

# IMPP Bridge Systematic Selection Criteria Tool

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# Outline

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- General Information
- Deck Activities Worksheet
- Superstructure Activities Worksheet
- Substructure Activities Worksheet
- Miscellaneous Activities Worksheet
- Scenarios

## General Information

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- Assists in systematic selection process
  - The Tool provides guidance, not decisions
- Sheets separated by
  - Deck
  - Superstructure
  - Substructure
  - Miscellaneous Activities

# General Information

Number	Item	Options		Score	Available Points	Section Total
<b>Section A. Eligibility and Federal Requirements</b>						
1	Is the bridge candidate on/over the Interstate System?	No	Not Eligible			
		Yes	Eligible			
2	Is the proposed activity for the bridge candidate part of another program? (TIP, etc.)	No	Eligible			
		Yes	Not Eligible			
3	Is ASR present in structural members?	No	Eligible			
		Yes	Not Eligible			
4	Is bridge coded structurally deficient or functionally obsolete?	No	5		5	0
		Yes	0			
<b>Section B. General Requirements</b>						
1	Is bridge candidate one of a planned corridor of bridges?	No	0			
		Yes	5			
2	Number of verified citizen/ city/ county complaints.	None	0			
		1-3	5			
		4 or more	10			
		>25%	0			
3	Traffic control as % of project cost	15%-24%	5			
		<15%	10			
		None	0			
4	Stream sensitivity issues.	Minor	5			
		Major	10			
		> 10%	0			
5	Improvements needed to detour as % of project cost	<= 10%	5			
		0%	10			
		< 1 mile	0			
6	Detour length	1-5 miles	5			
		5-10 miles	10			
		>10 miles	15			
		3 years	5			
7	Estimated Remaining Life Extension to component (after preservation activity)	10	10		80	0
		15	15			
		20+	20			

# General Information

**Section A. Eligibility and Federal Requirements** – These items address whether FHWA will compensate NCDOT for these activities.

1. Is the bridge candidate on/over the Interstate System?  
The bridge must be on or over the interstate.
2. Is the proposed activity for the bridge candidate part of another program? (TIP, etc.)  
A Federal requirement is the bridge cannot be programmed elsewhere. Avoid "like activities." For example, a bridge programmed for a deck replacement would not be eligible for an overlay, but painting steel beam ends could be an appropriate activity.  
Verify with the STIP:  
<http://www.ncdot.gov/planning/development/TIP/TIP/>
3. Is ASR present in structural members?  
If ASR (Alkaline Silica Reactivity) is present in structural members (beams, caps, columns) the bridge should be programmed for replacement not preservation.  
Review the Bridge Inspection Report notes and photos.
4. Is bridge coded structurally deficient or functionally obsolete?  
Structurally deficient or functionally obsolete bridges with a sufficiency rating below 50 are likely to be programmed for replacement in the not too distant future.  
Review the Bridge Inspection Report.

## General Information

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- Assists in comparing candidate projects by individual bridge components
- Assists in comparing “like” activities
  - For example, comparing 2 deck candidates
  - Not a Superstructure with a Substructure

