Introduction to Cold Central Plant Recycling

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Presentation Outline

Introduction to CCPR

01

CCPR Overview

What are the steps in performing the CCPR process and how can it be used?

02

Case Studies

Example CCPR projects have been completed in the Midwest and in Illinois

03

Why CCPR

Why does CCPR makes sense for agencies and contractors

04

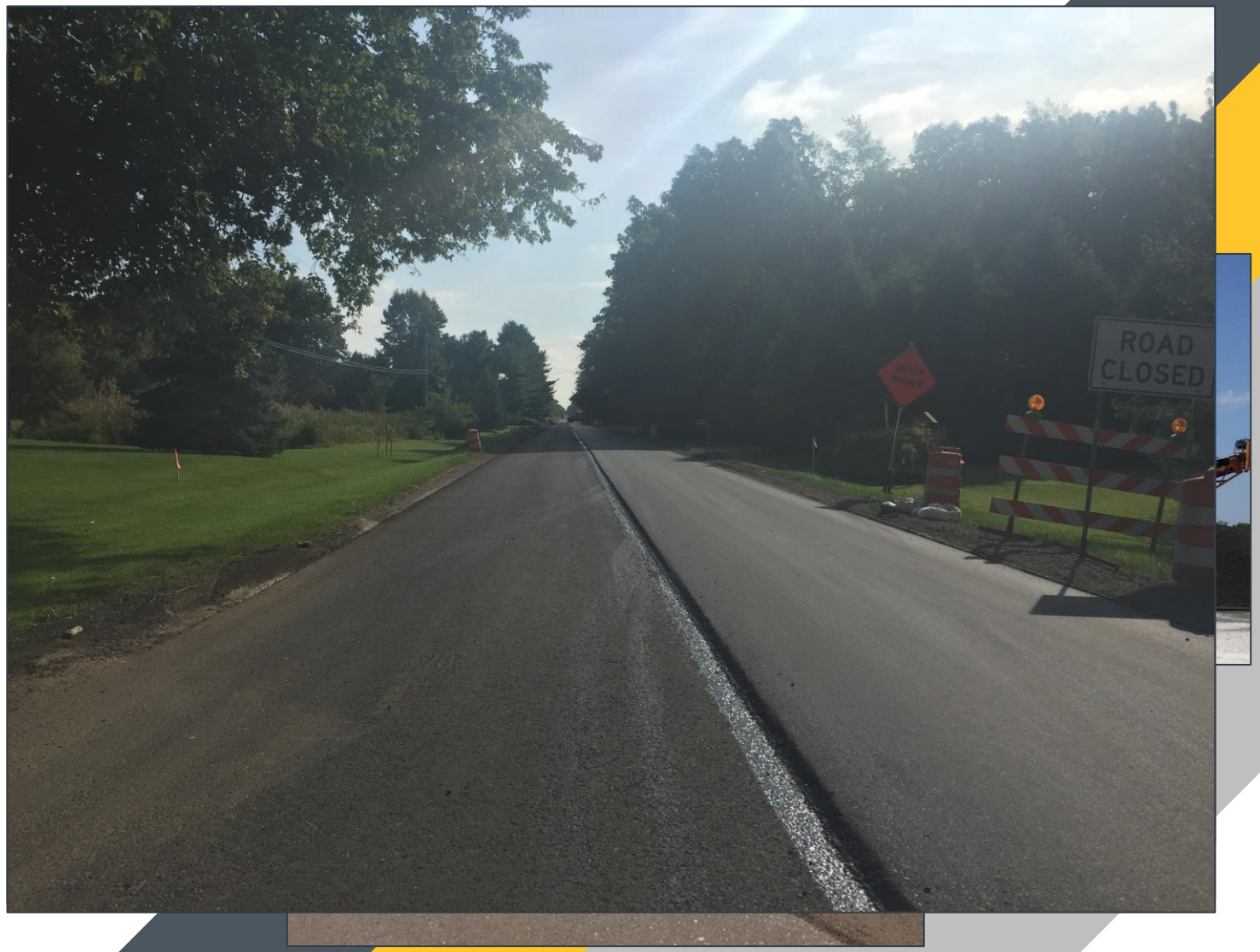
Q &A

Open Forum for Questions and Feedback

Cold Central Plant Overview

RAP = New Structural Pavement Layer

- Stockpile and Keep Clean
- Crush RAP to Gradation
- Mix with Engineered Emulsion
- Additive if Needed
- Transport to Laydown Area
- Pave as a Recycled Mix
- Compact to Specified Density
- Ready for HMA Surface



