

Outline

- BOBS Organization Structure
- Bridge Type and Composition/Terminology
- Asset Management
- **Bridge Maintenance**
- Bridge Design Process
- Bridge Plans
- Road and Bridge Coordination
- Request for Action (RFA) Projects
- Design in Construction
- Accelerated Bridge Construction (ABC)
- Wrap up



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BRIDGE MAINTENANCE

Bridge Design Basics

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WHY MAINTENANCE?



Oil changes prolong vehicle life

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WHY MAINTENANCE?

You can get by without regular maintenance...

...for a while



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TYPES OF BRIDGE MAINTENANCE

- Capital Preventative Maintenance (CPM)
- Capital Scheduled Maintenance (CSM)

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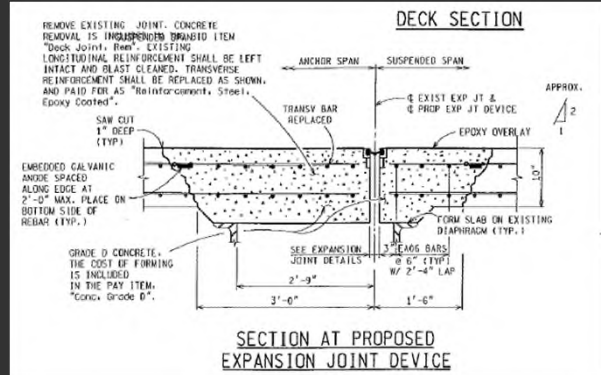
CAPITAL PREVENTATIVE MAINTENANCE (CPM)

- Repair and preserve the bridge
- No geometric enhancements



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EXPANSION JOINT REPLACEMENT



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HOW STRUCTURE BENEFITS FROM EXPANSION JOINT REPLACEMENT



Decreases water falling through Joint

Allows Bridge to expand and contract

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PIN AND HANGER REPLACEMENT



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WHY REPLACE PIN AND HANGERS?



Allows beam expansion
and contraction

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WHY REPLACE PIN AND HANGERS?



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PIN AND HANGER SUPPORTS



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PIN AND HANGER SUPPORTS

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STRUCTURAL STEEL PAINTING



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WHY PAINT STRUCTURAL STEEL?



Protects the steel from rusting

Prolongs life of steel

Aesthetics

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THIN OVERLAYS (EPOXY & HEALER SEALER)



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WHY PLACE THIN OVERLAYS?



Protects deck from salt

Prolongs deck life

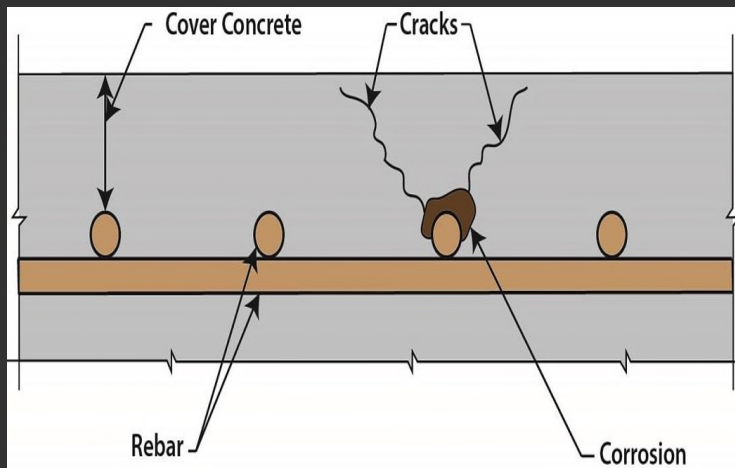
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DECK PATCHING



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WHY DECK PATCH?



Removes concrete unbonded from rebar

Smooth riding surface

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ASPHALT OVERLAY ON BRIDGE DECK



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SCOUR COUNTERMEASURES

Riprap



Articulating Concrete Block (ACB)



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WHY PLACE SCOUR COUNTERMEASURES?

