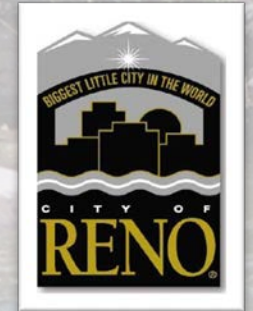


Feasibility Study for



ARLINGTON AVENUE BRIDGES REPLACEMENT

Stakeholder Working Group Meeting #2 |
Bridge Concepts | November 5, 2020

Meeting Purpose

- ▶ Discuss bridge concepts for the project
- ▶ Where are we in the process?
- ▶ Review recommendations from Technical Advisory Committee meetings (TAC)
 - ▶ TAC-1 Permitting and Regulatory Requirements
 - ▶ TAC-2 Bridge and Roadway Elements
- ▶ Group discussion and consensus
- ▶ Recommend Alternatives to carry forward for additional analysis

Meeting Agenda

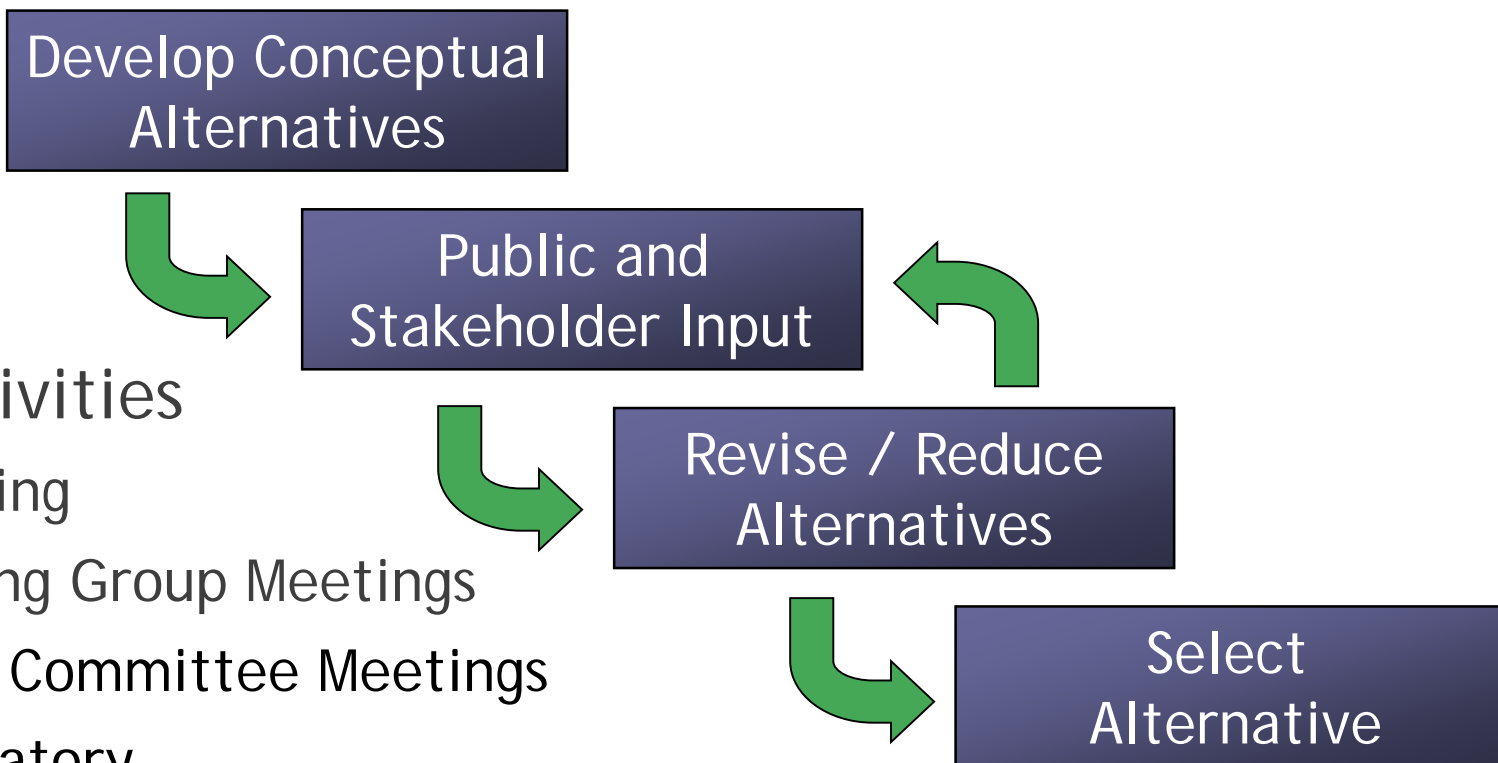
- ▶ Reestablish project scope, process, purpose and need, and schedule
- ▶ Meeting Recaps
 - ▶ SWG-1 Define Constraints and Criteria
 - ▶ TAC-1 Permitting/Regulatory Requirements
 - Questions ??
 - ▶ TAC-2 Bridge/Roadway Elements
 - ▶ Review Recommended Bridge Concepts
 - Questions ??
- ▶ Group Discussion and Consensus

Project Scope

- ▶ Complete a feasibility study to define scope of future phases
- ▶ Future Phases
 - ▶ National Environmental Policy Act (NEPA) and Design (2021-2025)
 - ▶ Construction (2026)
- ▶ Goal - Reduce the range of possible bridge type and aesthetic themes through engineering analysis and by conducting public outreach
- ▶ Outcome - have a bridge type and aesthetic package identified to carry forward into NEPA clearance and design
 - ▶ Document decisions using Planning and Environmental Linkages (PEL) process & NDOT PEL Checklist

Project Process

- ▶ Modeled after Virginia Street Bridge process



- ▶ Public Outreach Activities
 - ▶ Public Kick-off Meeting
 - ▶ 3 Stakeholder Working Group Meetings
 - ▶ 2 Technical Advisory Committee Meetings
 - ▶ Permitting/Regulatory
 - ▶ Bridge/Roadway Elements
 - ▶ 1 Additional Public Meeting