# Deck Activities

Section C. Deck Joints						
1	10% or more of Joint Length Leaking or Missing Glands	No	0			
		Yes	10			
2	Loose Mechanical Joints/Modular Joint Failure	No	0			
		Yes	10			
3	Part of or ahead of Painting Project	No	0			
		Yes	10		30	0
Section D. Deck Preservation General Information						
1	Superstructure Condition	≤ 5	0			
		5 - 6	5			
		≥ 7	10			
2	Substructure Condition	≤ 5	0			
		5 - 6	5			
		≥ 7	10			
3	Concrete Strengths (All Overlays)	< 3500	0			
		3500 - 4500	5			
		> 4500	10		30	0
Section D.1. Deck Preservation - Sealers						
1	Deck Condition Rating	≤ 7	0			
		≥ 7	5			
2	Delamination and patching (% Deck Area)	≤ 1%	10			
		> 1%	0			
3	Chloride Content (#CY at top mat)	> 1	0			
		≤ 1	10		25	0
Section D.2. Deck Preservation - Chloride Extractors						
1	Deck Condition Rating	≤ 6	0			
		≥ 6	5			
2	Chloride Content ( #CY at top mat)	≤ 0.5	0			
		0.5-1.5	10			
		> 1.5	5			
		Yes	10			
3	Coordinated with Sealing or Concrete Overlay	No	5		25	0
Section D.3. Deck Preservation - Epoxy Overlays						
1	Deck Condition Rating	≥ 7	10			
		6	5			
		≤ 5	0			
2	Delamination and patching (% Deck Area)	≤ 1%	10			
		> 1%	0			
3	Chloride Content ( #CY at top mat)	> 1.5	0			
		≤ 1.5	10		30	0
Section D.4. Deck Preservation - Concrete Overlays						
1	AWS inspection grade, if paved	≤ 5	10			
		> 5	0			
2	Deck Condition Rating	≥ 7	0			
		6	5			
		≤ 5	10			
3	Delamination and patching (% Deck Area)	1-3%	5			
		> 3%	10			
		> 3	0			
4	Chloride Content ( #CY at bottom mat)	1 - 3	10			
		< 1	0		40	0

# Deck Activities

Section C. Deck Joints						
1	10% or more of Joint Length Leaking or Missing Glands	No	0			
		Yes	10			
2	Loose Mechanical Joints/Modular Joint Failure	No	0			
		Yes	10			
3	Part of or ahead of Painting Project	No	0			
		Yes	10		30	0
Section D. Deck Preservation General Information						
1	Superstructure Condition	≤ 5	0			
		5 - 6	5			
		≥ 7	10			
2	Substructure Condition	≤ 5	0			
		5 - 6	5			
		≥ 7	10			
3	Concrete Strengths (All Overlays)	< 3500	0			
		3500 - 4500	5			
		> 4500	10		30	0
Section D.1. Deck Preservation - Sealers						
1	Deck Condition Rating	≤ 7	0			
		≥ 7	5			
2	Delamination and patching (% Deck Area)	≤ 1%	10			
		> 1%	0			
3	Chloride Content (#/CY at top mat)	> 1	0			
		≤ 1	10		25	0
Section D.2. Deck Preservation - Chloride Extractors						
1	Deck Condition Rating	≤ 6	0			
		≥ 6	5			
2	Chloride Content ( #/CY at top mat)	≤ 0.5	0			
		0.5-1.5	10			
		> 1.5	5			
3	Coordinated with Sealing or Concrete Overlay	Yes	10			
		No	5		25	0
Section D.3. Deck Preservation - Epoxy Overlays						
1	Deck Condition Rating	≥ 7	10			
		6	5			
		≤ 5	0			
2	Delamination and patching (% Deck Area)	≤ 1%	10			
		> 1%	0			
3	Chloride Content ( #/CY at top mat)	> 1.5	0			
		≤ 1.5	10		30	0
Section D.4. Deck Preservation - Concrete Overlays						
1	AWS inspection grade, if paved	≤ 5	10			
		> 5	0			
2	Deck Condition Rating	≥ 7	0			
		6	5			
		≤ 5	10			
3	Delamination and patching (% Deck Area)	1-3%	5			
		> 3%	10			
		> 3	0			
4	Chloride Content ( #/CY at bottom mat)	1 - 3	10			
		< 1	0		40	0





# Deck Activities

Section C. Deck Joints					
1	10% or more of Joint Length Leaking or Missing Glands	No	0		
		Yes	10		
2	Loose Mechanical Joints/Modular Joint Failure	No	0		
		Yes	10		
3	Part of or ahead of Painting Project	No	0		
		Yes	10		
				30	0

**Section C. Deck Joints** – Replacing damaged or non-functioning joints increases the life of the structure by reducing water penetration and preventing corrosion.

