Bridge 308 Alternatives Comparison Matrix

Jacobs

	Alternative 1	Alternative 1A	Alternative 2	Alternative 2A	Alternative 3	Alternative 3A	Alternative 4	Alternative 5	Alternative 6
Structure Alternate Description	**Existing Bridge Remains in Place (Free Flow Model)** - No action	**Existing Bridge Remains in Place (Debris Model)** - No action	**Repair the Damaged Piers (Free Flow Model)** - Exist. superstructure remains - Replace damaged pier 2 - Recommend replacing pier 1	**Repair the Damaged Pier (Debris Model)** - Exist. superstructure remains - Replace damaged pier 2 - Recommend replacing pier 1	**New 2-Span Bridge (Free Flow Model)** - Exist. superstructure removed - Remove both existing piers - New superstructure - New center pier	**New 2-Span Bridge (Debris Model)** - Exist. superstructure removed - Remove both existing piers - New superstructure - New center pier	**New Single Span Bridge (Free Flow Model)** - Exist. superstructure removed - Remove both existing piers - New superstructure - No piers	**Remove Existing Superstructure and Piers (Free Flow Model)** - Exist. superstructure removed - Remove both existing piers - No piers	**Remove Existing Superstructure, Piers and Abutment 1 (Free Flow Model)** - Exist. superstructure removed - Remove both existing piers - Remove existing abutment 1 - No piers
Proposed Superstructure Type	Existing to remain	Existing to remain	Existing to remain	Existing to remain	New steel deck girders	New steel deck girders	New steel girders	Existing to be removed	Existing to be removed
Proposed Pier(s) within Channel	2 Existing	2 Existing	2 new in existing location	2 new in existing location	1 at center of channel	1 at center of channel	None	None	None
Proposed Substructure	• Existing abutments to remain • Existing piers to remain	• Existing abutments to remain • Existing piers to remain	• Existing abutments to remain • Existing piers to be replaced in existing location	• Existing abutments to remain • Existing piers to be replaced in existing location	• Abutment 1 to be replaced • Abutment 2 to remain • New center pier	• Abutment 1 to be replaced • Abutment 2 to remain • New center pier	• Abutment 1 to be replaced • Abutment 2 to be remain	• Existing abutments to remain	• Abutment 2 to remain
PROJECT DELINEATORS	**Alternative 1**	**Alternative 1A**	**Alternative 2**	**Alternative 2A**	**Alternative 3**	**Alternative 3A**	**Alternative 4**	**Alternative 5**	**Alternative 6**
Bridge returned to Service for Rail Traffic?	NO	NO	YES	YES	YES	YES	YES	NO	NO
Water Surface Elevation - Q2 (Change V. Existing Condition)	EL. 580.47 (N/A)	EL. 585.91 (N/A)	EL. 580.42 (Lowered 0.05 feet)	EL. 585.91 (No Change)	EL. 580.37 (Lowered 0.10 feet)	EL. 582.21 (Lowered 3.70 feet)	EL. 580.31 (Lowered 0.16 feet)	EL. 580.34 (Lowered 0.13 feet)	EL. 580.34 (Lowered 0.13 feet)
Water Surface Elevation – Q5 (Change V. Existing Condition)	EL. 584.00 (N/A)	EL. 586.51 (N/A)	EL. 583.93 (Lowered 0.07 feet)	EL. 586.50 (Lowered 0.01 feet)	EL. 584.24 (Increased 0.24 feet)	EL. 586.54 (Increased 0.03 feet)	EL. 583.61 (Lowered 0.39 feet)	EL. 582.74 (Lowered 1.26 feet)	EL. 582.74 (Lowered 1.26 feet)
Water Surface Elevation – Q10 (Change V. Existing Condition)	EL. 586.97 (N/A)	EL. 587.35 (N/A)	EL. 586.97 (No Change)	EL. 587.36 (Increased 0.01 feet)	EL. 586.96 (Lowered 0.01 feet)	EL. 587.05 (Lowered 0.30 feet)	EL. 587.02 (Increased 0.05 feet)	EL. 587.05 (Increased 0.08 Feet)	EL. 587.05 (Increased 0.08 Feet)
Water Surface Elevation – Q50 (Change V. Existing Condition)	EL. 589.60 (N/A)	EL. 589.46 (N/A)	EL. 589.60 (No Change)	EL. 589.46 (No Change)	EL. 589.58 (Lowered 0.02 feet)	EL. 589.61 (Lowered 0.15 feet)	EL. 589.46 (Lowered 0.14 feet)	EL. 589.51 (Lowered 0.09 Feet)	EL. 589.51 (Lowered 0.09 Feet)
Water Surface Elevation – Q100 (Change V. Existing Condition)	EL. 590.49 (N/A)	EL. 590.54 (N/A)	EL. 590.49 (No Change)	EL. 590.54 (No Change)	EL. 590.48 (Lowered 0.01 feet)	EL. 590.51 (Lowered 0.03 feet)	EL. 590.35 (Lowered 0.14 feet)	EL. 590.40 (Lowered 0.09 Feet)	EL. 590.40 (Lowered 0.09 Feet)
Water Surface Elevation – Q500 (Change V. Existing Condition)	EL. 592.00 (N/A)	EL. 592.03 (N/A)	EL. 592.00 (No Change)	EL. 591.87 (Lowered 0.06 feet)	EL. 591.99 (Lowered 0.01 feet)	EL. 592.01 (Lowered 0.02 feet)	EL. 591.98 (Lowered 0.02 feet)	EL. 591.90 (Lowered 0.10 Feet)	EL. 591.90 (Lowered 0.10 Feet)
Note: Water Surface Elevations for Alternatives 2, 3, 4, 5 and 6 (Free Flow Model) compared to Alternative 1. Water Surface Elevations for Alternatives 2A and 3A (Debris Model) compared to Alternative 1A.									
Is Debris/Ice Buildup Improved	NO – Requires Debris Removal	NO – Requires Debris Removal	Slightly – Will Require Debris Removal	Slightly – Will Require Debris Removal	Slightly – Center Pier Only	Slightly – Center Pier Only	YES (No Piers)	YES (No Piers)	YES (No Piers)