Project Purpose and Need

- ▶ Address Structurally Deficient Arlington Avenue Bridges
- ▶ Provide Safe and ADA compliant Multimodal improvements
- ▶ Address hydraulic capacity needs
- ▶ Respond to regional and community plans



Project Schedule



	2019	2020	2021-2025	2026
Public Kickoff	*			
Identify and Analyze Bridge and Aesthetic Concepts		████████████████████		
Public Meeting			*	
Complete Feasibility Study			████████	
Environmental (NEPA)			████████████████████	
Design and Permitting				████████████████████
Construction Start				*

SWG Members

- ▶ Arlington Tower HOA
- ▶ Architects +
- ▶ City of Reno
 - ▶ Arts, Culture & Special Events
 - ▶ Public Works (capital projects, maintenance, and environmental engineering)
 - ▶ Parks, Recreation & Community Services
 - ▶ Access Advisory Committee
 - ▶ Historic Resources Commission
- ▶ Carson Truckee Water Conservancy District
- ▶ Downtown Reno Partnership
- ▶ Federal Highway Administration
- ▶ Frisch House
- ▶ Park Tower HOA
- ▶ Promenade on the River
- ▶ Reno/Sparks Indian Colony
- ▶ Pyramid Lake Paiute Tribe
- ▶ Nevada State Historic Preservation Office
- ▶ NDOT
 - ▶ Bridge Division
 - ▶ Landscape and Architect Division
- ▶ Truckee River Flood Management Authority
- ▶ St. Thomas of Aquinas
- ▶ U.S. Army Corps of Engineers
- ▶ Wingfield Condominiums HOA

SWG-1 Meeting Recap

- ▶ Organize alternative-specific constraints and criteria
- ▶ Refine bridge concepts and determine aesthetic themes
- ▶ Determine lead agency - USACE or FHWA
- ▶ Determine/confirm if bridges are historic, and direct/indirect effects on adjacent historic properties
- ▶ Determine PEL checklist signatory (FHWA or NDOT)
- ▶ Environmental Design Constraints/Criteria
- ▶ Engineering Design Constraints/Criteria

**Arlington Avenue Bridges Project Feasibility Study
Stakeholder Working Group Meeting 1 Notes**

ENVIRONMENTAL DESIGN CRITERIA	ENVIRONMENTAL DESIGN CONSTRAINTS	NOTES
SECTIONS 4(f) and 6(f)		
<p>1. Section 4(f) provides for consideration of park and recreation lands, wildlife and waterfowl refuges, and historic sites during transportation project development</p> <p>a. Applies to U.S. DOT and implemented by FHWA</p> <p>2. Section 6(f) Land and Water Conservation Fund (LWCF) preserves, develops, and assures accessibility to outdoor recreation resources</p> <p>a. Provides funds and authorizes federal assistance for planning, acquisition, and development of land, water areas and facilities</p> <p>b. Provides funds for federal acquisition and development of lands and other areas</p>	<p>1. Section 4(f) includes publicly-owned recreational and historic properties</p> <p>a. Truckee River Trail detours during construction</p> <p>b. Pedestrian traffic detours</p> <p>c. Impacts to property features, attributes or characteristics</p> <p>2. Section 6(f) includes public & private properties that have received LWCF funding</p> <p>a. Impacts to properties or property</p> <ul style="list-style-type: none"> - Includes temporary closures di - Applies to Truckee River Greer Whitewater Park - Potentially applies to Barbara I <p>b. If yes, mitigate by replacing prop</p> <p>c. If work enhances property featu management plan, can be cover</p>	<p>-per City of Reno Parks Dept. (Jeff Mann, Parks Manager) none of the parks used LWCF funding – mitigation per Section 6(f) not required</p>
HAZARD		

AAB-SWG1_HandOuts(MeetingNotes-v2)

**Arlington Avenue Bridges Project Feasibility Study
Stakeholder Working Group Meeting 1 Notes**

ENVIRONMENTAL DESIGN CRITERIA	ENVIRONMENTAL DESIGN CONSTRAINTS	NOTES
PERMITTING		
<p>1. City of Reno Special Use Permit -City of Reno to confirm if required</p> <p>2. USACE 408 Permit -application required to be completed/submitted before 404 permit application. -need to establish ordinary high water mark (OHWM)</p> <p>3. USACE 404 Permit</p> <p>4. Nationwide Stormwater Permit</p> <p>5. State Lands Encroachment permit</p> <p>6. 401 water quality certification</p>	<p>1. Conditions and schedule -City of Reno Special Use Permit – conditions/schedule TBD (by City of Reno) -408 – per CTWCD 18 month schedule -per USACE, 408 needs to precede 404 permit – USACE will work with CTWCD and USACE civil works</p>	<p>-408 and 404 permitting process can proceed in parallel.</p> <p>-access to river bed for debris removal is very important</p> <p>-need to determine who is lead federal agency (USACE or FHWA)</p> <p>-USACE will have to do their own Sect. 106 consultation w/ tribes</p> <p>-the river is a traditional cultural property (TCP) for Reno Sparks Indian Colony – need to determine how the TCP is evaluated and adverse effects documented and mitigated</p> <p>-per CTWCD, model survey/LiDAR sufficient for bathymetry beneath the bridge structure (e.g., no survey needed); construction prohibited during flood season (Nov thru Jun) or flows over 14K cfs</p> <p>- determine 100-year WSEL/cfs and confirm OHWM w/ TRFMA</p>
HISTORIC (SECTION 106)		
<p>1. Bridges are not eligible for any registers</p> <p>2. Confirm purpose and need for Programmatic Agreement</p>	<p>1. Define Area of Potential Effects</p> <p>a. Direct and Indirect Effects</p> <p>2. Identify and document resources</p> <p>3. Determine effects</p> <p>a. If adverse, produce agreement document</p> <p>b. Implement monitoring program</p> <p>4. Implement mitigation</p> <p>5. Proceed with Project</p> <p>6. Programmatic Agreement</p>	<p>Standard Section 106 process should be appropriate for Project</p> <p>Programmatic Agreement – needed if no adverse effects (direct or indirect)</p> <p>-need to confirm (with NDOT, USACE/NV SHPO) that bridges are not eligible for registers</p> <p>-confirm (with NDOT, USACE/NV SHPO) the need for and purpose of the PA</p> <p>-direct and indirect (e.g., viewshed of surrounding historic properties) effects need to be evaluated to complete section 106</p>