1. 10% or more of Joint Length Leaking or Missing Glands.  
Leaking joints contribute to corrosion.
2. Loose Mechanical Joints/Modular Joint Failure  
Loose joint elements contribute to noise, imminent failure, reduce ride quality and safety concerns. Metal joints include finger joints, bolted down metal components with glands. Modular joints are typically cast in the deck.
3. Part of or ahead of Painting Project (Steel superstructure).  
High consideration should be made to coordinating joint replacement/repair with painting structural steel.

# Deck Activities

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## Deck Preservation

- General Information
- Sealers
- Chloride Extractors
- Epoxy Overlays
- Concrete Overlays

Tool aids in selecting appropriate treatment

# Deck Activities

Section D.1. Deck Preservation - Sealers					
1	Deck Condition Rating	$\leq 7$	0		
		$\geq 7$	5		
2	Delamination and patching (% Deck Area)	$\leq 1\%$	10		
		$\geq 1\%$	0		
3	Chloride Content (#/CY at top mat)	$\geq 1$	0		
		$\leq 1$	10		
				25	0

## Section D.1. Deck Preservation – Sealers

- Deck Condition Rating for Sealers  $\geq 7$ .  
Preference is to seal decks in good condition. (Sealing should be applied to higher quality decks.)  
Review the Bridge Inspection Report.
- Deck Evaluation shows delaminations and patches no greater than 1% of Deck Area.  
Preference is to seal decks in good condition. (Sealing should be applied to higher quality decks)  
Review the Bridge Deck Evaluation Report (BridgeDocs Program).
- Chloride Content #/CY  $\leq 1$  at top mat of steel.  
Preference is to seal decks in good condition. (Sealing should be applied to higher quality decks)  
Bridge Deck Evaluation Report (BridgeDocs Program)  
Chloride Sampling Report

# Superstructure Activities

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## Painting

- Complete, Zone and Spot Painting

## Superstructure Preservation

- Bearing Replacements/Repairs
- Structural Steel Repairs\*
- Concrete Girder and Diaphragm Repairs\*

\* Must be done in conjunction with another preservation activity and cannot exceed the cost of the original activity.

# Superstructure Activities

Section C. Paint Condition (Complete, Spot and Zone Painting)					
1	Paint Condition Grade	< 5	10		
		5 - 6	5		
		> / = 7	0		
2	Paint system down to primer over 25% of area	No	0		
		Yes (non lead)	5		
		Yes (lead)	10		
3	Paint system rusting over 10% of area	No	0		
		Yes (non lead)	5		
		Yes (lead)	10		
4	Section loss on steel members due to paint loss	No	0		
		Yes (non lead)	5		
		Yes (lead)	10		
5	Unpainted Weathering Steel Beam Ends or failed painted Beam Ends	No	0		
		Yes	10		
6	Bearing Assembly cleaning and recoating (condition rating)	> 5	0		
		< / = 5	5		
				55	0

**Section C. Paint Condition (Complete, Spot and Zone Painting)** Cleaning and painting activities increases the life of the structure by preventing corrosion.

1. Paint Condition Grade.  
Preference is to clean and paint with a fair or lower paint condition grade.  
Review the Bridge Inspection Report.

# Superstructure Activities

Section D. Superstructure Preservation					
1	Bearing Replacements and/or Repairs (damaged or not functioning)	No	Not Eligible		
		Yes	Eligible		
2	Structural Steel Repairs (in conjunction with other preservation activities)	No	Not Eligible		
		Yes	Eligible		
3	Concrete girder and diaphragm Repairs (in conjunction with other preservation activities)	No	Not Eligible		
		Yes	Eligible		

**Section D. Superstructure Preservation** - These items address whether FHWA will compensate NCDOT for these activities.

1. Bearing Replacements and/or Repairs (damaged or not functioning).  
Higher priority is given to bearings that are damaged or not functioning.
2. Structural Steel Repairs (in conjunction with other preservation activities).  
Structural steel repairs should only be done while in conjunction with another preservation activity, i.e., painting or joint replacement.
3. Concrete girder and diaphragm repairs (in conjunction with other preservation activities).  
Concrete girder and diaphragm repairs should only be done while in conjunction with another preservation activity, i.e., joint replacement.



