

We Make a Difference



BrDR 6.8.3, 6.8.4 and 7.0

RADBUG Meeting, 2018





We Make a Difference

BrDR 6.8.3, 6.8.4 and 7.0

- Release Roadmap
- Overview of BrDR 6.8.3
- Load Rating Tool Enhancements
- Testing Strategy for BrDR 6.8.4 and BrDR 7.0
- Overview of the Modernized BrDR User Interface





Overview of BrDR 6.8.3

- Modernized AASHTO Analytical Engine
- Errata for AASHTO LRFD Bridge Design Specifications, 8th Edition
- Live Demo

Member Alternative and Member Definition

A M	1ember Alternativ	ve Description				• ×
<u>M</u> D₁	ember Alternative: escription Specs	Plate Girder Factors Engine Import	Control Options			
	Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors	
	ASD	Legacy AASHTO ASD 🛛 🗸	System Default 🗸	MBE 3rd, Std 17th 🖂	N/A	\sim
	LFD	Legacy AASHTO LFD 🛛 🗸	System Default 🗸	MBE 3rd, Std 17th 🖂	2002 AASHTO Std. Specifications	~
	LRFD	Legacy AASHTO LRFD 🗸	System Default 🖂	LRFD 8th 🗸	2017 AASHTO LRFD Spec	~
	LRFR	Legacy AASHTO LRFR $$	System Default 🖂	MBE 3rd, LRFD 8th 🖂	2017 AASHTO LRFR Spec	~
		AASHTO LRFR Legacy AASHTO LRFR				
				[OK Apply	Cancel

Concrete Multi-Cell Box

م م ۱	Concrete Multi-Cell Box Superstructure Definition Definition Analysis Specs Factors Engine Control Options											
	Analysis Method Type Analysis Module Selection Type Spec Version Factors											
	LFD	Legacy AASHTO LFD	\sim	System Default	\sim	MBE 3rd, Std 17th	2	2002 AASHTO Std. Specifications	-			
	LRFD	Legacy AASHTO LRFD	\sim	System Default	\sim	LRFD 8th 🗸	2	2017 AASHTO LRFD Spec	-			
	LRFR	Legacy AASHTO LRFR	\sim	System Default	\sim	MBE 3rd, LRFD 8th 🔍	2	2017 AASHTO LRFR Spec	~			
		AASHTO LRFR										
		Legacy AASHTO LRFR										
	OK Apply Cancel											

3D FEM analysis and 3D FEM-Vehicle Path analysis

Analysis Method Type	Analysis Module		Selection Type		Spec Version		Factors	
ASD	Legacy AASHTO ASD	\sim	System Default	\sim	MBE 3rd, Std 17th	\sim	N/A	\sim
LFD	Legacy AASHTO LFD	\sim	System Default	\sim	MBE 3rd, Std 17th	\sim	2002 AASHTO Std. Specifications	\sim
LRFD	Legacy AASHTO LRFD	\sim	System Default	\sim	LRFD 8th	\sim	2017 AASHTO LRFD Spec	\sim
LRFR	Legacy AASHTO LRFR	<	System Default	\sim	MBE 3rd, LRFD 8th	\sim	2017 AASHTO LRFR Spec	\sim
	AASHTO LRFR							
	Legacy AASHTO LRFR							

Main Truss

🗛 Truss	
Name: Truss 1	Link with: None ~
Description Gusse	et Plates Specs Factors
Analysis Method Type	Analysis Module Selection Type Spec Version Factors
LFD	Legacy AASHTO Truss LFD 📈 System Default 🗸 MBE 3rd, Std 17th 🔽 2002 AASHTO Std. Specifications 🗸
LRFR	Legacy AASHTO Truss LRFF 🗸 System Default 🗸 MBE 3rd, LRFD 8th 🔽 2017 AASHTO LRFR Spec 🗸
	AASHTO Truss LRFR
	Legacy AASHTO Truss LRFR
	OK Apply Cancel
1	

Floor Truss

🗛 FI	loorbeam Definiti	ion							×
Na	ame: Channel	Truss	Factors	Engine					
	Acchain Method	All Cheer	1 actors	Engine	1		1		т
	Analysis Method Type	Anal	lysis Modu	ıle	Selection Type	Spec Version	Fa	ctors	
	LFD	Legacy AAS	SHTO Trus	as LFC 🗸	System Default 🗸	MBE 3rd, Std 17th	2002 AASHTO Sto	d.Specifications 🗸	
		AASHTO Tri Legacy AAS	uss LFD SHTO Trus	ss LFD					
'									
						[OK A	Apply Cano	el