AAB-SWG1_HandOuts(MeetingNotes-v2)

TAC-1 Permitting/Regulatory Members

- ▶ City of Reno (CoR)
 - ▶ Public Works Capital Projects Dept.
 - ▶ Historic Resources Commission
 - ▶ Parks, Recreation & Community Services Dept.
 - ▶ Environmental Engineering Dept.
- ▶ Carson Truckee Water Conservancy District (CTWCD)
- ▶ Federal Highway Administration (FHWA) - Nevada Division
- ▶ Nevada Dept. of Transportation (NDOT)
- ▶ Reno-Sparks Indian Colony (RSIC)
- ▶ Pyramid Lake Paiute Tribe (PLPT)
- ▶ State Historic Preservation Office (SHPO)
- ▶ U.S. Army Corps. Of Engineers (USACE)
- ▶ Nevada Division of Environmental Protection (NDEP)
- ▶ Nevada Division of State Lands (NDSL)

TAC-1 Meeting Recap

- ▶ Lead agency - FHWA
- ▶ Bridges are not historic, direct/indirect effects on adjacent historic properties determined during NEPA
- ▶ PEL checklist signed by NDOT
- ▶ Per FHWA, DOT Section 4(f) not applicable
- ▶ Section 408 local sponsor is CTWCD and requires flood risk modeling (using updated model) and river access for debris and sediment removal

TAC-1 Permitting/Regulatory Requirements



Permitting & Regulatory Requirements	Alternative Bridge Description				
	Alternative 1 (Single Pier)	Alternative 2 (Clear Span)	Alternative 3 (Underdeck Arch)	Alternative 4 (Tied Arch)	Alternative 5 (Elevated)
CoR SUP	Not Applicable				
USACE 408 Permit	✓	✓	✓	✓	✓
USACE 404 Permit	✓*	✓	✓	✓*	✓*
NDEP Stormwater Permit	✓	✓	✓	✓	✓
NDSL Encroachment Permit	✓*	✓	✓	✓	✓
NDEP 401 Certification	✓	✓	✓	✓	✓
NDEP Working-in-Waterways Permit	✓	✓	✓	✓	✓
NDEP Groundwater Discharge Permit	✓	✓	✓	✓	✓

* additional requirements possible during permitting and/or construction

TAC-1 Meeting Recap

- ▶ Permitting and regulatory requirements similar between alternatives except 1) tied-arch and 2) elevated concepts
 - ▶ More challenging related to permitting (Section 404) and viewshed impacts, required maintenance (bridge and river/park) and river access for debris/sediment removal
- ▶ Meeting goal - to reduce the range of alternatives carried forward into NEPA and design

Questions?

TAC-2 Bridge/Roadway Members

- ▶ Nevada Department of Transportation (NDOT) - Bridge Division
- ▶ Federal Highway Administration (FHWA) - Nevada Division
- ▶ Regional Transportation Commission (RTC)
 - ▶ Engineering
 - ▶ Planning
- ▶ City of Reno (CoR) Departments
 - ▶ Public Works Capital Projects
 - ▶ Public Works Maintenance
 - ▶ Parks, Recreation & Community Services
 - ▶ Public Works Traffic
 - ▶ Stormwater
 - ▶ Fire Department

TAC-2 Meeting Recap

- ▶ Prepared evaluation attributes and scoring packets based on feedback from SWG-1
 - ▶ Developed nine concepts from the three major design themes 1) single-pier, 2) clear span, including underdeck and tied arch, and 3) elevated
 - ▶ Included eight attributes plus undefined attributes “Y” and “Z” for user input/editing
 - ▶ Attributes ranked on a scale of 1 (poor) to 10 (excellent)
- ▶ Qualitative attribute guidelines and concept evaluation summaries helped members score individually
- ▶ Members reviewed scores as a group and consensus was achieved

TAC-2 Scoring Sheet



		Name:									
Attribute		Construction Cost	Construction Schedule and Cost Risks	Existing Infrastructure Impacts	Maintenance and Inspection Access	Long Term Maintenance Costs	Environmental Impacts	River Recreation Impacts	Bridge Aesthetics	Attribute Y	Attribute Z
ID	Alternative Description	Attribute Score (a)									
North Bridge	Single Pier Concept										
	SP-N1	Precast Concrete Girders									
	SP-N2	Cast-in-Place Concrete Box									
	SP-N3	Steel I-Girders									
	Clear Span Concept										
	CS-N1	Underdeck Arch									
CS-N2	Rigid Frame										
CS-N3	Tied Arch										
N&S Bridges	Elevated Bridge Concept										
	EB-NS1	Precast Concrete Girders									
	EB-NS2	Cast-in-Place Concrete Box									
	EB-NS3	Steel I-Girders									
(a) Attribute Score: Excellent = 10; Good = 7; Fair = 4; Poor = 1											
See "Qualitative Attribute Guidelines" and "Concept Evaluation" summaries for additional information											