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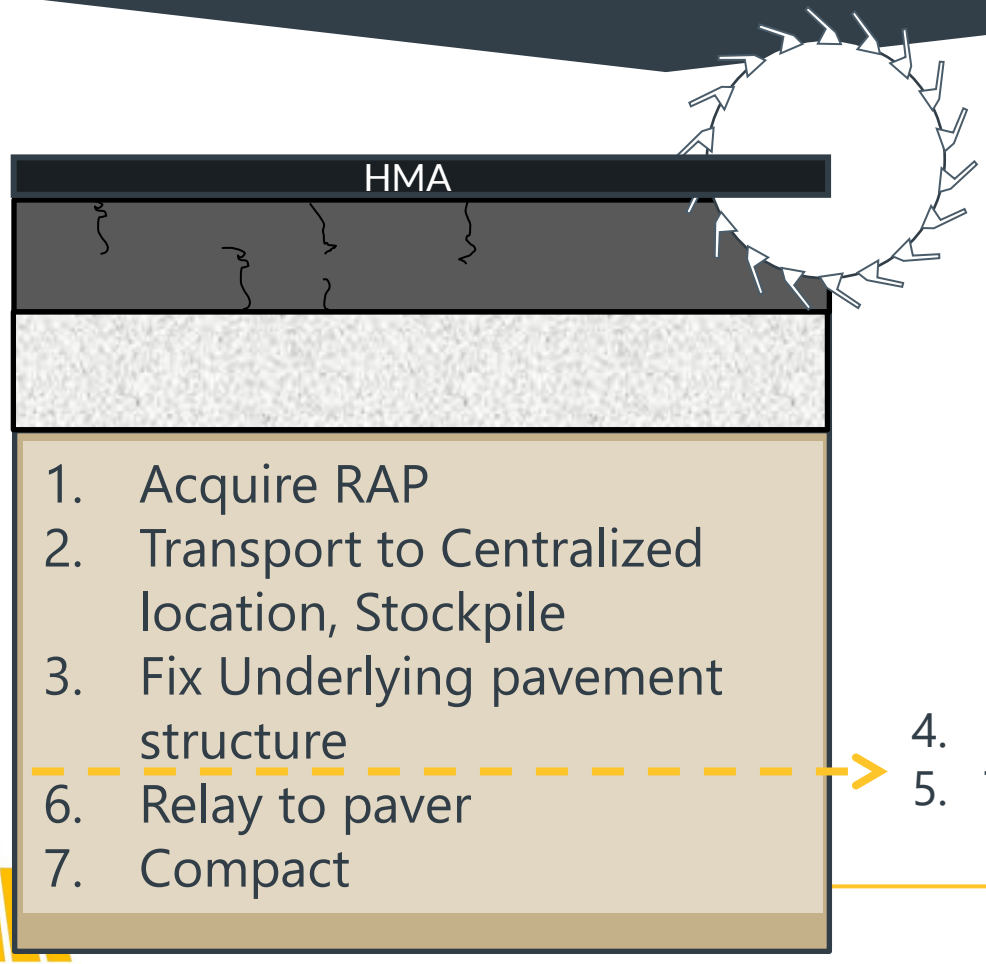
CCPR Process

Visual Tool



1. Acquire RAP
2. Transport to Centralized location, Stockpile
3. Fix Underlying pavement structure

6. Relay to paver
7. Compact

Stockpile at "Central Plant"

