCC joint and crack repair patches – 26,652 LF, $16.00/LF
• Over depth patches – 267 SF, $30.00/SF
DEVELOPMENTAL SPECIFICATIONS
FOR
PARTIAL DEPTH PCC FINISH PATCHES

Effective Date
October 21, 2014

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

This specification replaces Section 2530 of the Standard Specifications for Partial Depth Portland Cement Concrete Patches.

2530.01 DESCRIPTION.

A. This specification contains requirements for Partial Depth PCC Patches, Partial Depth PCC Joint and Crack Repair Patches, and Overdepth Patches.

B. Remove pavement in areas designated in the contract documents. This includes furnishing and placing patching material to provide a new traffic surface, and restoring adjacent shoulder as shown in the contract documents. This work is in areas where the size, shape, and depth of patch depends on extent of pavement deterioration and shall be determined during removal operation.

C. Patches may be identified and constructed as one of the following types:

1. Finish Patches.
   Finish patches are square or rectangular in shape. They will be less than 9 feet (2 m) in length when placed on a longitudinal or transverse joint or random crack. Patches will be identified by tabulation in the contract documents. The patch size and location for each lane will be shown. Patch size and locations may be adjusted by the Engineer to fit field conditions.

2. Joint and Crack Repair Patches.
   Joint and crack repairs are square or rectangular in shape. They will be placed at a longitudinal or transverse joint or random crack. They will be a minimum of 6 feet (2 m) in length, and will be identified by tabulation in the contract documents. Size and location will be shown. Repair size and location may be adjusted to fit field conditions.

3. Overdepth Patches
   Overdepth Patches are irregular in shape. They are placed to the full depth of existing pavement in areas of unsound concrete as designated by the Engineer. Repair size and location will be determined at time of construction.

2530.02 MATERIALS.
Meet the requirements for the type of material specified.
PATCHING DETAILS

• Three types of patches for joint and crack repairs
• PCC patching material
  – Class A
  – Class B
  – Class C
• Construction
• Sealing joints
• Patch failures