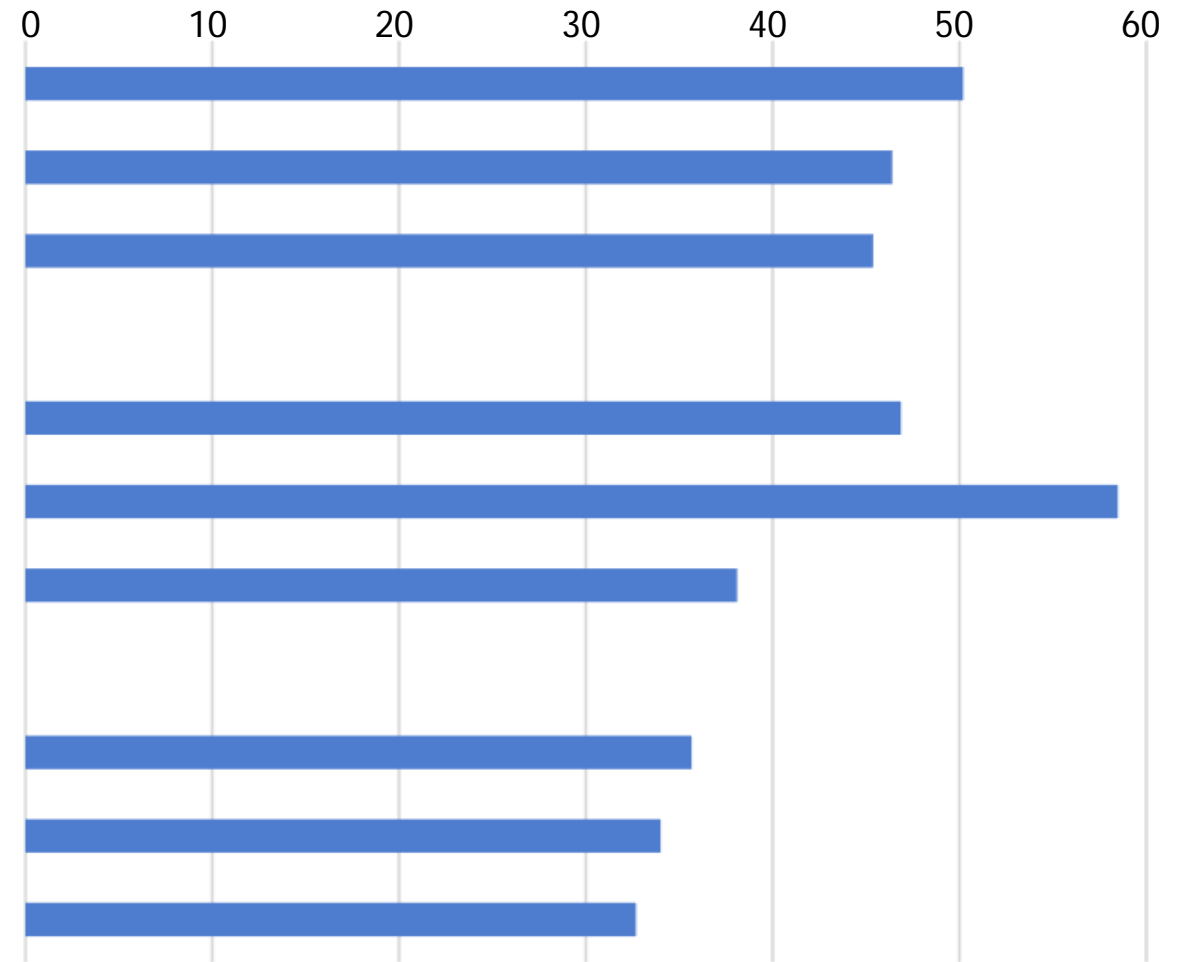
TAC-2 Meeting Recap

- ▶ Attributes TAC members added
 - ▶ Permitting and Ancillary Impacts to Wingfield Park (Scope Creep)
 - ▶ Crime Prevention Through Environmental Design
 - ▶ Homeless Camps/Graffiti/Illicit Activity
- ▶ Added attributes not included in TAC 2 scoring results but only subtly change overall ranking

