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Bridge Deck & Roadway
Rehabilitation Systems

Product Training

PPC 1121 Polyester Polymer Concrete

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Meeting Outline

1. Polyester Polymer Concrete (PPC) Video & Product Overview
2. Construction Process of PPC
3. Safety
4. Specification Review
5. Questions?

1. VIDEO

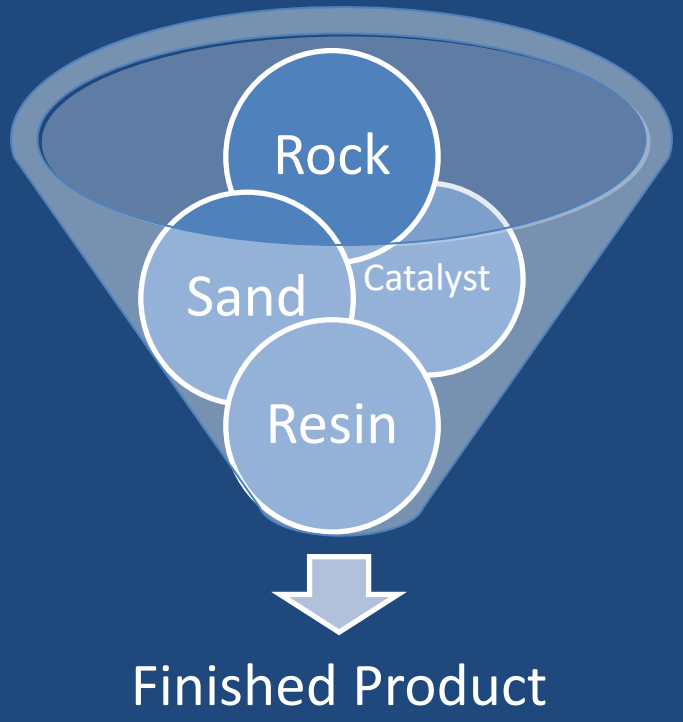
PPC 1121 Polyester Polymer Concrete

Overview

- Polyester binder – no cement or water
- Impermeable to chloride and moisture
- 8-10X the abrasion resistance of PCC
- High Friction (Skid) numbers for up to 30+ years
- Rapid Cure, Return Traffic ~ 2 hours
  - Consistent Cure at Temperatures from 40°F - 100°F
- 6800 psi Compressive Strength
- In Use Since 1983
- Most cost effective material for overlaying, patching, repairing, and rehabilitating Concrete.

What do the Components of PPC do?

- Aggregates – Rock and Sand similar function to standard concrete
- Resin – is the binder or glue
- Catalyst – Initiates the reaction
- Accelerator – Speeds up the reaction



Process of Polyester Concrete

- Are the conditions acceptable?
- Deck Preparation
- Forming and equipment
- Primer placement
- Mixing of PPC
- Placement of PPC
- Finishing of PPC
- Cure time

Climactic Conditions

- Moisture
  - SSD at a minimum but the drier the better
- Temperatures
  - 40-100F and adjust with Accelerator

Deck Preparation

- Similar to other polymer overlays (epoxy in Colorado)
- Remove unsound concrete and replace with PPC
- Shotblast surface to remove any contaminants, expose aggregates and open pores of the concrete.
- Blow off the deck using compressed air to remove all dirt, dust, steel shot, remnants from forming.

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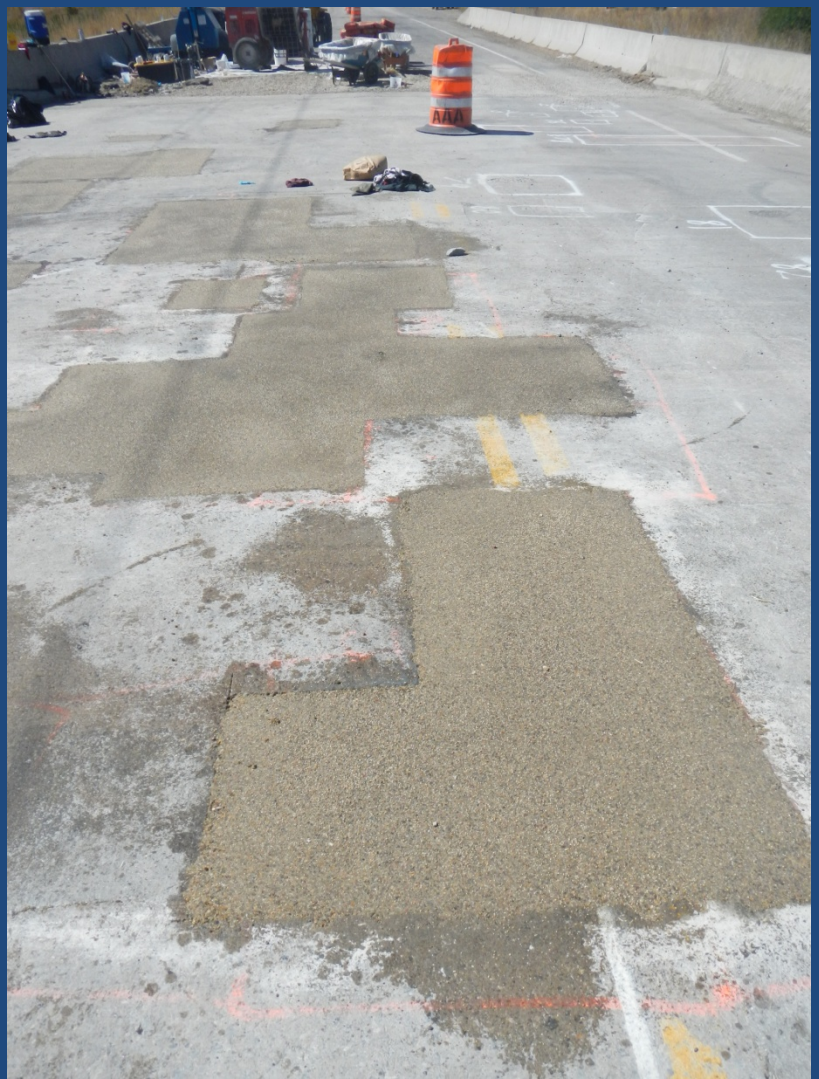
Deck Preparation