## Substructure Activities

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Bent/End Bent Sealing\*

Bent/End Bent Repairs\*

Bent/End Bent Cleaning

- \* Must be done in conjunction with another preservation activity and cannot exceed the cost of the original activity.

# Substructure Activities

Section C. Substructure Preservation						
1	Bent/End Bent sealing (in conjunction with other preservation activities) Substructure Condition Grade	>/=6	10			
		<6	0			
2	Bent/End Bent repairs (in conjunction with other preservation activities) Substructure Condition Grade	<5	10			
		>/=5	5			
3	Bent/End Bent cleaning - Debris accumulation	Heavy	10			
		Medium	5			
		Light	0			
					30	0

**Section C. Substructure Preservation** – Considered only in conjunction with other preservation activities.

1. Bent/End Bent sealing (in conjunction with other preservation activities). Substructure Condition  
Preference is to address substructures with higher condition ratings. Bent/End Bent sealing should only be done while in conjunction with another preservation activity, i.e., overlay.
2. Bent/End Bent repairs (in conjunction with other preservation activities). Substructure Condition.  
Bent/End Bent repairs should only be done while in conjunction with another preservation activity, i.e., overlay. May seal after repair
3. Bent/End Bent cleaning - Debris accumulation.  
Preference is given to bridges with greater debris accumulation



## Miscellaneous Activities

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Deck Washing

Scour Countermeasures

Crossline Pipes (54" or Greater)

Reference Roadside Features - Drainage

# Miscellaneous Activities

Section C. Deck Washing						
1	3 or more granular salt applications per year	No	0			
		Yes	10			
2	Debris accumulation	Heavy	10			
		Medium	5			
		Light	0			
3	Closed Deck Drain System	No	0			
		Yes	10			
					30	0

**Section C. Deck Washing** – Removing salt prevents deck deterioration from chloride seepage and improves deck drainage and safety.

1. 3 or more granular salt applications per year.  
Preference is given to decks that receive multiple granular salt applications per year.
2. Debris accumulation.  
Preference is given to decks with greater debris accumulation.
3. Closed Deck Drain System.  
Preference is given to decks with closed drainage systems. Avoid clogging drainage system.

# Miscellaneous Activities

Section E. Crossline Pipes (54" or greater)						
1	Repairing headwalls - In conjunction with other pipe preservation activities	No	0			
		Yes	5			
2	Adding liner - Pipe is rusted or pinholed yet structurally sound and with minimal pipe deformity.	No	0			
		Yes	10			
3	Repair leaking pipe joints (water or fill material)	No	0			
		Yes -water	5			
		Yes- fill	10			
					20	0

**Section E. Crossline Pipes (54" or greater)** – Lining or repairing increases pipe life and reduces costly replacements.

1. Repairing headwalls - Preference is to do headwall repairs in conjunction with other pipe preservation activities.
2. Adding liner - add liner if pipe is rusted or pinholed yet structurally sound and with minimal pipe deformity.
3. Repair leaking pipe joints (water or fill material).  
Preference is given to pipe joints leaking fill material.

# Scenario Approaches

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## Scenario 1:

You know your activity, but you do not know which bridges or corridor to address.

## Example Activities

- Joint Replacements
- Painting

Use the appropriate worksheets to select specific bridges and a corridor.

# Scenario Approaches

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## Scenario 2:

You know your general type of activity, but you do not know which treatment to use

### Example Deck Preservation

- Sealers
- Chloride Extractors
- Epoxy Overlays
- Concrete Overlays

Use the deck worksheet to select the specific treatment

# Scenario Approaches

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## Scenario 3:

You know the corridor you want to address, but you do not know what activities to use

Use all 4 worksheets to determine appropriate activities.

# Scenario Approaches

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## Scenario 4:

You need to choose between corridors

Use all 4 worksheets to determine appropriate activities. Make treatment selections and then consider the corridor with higher points

# Scenario Approaches

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Other Scenarios?

Remember the tool provides guidance,  
not decisions



# Questions???

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