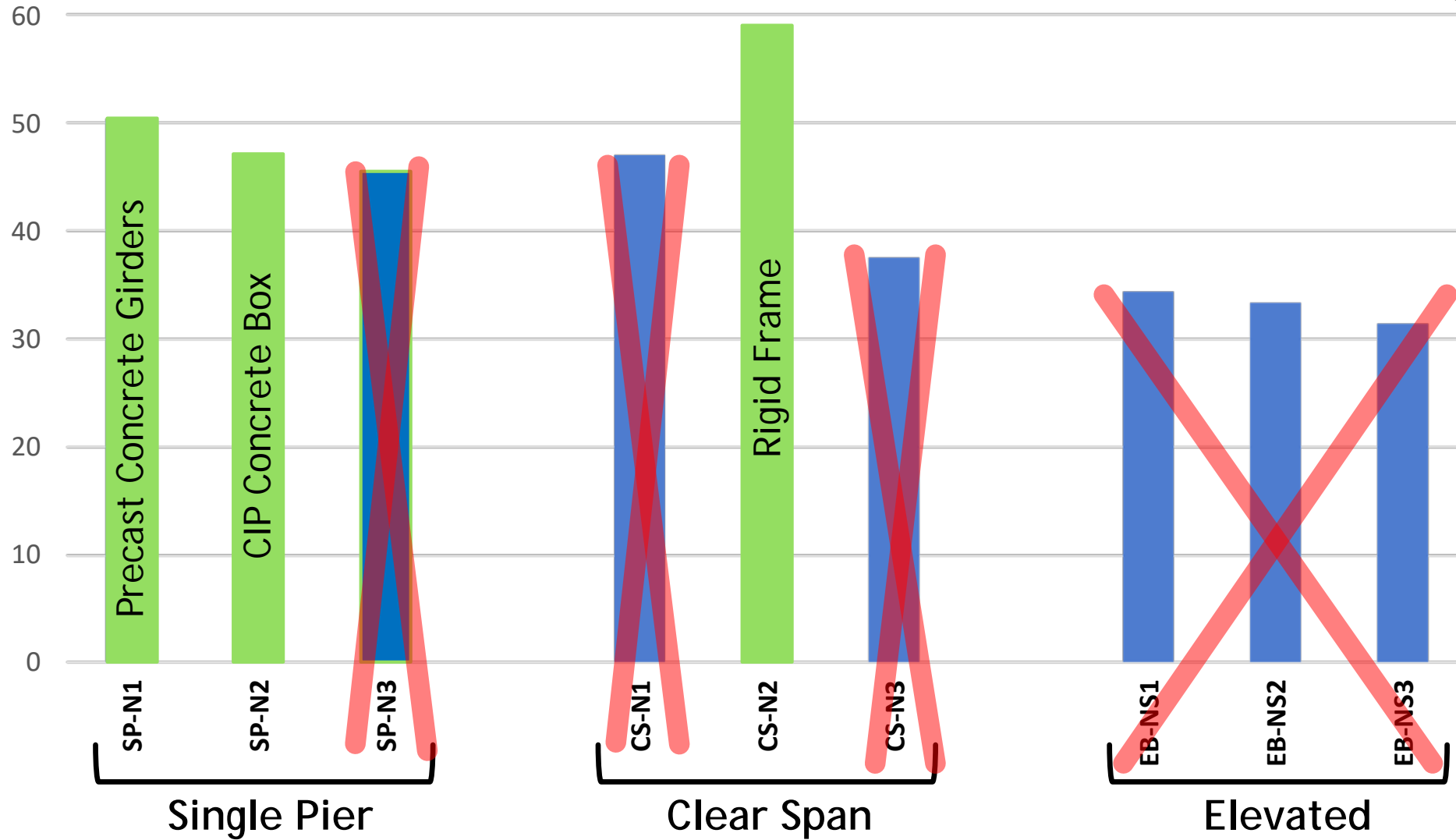
TAC-2 Scoring Results



		Score	Rank
North Bridge	Single Pier Concept		
	SP-N1 Precast Concrete Girders	50	2
	SP-N2 Cast-in-Place Concrete Box	46	4
	SP-N3 Steel I-Girders	45	5
	Clear Span Concept		
	CS-N1 Underdeck Arch	47	3
	CS-N2 Rigid Frame	58	1
CS-N3 Tied Arch	38	6	
N&S Bridges	Elevated Bridge Concept		
	EB-NS1 Precast Concrete Girders	36	7
	EB-NS2 Cast-in-Place Concrete Box	34	8
	EB-NS3 Steel I-Girders	33	9