- Prevents stream bank erosion
- Protects substructure from being undermined



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CAPITAL SCHEDULED MAINTENANCE (CSM)



- Maintain the existing serviceability
- No geometric enhancements
- Reduce deterioration rate

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BRIDGE CLEANING

- Clearing debris and dirt from bridge



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BRIDGE CLEANING



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VEGETATION CONTROL

- Can improve line of sight
- Allows inspector access



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DRAIN SYSTEM CLEAN/REPAIR



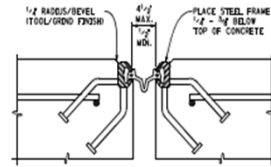
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STRUCTURAL STEEL SPOT PAINTING

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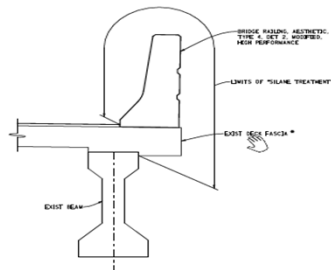
EXPANSION JOINT SEAL REPLACEMENT



SECTION THRU EXPANSION JOINT

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CONCRETE SILANE TREATMENT



SECTION THRU BARRIER

* EXISTING DECK FASCIA HAS CONCRETE SURFACE. CONTROL SILANE TREATMENT TO THE WEAR SURFACE. APPLYING SILANE TREATMENT AS PER THE SPECIAL PROVISION 'SILANE TREATMENT FOR BRIDGE BARRIERS AND DECK FASCIA'.

MISCELLANEOUS QUANTITIES			
ITEM	QUANTITY	UNIT	PRICE
1.00	1.00	1.00	1.00

MICHIGAN
DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
FOR
SILANE TREATMENT FOR BRIDGE BARRIERS AND DECK FASCIA

STM:APZ 1 of 2 APPR:ARB,SKC:06-11-19

A. Description. This work consists of providing all labor, equipment and materials necessary for the furnishing and application of spray-applied penetrating silane sealer to the limits specified on the plans including the preparation and cleaning of the barriers and deck fascias.

B. Materials. Deliver the sealer to the project in original, undamaged, and unopened containers with the manufacturer's label identifying the product and batch number. Use one of the following 100 percent silane materials:

1. Aquasil™ Plus 100, ChemMasters, Inc., Madison, OH
2. Baracade Silane 100C, The Euclid Chemical Company, Cleveland, OH
3. Cerli-Vaxell Penaseal 244 100%, Vaxxon Chemicals, Inc., Philadelphia, PA
4. MasterProtect H 1000, BASF Construction Chemicals, LLC Building Systems, Shakopee, MN
5. KleanSeal® 9100-S, Peacor Corporation, Harleyville, PA
6. ProtectoSeal® BH-N, Evonik Degussa Corporation, Parsippany, NJ
7. Sikagard® 705L, Sika Corporation, Lyndhurst, NJ
8. SIL-ACT™ ATS-100, Advanced Chemical Technologies, Oklahoma City, OK
9. Xiameter® OFS-6403 Silane, Dow Corning Corporation, Midland, MI

C. Construction. Perform this work in accordance with the plans, standard specifications, and this special provision. Follow the selected manufacturer's recommendations for surface preparation and application, except as modified by this special provision.

1. **Surface Preparation.** Ensure all concrete to be sealed is at least 28 days old. Ensure the surface to be sealed is dry, clean and free from all contamination including, but not limited to: old coatings, dirt, form release agents, oil, grease, laitance, loose material, and curing compounds. Abrasive blasting followed by oil-free compressed air cleaning is required. Water blasting or wire brushing is prohibited. Provide an axline for blowing prepared concrete surface clean with an inline water trap and air free of oil and water as it leaves the air-line. Verify that the compressed air is free of moisture and oil contamination in accordance with the requirements of ASTM D 4255. Conduct the test at least once per shift prior to the blowing operation. Ensure that the concrete surface profile (CSP) after abrasive blasting is a CSP 3 in accordance with the International Concrete Repair Institute (ICRI) Guidelines for Selecting

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CONCRETE BRIDGE DECK CRACK SEALING



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PAVEMENT/PRESSURE RELIEF JOINT



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PAVEMENT/PRESSURE RELIEF JOINT



Allows pavement to expand

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IN SUMMARY

- Regular bridge maintenance will prolong the life of a bridge
- Not performing regular bridge maintenance will result in more costly future bridge repairs
- CPM and CSM projects do not require geometric enhancements
- CPM and CSM projects are relatively quick in construction duration

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