Deck Preparation

Deck Preparation

Deck Preparation

Deck Preparation

Forming of surface

- Plywood strips or ripped lumber are most common for forming
- The surface of the finished product is only as good as the grades set by the forms

Forming of surface

Forming of surface

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Slipform Paver

Slipform Paver

Slipform Paver

Placement of Primer

- Why is the primer so important?
- Spread to refusal, avoid puddling
- How long can it be left “open”?

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Placement of Primer

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Placement of Primer

Placement of Primer

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Placement of Primer

Mixing of PPC

- A typical “batch”
- What are typical mixing times?
- How should the material look?
- How exact must the measurements be?

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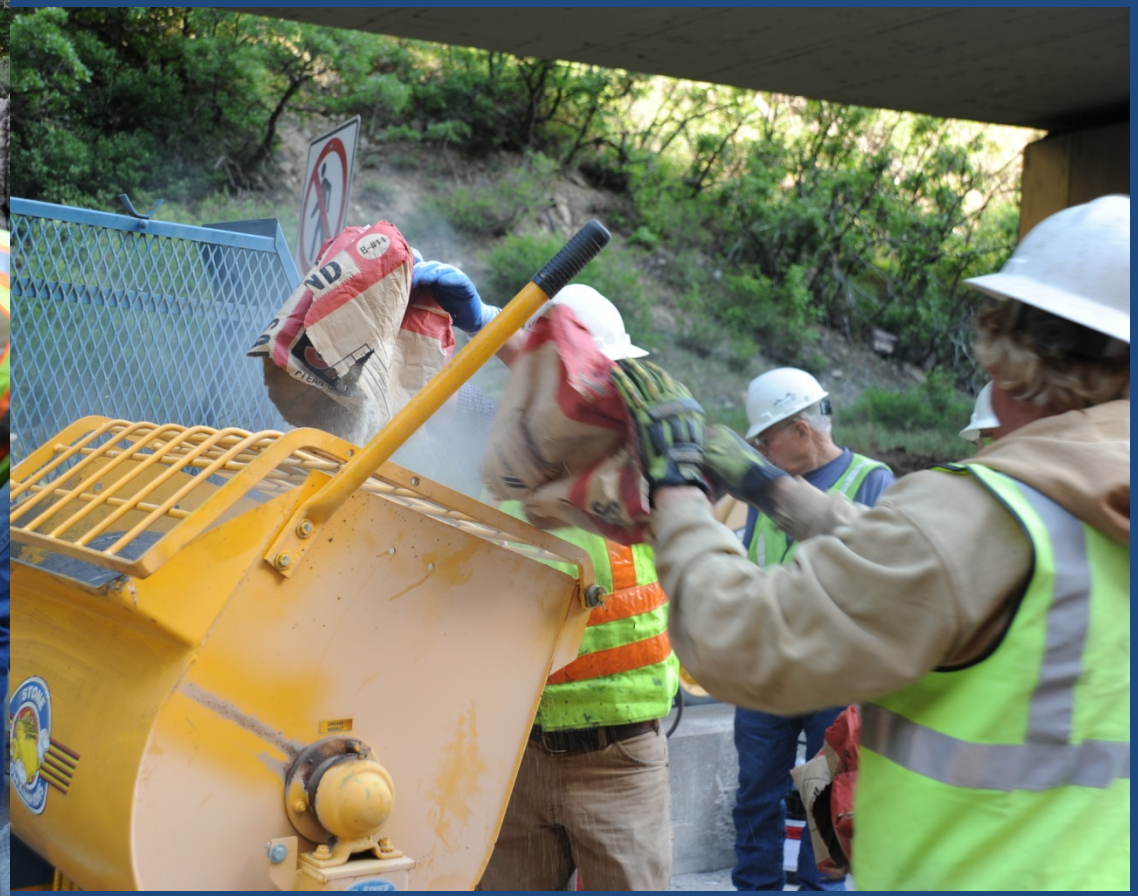
Mixing of PPC



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Mixing of PPC

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Mixing of PPC

Placement of PPC

- The material is placed in front of the screed, just slightly above the intended final grade.