TAC-2 Recommendation

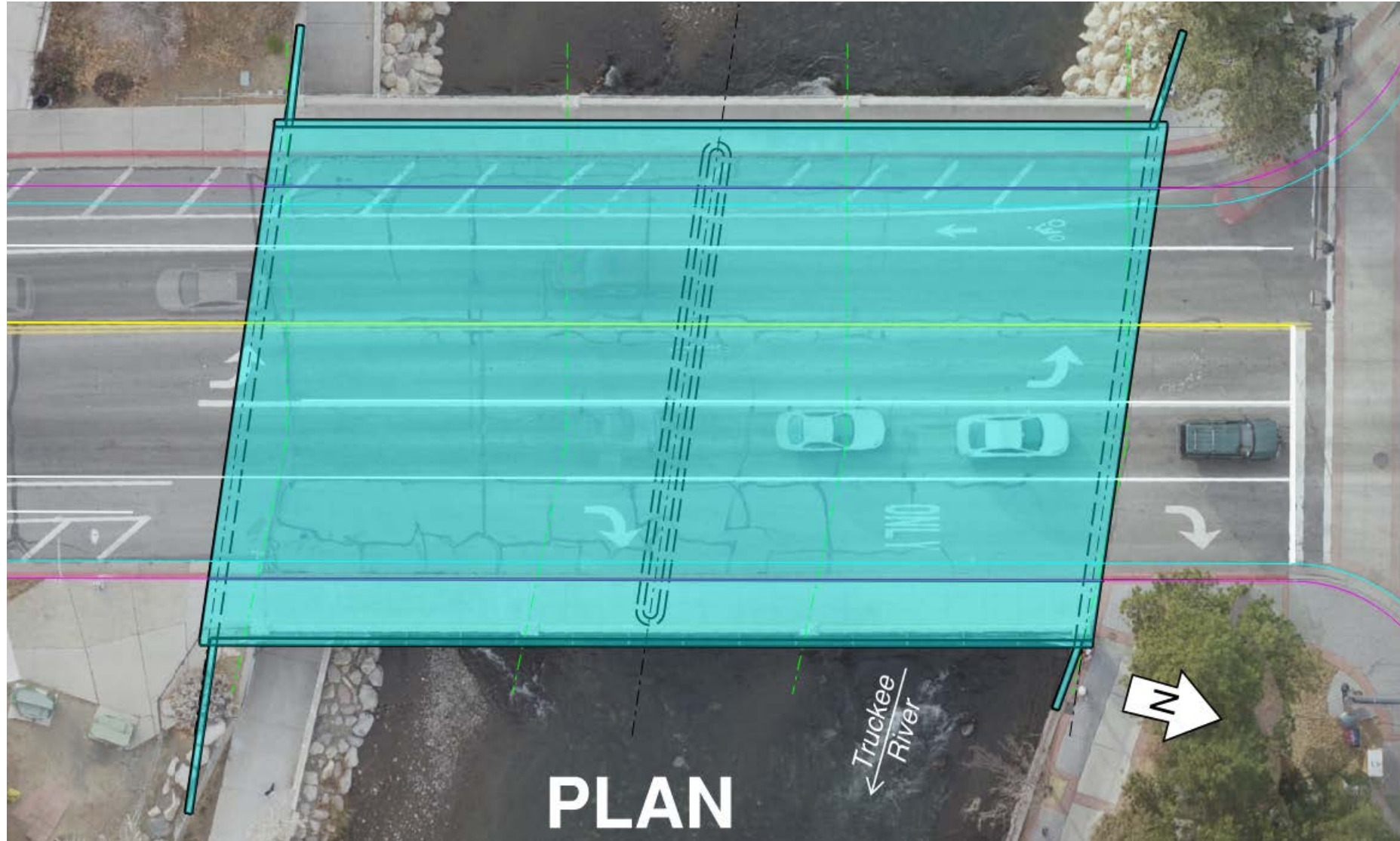


Recommended Bridge Concepts

- ▶ Single Pier Precast Concrete Girders
 - ▶ Fewer obstructions in the river
 - ▶ Falsework *not* required for superstructure construction
- ▶ Single Pier Cast-In-Place (CIP) Concrete Box
 - ▶ Fewer obstructions in the river
 - ▶ Falsework *is* required for superstructure construction
- ▶ Clear Span Rigid Frame
 - ▶ No obstructions in the river
 - ▶ Falsework *is* required for superstructure construction

