BRIDGE DECKS:
SURFACING AND JOINT OPTIONS

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Bridge Deck Surfacing Options:

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- Multi-Layer Polymer Overlay (MLPO)
- Polyester Polymer Concrete (PPC)
- Bonded Concrete Overlays (BCO)
- Latex Modified Concrete Overlay (LMC)
- ACP and Seal Coats
Penetrating Concrete Surface Treatments (Item 428):

Applicable Uses:
- For Bridges that have not been overlaid, (i.e. ACP, Seal Coats, MLPO)
- Does not provide a structural benefit, not for new construction
- Provides a method for sealing/coating cracks, water repellant

Surface Preparation:
- Item 428 - consisting of cleaning the surface with shot or abrasive blasting(open pores)
- Prep should occur directly before placement of Penetrating Concrete Surface Treatment

Anticipated Benefits/Life:
- Good economical method to provide a seal to a bridge deck ($10/SY)
- Anticipated durable life is up to 10 years in most conditions,
  Re-application is required as part of a routine maintenance program.
Bridge Decks: Surfacing and Joint Options

**Flood Coats (Item 780):**

**Applicable Uses:**
- For Bridges that have not been overlaid, (i.e. ACP, Seal Coats, MLPO)
- Does not provide a structural benefit
- Provides a method for sealing cracks and reduce chloride penetration, can be used in combination with Silane, 2 course treatment. Discrete Injection. Temperature sensitive

**Surface Preparation:**
- Concrete Repair Manual- consisting of cleaning the surface with shot or abrasive blasting
- Prep should occur directly before placement of Epoxy/Methacrylate; the epoxy is spread over the entire bridge deck with brooms/squeegees, and fine sand cast on top.

**Anticipated Benefits/Life:**
- Good economical method to provide a seal to a bridge deck ($20/SY)
- Can delay chloride contamination for up to 10 years in most conditions, routine maint.
Bridge Decks: Surfacing and Joint Options
Multi-Layer Polymer Overlay (Item 439):

Applicable Uses:
- For Bridges that have not been overlaid, (i.e. ACP, Seal Coats)
- Does not provide a structural benefit, but can improve skid values
- Provides a method for sealing cracks and reduce chloride penetration

Surface Preparation:
- Partial/Full-Depth Repairs as well as Crack Sealant should be completed prior to MLPO
- Item 483 - consisting of cleaning the surface with milling and shot basting or diamond grinding
- Prep should occur directly before placement of MLPO. Check Material Compatibility

Anticipated Benefits/Life:
- Good deck seal for a bridge deck with cracking and polished surface ($50/SY)
- Can delay chloride contamination for up to 10-15 years in most conditions
Bridge Decks: Surfacing and Joint Options
Polyester Polymer Concrete (SS 4106 OTU):

Applicable Uses:
- For Bridges that have not been overlaid, (i.e. ACP, Seal Coats, MLPO)
- Can provide small structural benefit, improve skid, ride, and wearing surface
- Provides a method for sealing cracks and reduce chloride penetration

Surface Preparation:
- Partial and Full-Depth Repairs should be completed prior to PPC
- Item 483 - consisting of cleaning the surface with milling, shot basting, diamond grinding, hydro-demolition
- Prep should occur directly before placement of PPC. Quick cure time and traffic return

Anticipated Benefits/Life:
- Good deck seal for a bridge deck with cracking and polished surface ($90/SY)
- Can delay chloride contamination for up to 20+ years in most conditions
Bridge Decks: Surfacing and Joint Options
Bridge Decks: Surfacing and Joint Options

Bonded Concrete Overlays (Item 439):

Applicable Uses:
- For Bridges with minor to moderate cracking and partial and full-depth repairs
- Can provide structural benefit with or without the addition of reinforcing steel
- Provides a method adding clear cover, delay chloride penetration, ride, and skid

Surface Preparation:
- Partial and Full-Depth Repairs should be completed prior to BCO
- Item 483 - consisting of cleaning the surface with milling and shot basting, or hydro-demolition
- Prep should occur directly before placement of BCO and longer TCP duration.