4. Mix with stabilizing agent
5. Transport to laydown area

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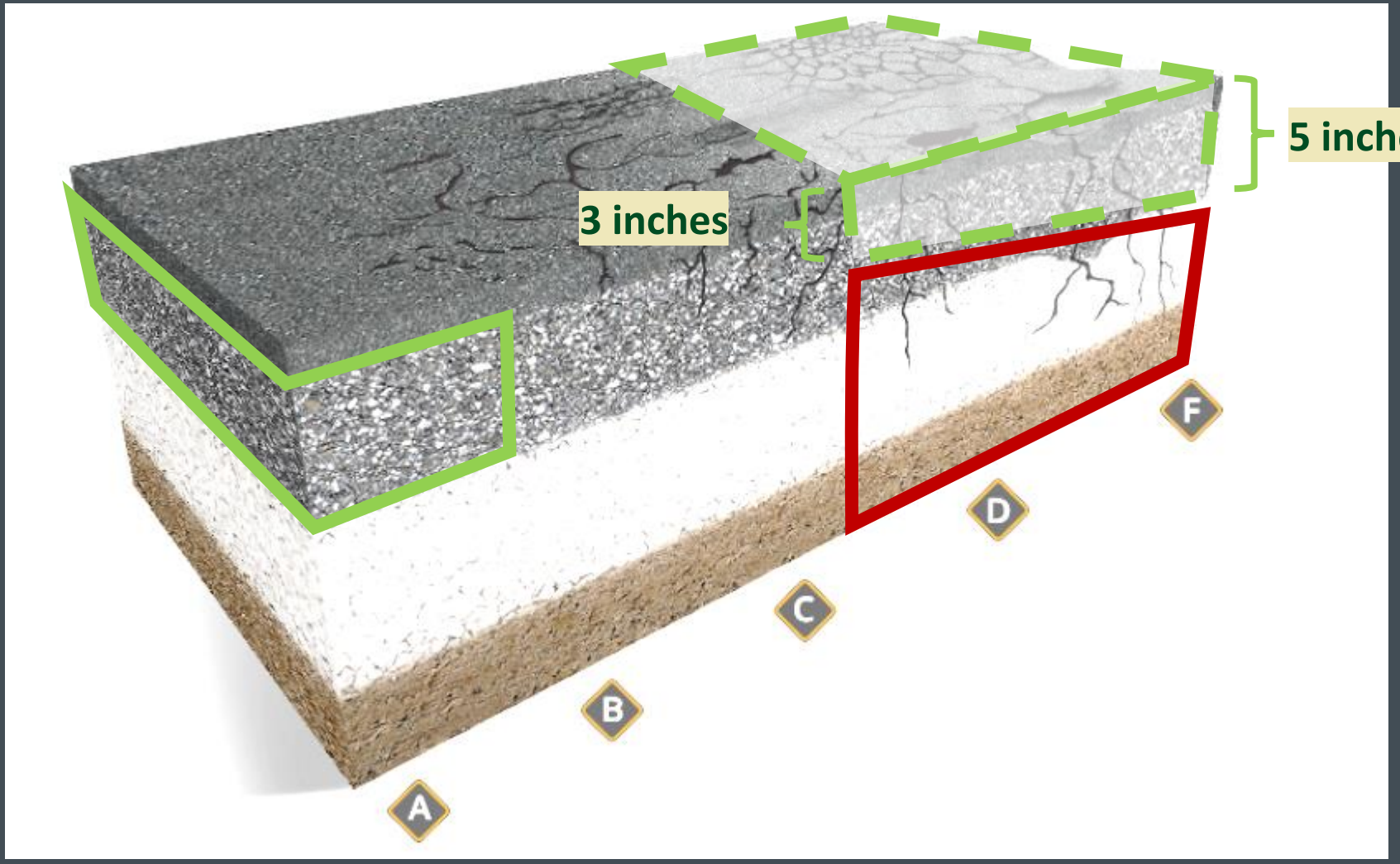
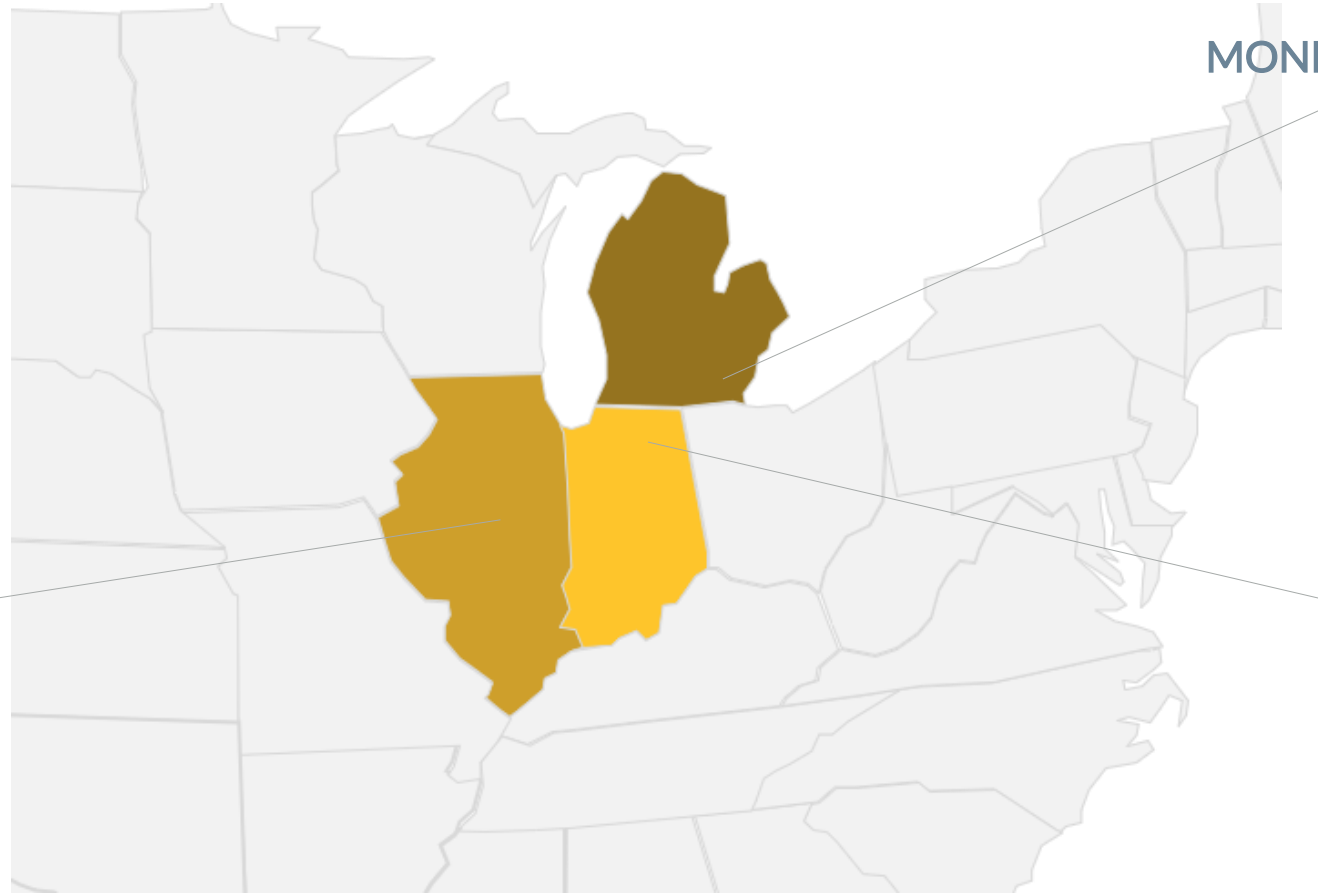
Cold Central Plant Recycling Overview