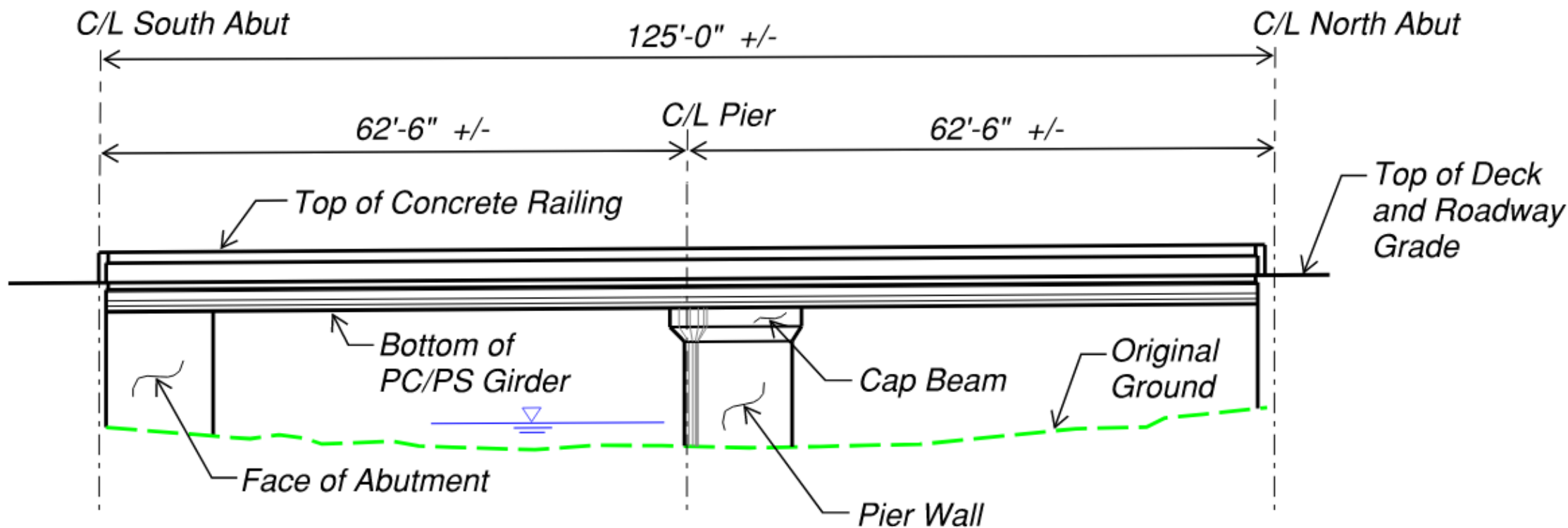
Recommended Bridge Concepts

► Single Pier Precast Concrete Girders



Recommended Bridge Concepts

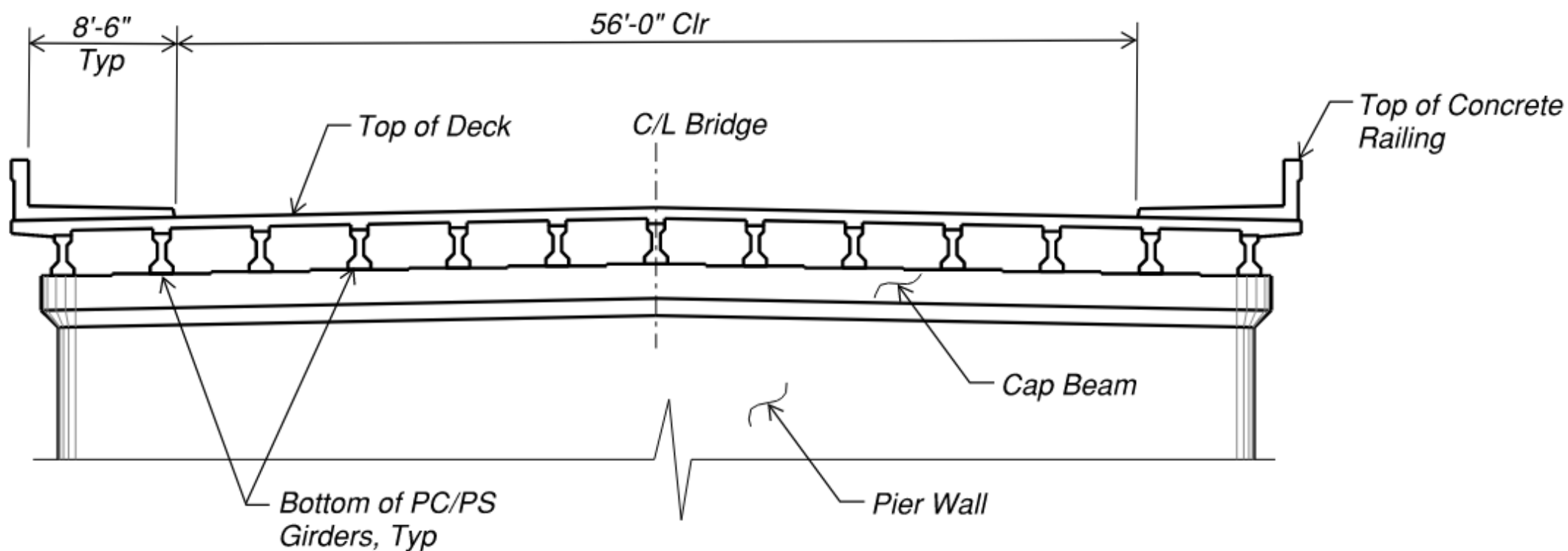
► Single Pier Precast Concrete Girders



ELEVATION

Recommended Bridge Concepts

► Single Pier Precast Concrete Girders



TYPICAL SECTION

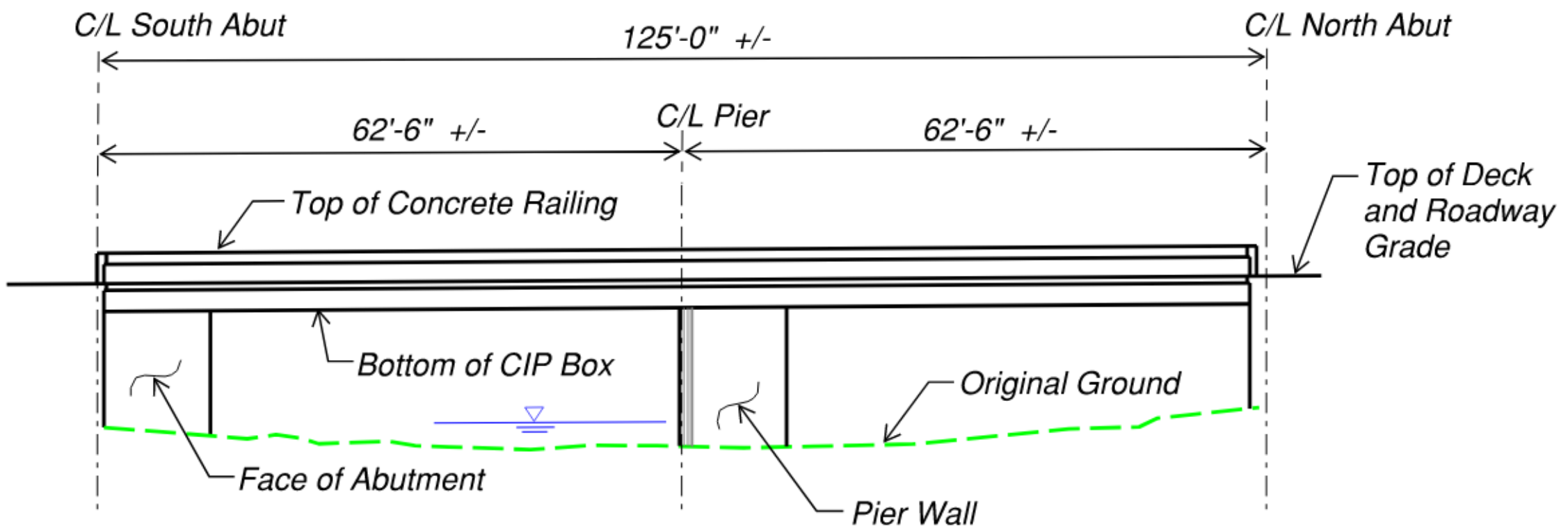
Recommended Bridge Concepts

- ▶ Single Pier CIP Concrete Box



Recommended Bridge Concepts

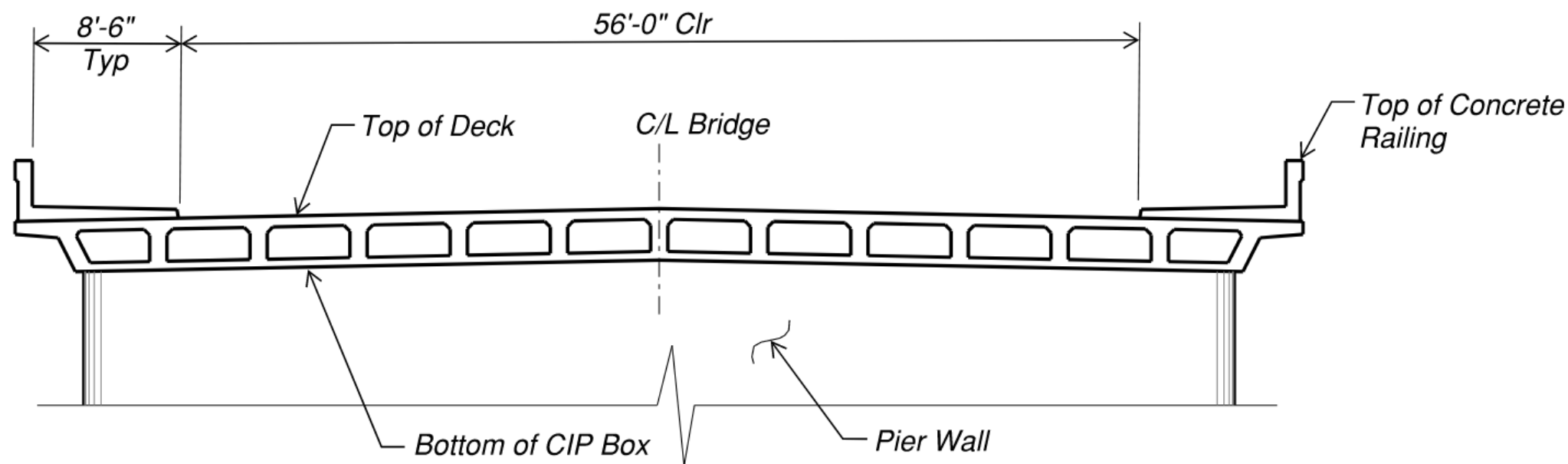
► Single Pier CIP Concrete Box



ELEVATION

Recommended Bridge Concepts

► Single Pier CIP Concrete Box