Anticipated Benefits/Life:
- Good bridge overlay for a deck with cracking and polished surface ($95/SY)
- Can delay chloride contamination for up to 20+ years in most conditions
Bridge Decks: Surfacing and Joint Options
**Latex Modified Concrete (Item 439):**

**Applicable Uses:**
- For Bridges with minor to moderate cracking and partial and full-depth repairs
- Can provide structural benefit with or without the addition of reinforcing steel
- Provides a method adding clear cover, delay chloride penetration, ride, and skid

**Surface Preparation:**
- Partial and Full-Depth Repairs should be completed prior to LMC
- Item 483 - consisting of cleaning the surface with milling and shot basting, or hydro-demo
- Prep should occur directly before placement of LMC and longer TCP duration. LMC-VES can reduce closure and cure times. Typically placed with Volumetric Mixers

**Anticipated Benefits/Life:**
- Good bridge overlay for a deck with cracking and polished surface ($135/SY)
- Can delay chloride contamination for up to 20+ years in most conditions
Bridge Decks: Surfacing and Joint Options
Expansion Joint Options:
After the Surfacing option has been selected, the joint option needs to be determined:

- No Joint option, just let it crack (ACP)
- Saw and seal (ACP)
- Fabric Underseal Joint (ACP)
- Asphalt Plug (ACP)
- Header Joint/Polymer Nosing
- SEJ-S(O)
- TY A Joint – Concrete to Concrete
Bridge Decks: Surfacing and Joint Options

Overlay Cracks & Delaminates from Deck

Overlay Expands & Contracts w/ Deck
For Spans Greater than 30 ft, saw and seal not needed for less span length
Bridge Decks: Surfacing and Joint Options
Bridge Decks: Surfacing and Joint Options

Item 356 - Fabric Underseal

Item 438 - Cleaning and Sealing Joints

Fabric Underseal (DMS-6220)  
Foam Backer Rod  
Asphalt Overlay  
Hot Poured Rubber (DMS-6310) CL III

Fabric Joint Seal with Hot Poured Rubber  
Shown With Overlay
SS 4001

Not for use on high ADTT Roadways

2” minimum height

Accommodates small Movement, ¾”

Asphaltic Plug Material (Per Plan Notes)

Steel Plate

Asphalt Overlay

**ASPHALTIC PLUG EXPANSION JOINT**
Bridge Decks: Surfacing and Joint Options
Item 454 – Bridge Expansion Joints

Minimize Use to Expansion Joints Only. No Control or Construction Joints

Do not place at every joint, just saw and seal when little to no expansion is expected.
Bridge Decks: Surfacing and Joint Options
Item 454 - Bridge Expansion Joints

Premolded Preformed Compressible Joint material installed with Polymer Concrete header material
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Bridge Decks: Surfacing and Joint Options

Available in various heights
Standard Sheet SEJ –S(O)

Typical TY A Joint

TYPE A JOINT DETAIL
Anytime Rehab work is scheduled for bridges, incorporate the cleaning and sealing of the Pavement to Bridge Approach Slab Joint.

Re-establish Joint Size
Concerns with Overlay Surfacing

- Mix Design Verification, Pre-Pour Meeting, Contact Bridge Division
- Clean, Sound Substrate – critical for good bonding
- SSD for Concrete Overlays
- Curing Practices
- Selection of Surface Preparation Increases Overlay Cost
Bridge Decks: Surfacing and Joint Options

Concerns at Joints with Overlay

• Proper Joint Selection

• Need to isolate adjacent spans with overlay

• Do not allow saw cut after placement

• Clean Joints Full-Depth, Re-establish Expansion

• Minimize Usage of Header Joint Types to expansion only

(LF vs CF Payment)
Bridge Decks: Surfacing and Joint Options
QUESTIONS?

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