Graphic from RoadResource.org

Case Studies

CCPR Projects



MONROE CO. ROAD COMMISSION

Ida West - 2016

ILLINOIS DOT

US 136 – 2020
Catlin- Indianola - 2020

INDIANA DOT

SR 101 – 2017

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INDOT SR 101

Allen County, Indiana

Project Background

- Fort Wayne, IN
- Two Lane State Highway
- Major Collector for US-24
- Average of 10.3” of Existing Asphalt Pavement
- 37,000 tons of CCPR
- Constructed in 2018

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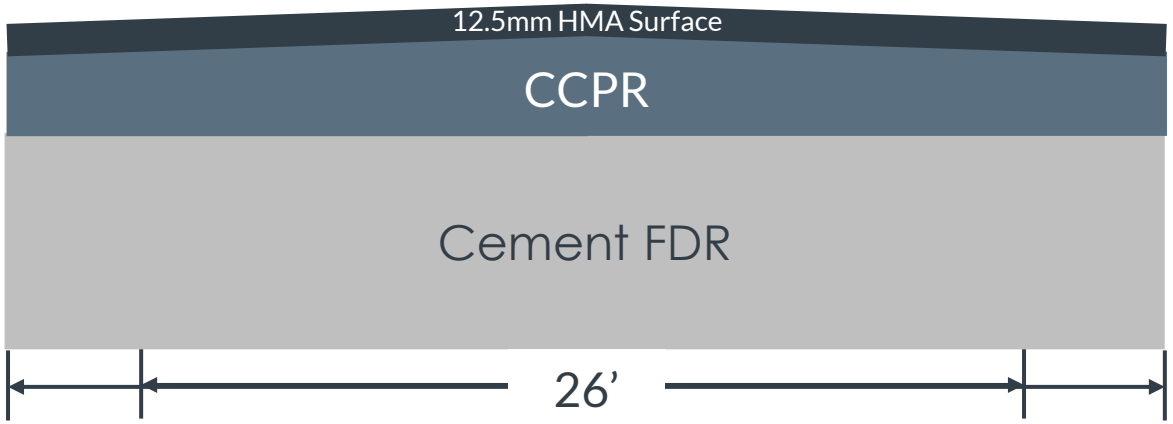
INDOT SR 101

Game Plan

- Mill 8” of Existing HMA
- Perform 10” Cement Stabilized FDR
- Pave 6” of CCPR Mix at Final 26’ Planned Width
- Pave and Compact 2” of 12.5mm Surface Mix



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INDOT SR 101

Project Progression

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MCRC - IDA WEST RD

Monroe County, Mi

Project Background

- Two Lane County All Weather Route
- Composite Pavement
  - Approximately 6” Existing Asphalt Pavement
  - Concerns About Underlying Concrete Pavement Condition
- 63,215 Square Yards
- Constructed in 2016

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MCRC – IDA WEST

Game Plan

- Remove the existing 6” of HMA
- Excavate 1’ on each side of existing roadway
- Evaluate the underlying concrete pavement
- Apply the stress absorbing membrane interlayer
- Pave approximately 5” of CCPR mix
- Pave 2 lifts of HMA surface

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MCRC – Ida West

Project Progression

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IDOT IL 136

Logan County, IL

Project Background

- Two Lane State Highway
- Mainline Pavement Planned for a 2.75” Mill and Fill
- Failing Shoulders Needed a Deeper Treatment
- 19,040 Square Yards
- Constructed in 2020