- Slipform Paving machine – hopper with auger

- Similar technique to standard concrete

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Placement of PPC

Placement of PPC

Finishing of PPC

- Finishes similar to concrete
- The material has been struck to final grade by the screed – what next?
- What should it look like? Bleed Resin
- Tining
- Top Sand

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Finishing of PPC

Finishing of PPC

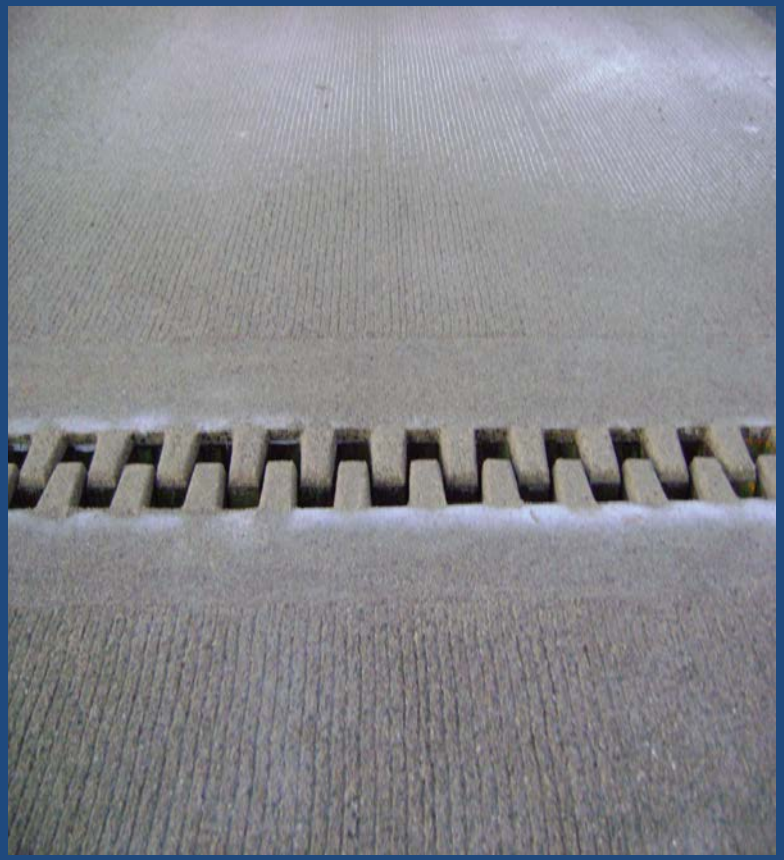
Cure of PPC

- How long will it take for the material to cure?
- How do I know if the overlay is ready to handle traffic?

!!!!SAFETY!!!!

- This stuff smells, is it harmful?
- There are flammable stickers on the drums – should I worry?
- What happens if we mix the 6% cobalt and the CHP (primer)?

PPC Best Practices



1. Catalyst (DDM9)
   - Optimal range
   - What if you use too much
   - What if you use too little
2. Accelerator (Z-cure)
   - When should I use it?
   - Why?
3. Polyester Resin
   - What is the correct amount to use
   - What happens if I use too much resin
   - What happens if I use too little resin
4. Temperatures
   - How do we make adjustments of the above in different temps?

PPC Best Practices

- ***Gel Times***
  - 30 Minutes is ideal
  - 20 – 45 minutes is acceptable
  - More than 1- hour – You may not get full strength and cracking is possible
- ***Resin Content***
  - 12% is ideal in normal temperatures
  - Colder temps will require slightly more resin ~12.5%
  - Warmer temps will require less resin 11.5 – 11.75%
  - Thicker areas will require less resin
  - NEVER go above 13% resin using standard aggregate mix design
- ***Catalyst (DDM-9) Levels*** – Required to get things going
  - Ideal range is 1.75%
  - Normal Range is 1.25 – 2.5%
  - Never go below 1% or above 3%
- ***Accelerator (Zcure)*** – Not required above 65F, this will really drive your back end cure.
  - Use when **DECK** temperatures are below 65F and are steady to falling
  - Set your DDM-9 at 2% and adjust with Zcure

Specification Review

PPC 1121 Polyester Concrete – Questions?