TYPICAL SECTION

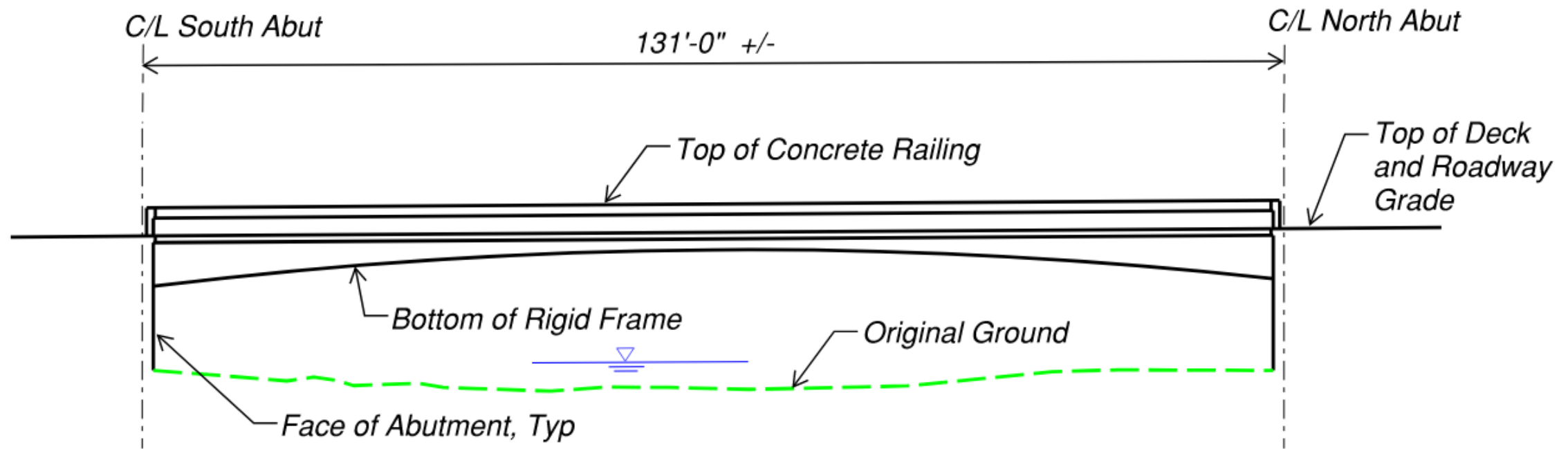
Recommended Bridge Concepts

► Clear Span Rigid Frame



Recommended Bridge Concepts

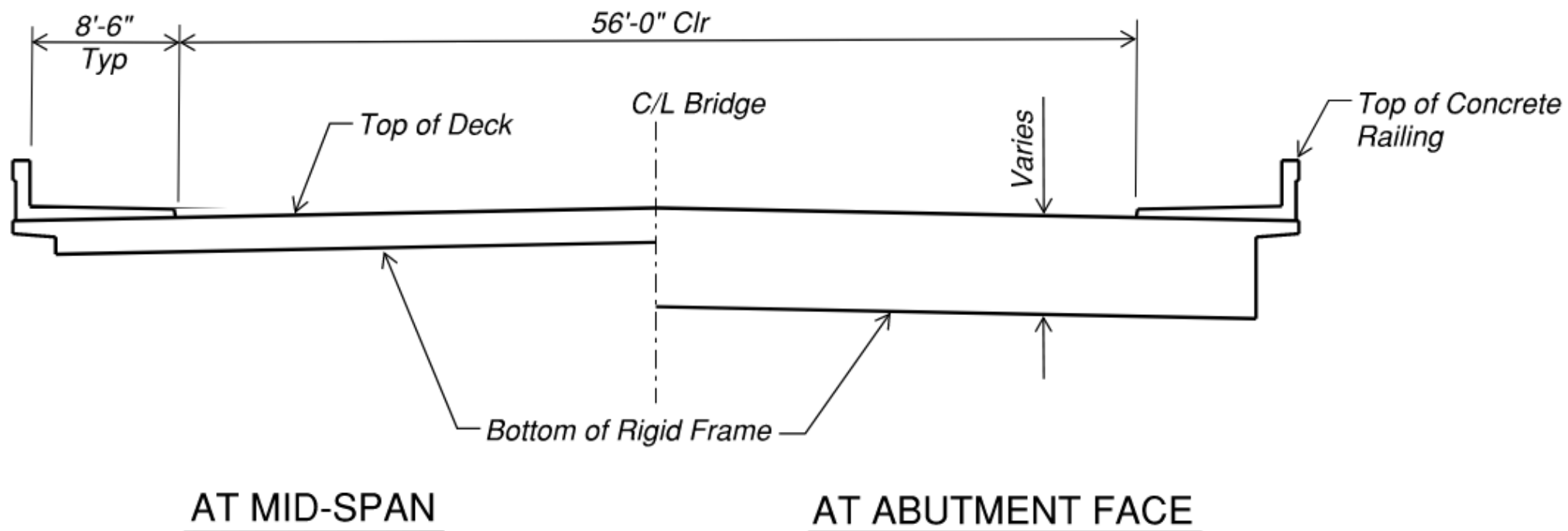
► Clear Span Rigid Frame



ELEVATION

Recommended Bridge Concepts

► Clear Span Rigid Frame



TYPICAL SECTION

Questions?

Group Discussion and Consensus

TAC-1 Recommendations

- ▶ Single Pier
- ▶ Clear Span
- ▶ Underdeck Arch

TAC-2 Recommendations

- ▶ Single Pier Precast Concrete Girders
- ▶ Single Pier Cast-In-Place (CIP) Concrete Box
- ▶ Clear Span Rigid Frame



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