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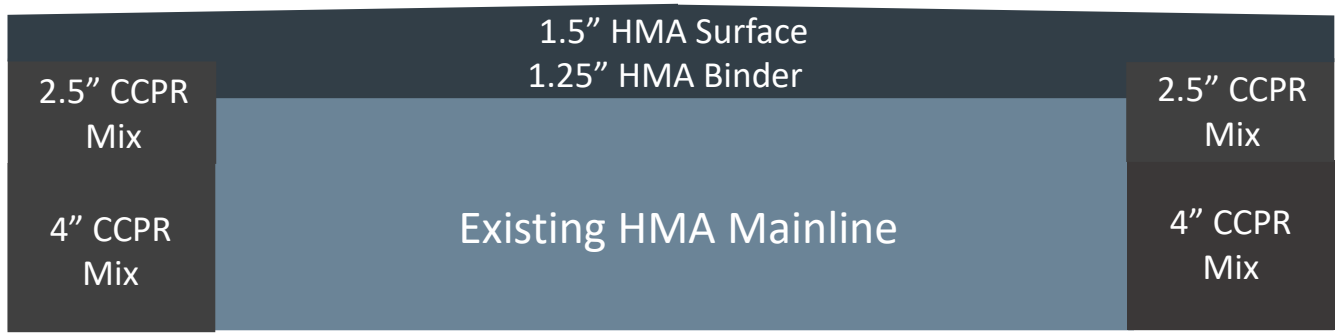
IDOT – IL 136

Game Plan

- Remove the existing 6.5” of HMA shoulders
- Pave and compact a 4” lift of CCPR mix
- Immediately after, pave and compact a 2.5” lift of CCPR mix
- Pave 1.5” of HMA surface



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IDOT – US 136

Project Progression

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IDOT – Catlin- Indianola Rd

Vermillion County, IL

Project Background

- Indianola, IL
- Two Lane State Highway
- Existing Concrete Pavement
  - Excessive Joint Failure
- 40,661 Square Yards of CCPR
- Constructed in 2020

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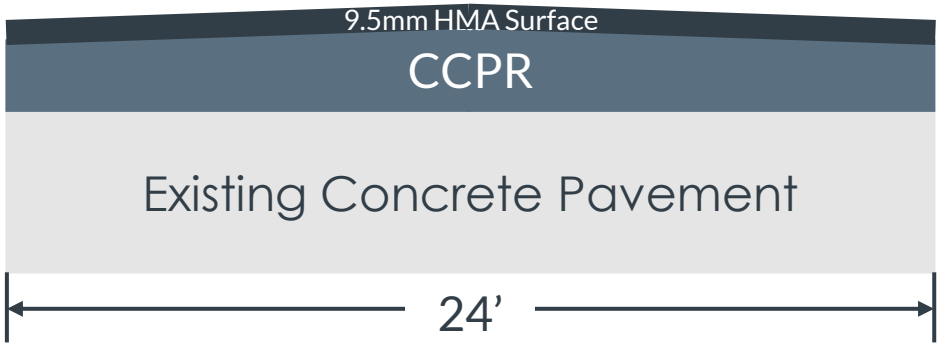
IDOT – Catlin - Indianola

Game Plan

- Existing 24’ Concrete Pavement
- Pave and Compact 3” of CCPR Mix
- Apply LJS along Planned Centerline Joint at a width of 18”
- Pave and Compact 1.5” of 9.5mm HMA Surface



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IDOT – Catlin – Indianola Rd

Project Progression

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Why CCPR?

Milling of HMA Pavement

- Cold Milling of HMA
  - Started in the 1970's
- RAP
  - How much is generated?
  - 0.5 lane miles
  - 12 feet wide
  - 3 inches
  - HMA Weight 110 lbs./sq yd./ in.
  - 580 tons of HMA
  - ~ 23 trucks (@ 25 tons/truck)
  - Available to reuse in HMA
- How much goes back in HMA
  - ~20%
  - ~ 5 trucks worth

RAP returned in HMA

Excess RAP from project

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Why CCPR?

RAP Management – Where does RAP go?

- Landfill
- Clean Fill
- Shoulder Materials
- Reuse into HMA – 20%
- Piles keep building
- 100% RAP Material

Are we capturing maximum value?