Bridge 308 Alternatives Comparison Matrix

	Alternative 1	Alternative 1A	Alternative 2	Alternative 2A	Alternative 3	Alternative 3A	Alternative 4	Alternative 5	Alternative 6
Improves Bridge Maintenance	NO – Existing Condition	NO – Existing Condition	YES - New Piers; Debris Removal Reduced	YES - New Piers; Debris Removal Reduced	YES; New Center Pier and Superstructure	YES; New Center Pier and Superstructure	YES; No Piers and new Superstructure	YES Bridge Removed	YES Bridge Removed
Improves Service Life	NO – No Action	NO – No Action	Yes, new piers enhance services life to 25 yrs; can be used for future superstr. replacement	Yes, new piers enhance services life to 25 yrs; can be used for future superstr. replacement	Yes, new substructures and superstructure provides 75-year service life	Yes, new substructures and superstructure provides 75-year service life	Yes, new abutment and superstructure provides 75-year service life	Bridge Removed	Bridge Removed
Permanent Property Impacts	No Permanent Construction Impacts. No Action Alternative	No Permanent Construction Impacts. No Action Alternative	Reduces Ice/debris buildup		Reduces Ice/debris buildup		Increase in rail profile effects adjacent properties	Reduces Ice/debris buildup	Reduces Ice/debris buildup
Summary of environmental impacts	Does not improve ice/debris buildup	Does not improve ice/debris buildup	Slightly Reduces Ice/debris buildup. Work in water during construction	Slightly Reduces Ice/debris buildup. Work in water during construction	Reduces Ice/debris buildup. Work in water during construction	Reduces Ice/debris buildup. Work in water during construction	Rail profile increase creates dam effect within floodway. Work in water during construction	Work in water during construction	Work in water during construction
Cultural resource impacts	NO	NO	NO	NO	NO	NO	POSSIBLE	NO	NO
Will meets AREMA/VTrans standards	NO	NO	YES	YES	YES	YES	YES	N/A	N/A
City travel way impacts	YES Increase truck traffic for loading/unloading granite	YES Increase truck traffic for loading/unloading granite	NO	NO	NO	NO	YES Roadway revised at crossing to meet increased rail profile	YES Increase truck traffic for loading/unloading granite	YES Increase truck traffic for loading/unloading granite
Monetary impact to railroad customer	YES	YES	NO	NO	NO	NO	NO	YES	YES
City utility impacts (Aerial & Underground)	NO	NO	NO	NO	NO	NO	POSSIBLE	NO	NO
City drainage system impacts	NO	NO	NO	NO	NO	NO	YES	NO	NO
Current 2024 Construction Cost	**$10,000 Annually**	**$10,000 Annually**	**$450,000 (Pier 2 only)**	**$450,000 (Pier 2 only)**	**$1,995,000**	**$1,995,000**	**$3,995,000**	**$325,000**	**$400,000**
Shading Key	Desirable	Neutral	Not Desirable						