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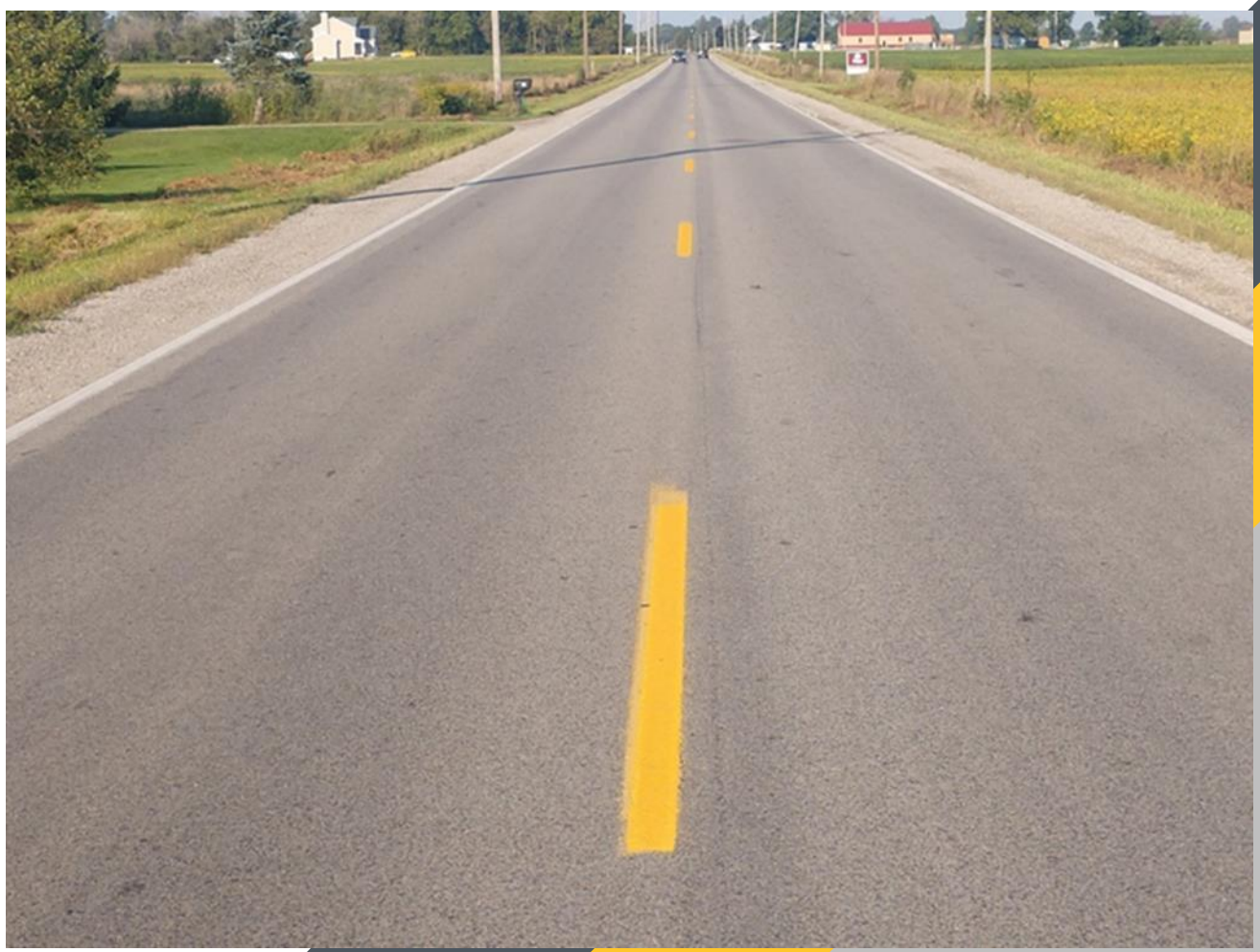
Why CCPR?

Agency Perspective

- Right road, right time, right treatment
  - Process Selection
  - Repair subbase/subgrade
- Utilize Engineered Process
  - Performance
  - Low and High-Volume Roadways
- Sustainability/Cost Savings
  - Reuse material already purchased



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Why CCPR?

Contractor Perspective

- Utilize Engineered Process
  - Performance
  - Structural Base
    - Low and High-Volume Roadways
    - Commercial Developments
- Sustainability/Cost Savings
  - Reuse material already purchased

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THANK YOU

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