Timber Deck

🗛 Deck		
Description Factors Engine		
Default rating method: ASD Analysis Module ASD: Legacy Madero A Legacy Madero A Madero ASD	∽ SD	Deck Rating Parameters
Timber deck type:	Nail-Laminated Deck	~
Timber material:	Deck Timber	~
Total deck thickness:	3.5000 in	Nominal thick.: 2.0000 in
Lamination thickness:	1.5000 in	Nominal width: 4.0000 in
Deck LL distribution width:	17.3200 in	
Nail:	20 Pennyweight	~
		OK Apply Cancel

Corrugated Deck

🕰 Corrugated Deck Metal Panel	
Default rating method: LFD V Analysis LFD: LRFR:	Module Wheel Load Distribution Legacy AASHTO Parallel to traffic: 10.0000 in : Legacy AASHTO Perpendicular to traffic: 10.0000 in
Corrugated Deck Plank	AASHTO LRFR Legacy AASHTO LRI
Plank depth: 2.0000 in	Yield strength: 50.0000 ksi Copy from Library
Plank thickness: 0.0635 in	Panel length: 9.0000 ft
A: 1.0000 in	
B: 2.0000 in	
C: 2.0000 in	Thickness A Plank
Compute Properties	above plank
Moment of inertia: 0.6975 in^4/ft	
Section modulus: 0.6761 in^3/ft	
Load: 20.000 psf	│ │ ॺ⊭∖⋖─≻∖⋖ →│ │
Fill Material Weight: 150.000 pcf	
Thickness above plank:	OK Apply Cancel

Steel Non-Detailed Section

A Member Alternati	ve Description				- • •
Member Alternative Description Spece	Mbr Alt 1 Factors Engine Import	Control Options			
Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors	
ASD	Legacy Virtis Simplified ∨ BrR Simplified ASD Legacy Virtis Simplified ASI	System Default 🔽	×	N/A	✓
			[OK Apply	Cancel

Distribution Factor-Line Girder analysis

Analysis Settings	
O Design Review Rating	Rating Method: LRFR ~
Analysis Type: Legacy Dist Factor-Line Girder 🛛 🗸	
Legacy Dist Factor-Line Girder 3D FEM Superstructure Definition 3D FEM-Vehicle Path V Distribution Factor-Line Girder	Apply Preference Setting: None ~
Traffic Direction: Both directions Vehicle Selection:	Vehicle Summary:
 Standard EV2 EV3 H 15-44 H 20-44 HL-93 (SI) HL-93 (US) HS 15-44 HS 20 (SI) HS 20-44 Lane-Type Legal Load LRFD Fatigue Truck (SI) LRFD Fatigue Truck (US) 	 Add to Rating → Rating Vehicles → LRFR → Design Load Rating → Inventory → Operating → Fatigue → Legal Load Rating → Routine → Specialized Hauling → Permit Load Rating
Reset Clear Open Template	Save Template OK Apply Cancel

- How about the Pier analysis?
- How about the Design Tools?
 - Prestressed Concrete Design Tool
 - Shear Stirrup Design Tool
 - Shear Stud Design Tool
 - Culvert Design Tool

Use General Preferences to switch analysis engine

General Preferences		×
General Preferences General Preferences Preference Selection:	Add to Setting > Remove from Setting < Add All to	Preference Setting Preference Setting: Superstructure 3D Analysis Module - ASD 3D Analysis Module - LFD 3D Analysis Module - LRFR 3D Analysis Module - LRFR DLine Girder Analysis Module - LFD Line Girder Analysis Module - LRFR Line Girder Analysis Module - LRFR CLine Girder Analysis Module - LRFD Member Analysis Module - ASD
	Remove All from Setting	Analysis Module - LFD Analysis Module - LRFR Analysis Module - LRFD Culvert Analysis Module - LFD Analysis Module - LFD Analysis Module - LRFR
	<<	Open Template Save Template View Edit Preferences
		Apply Close

AASHTO LRFD 6.13.6.1.3c – Web Splices



Live Demo Legacy vs. Modernized AASHTO Engine



Load Rating Tool Enhancements

- Support LFR analysis of additional structure types
 - Floor Systems
 - Concrete Multi-Cell Boxes
 - Culverts
- For the Modernized AASHTO Engine in BrR 7.0



We Make a Difference

Testing Strategy

2 main upgrade paths



- Effective regression testing approach
- Get organized, make a plan, and don't get left behind!



We Make a Difference

Overview of the Modernized BrDR User Interface

- Mockups
- User Interface Changes
- Discontinued Features
- Live Demo

Michael Baker

W

Modernized UI – Mockups

	AASHTO	OWare Bridge I	ridge Design and Rating						
BRIDGE EXPLORER BRIDGE FOLDER F	RATE TOOLS	S VIFW]	Drop-down op	indow	Iohn Smith 💌			
Command 1 Group 1 Group 2 Group 2 Group 2 Group 2						*			
	BID	Bridge	ID Bridge Name	District	County	Facility			
	1	TrainingBridg	e1 Training Bridge 1 (LRFD)						
Steel Example Bridges	2	TrainingBridg	e2 Training Bridge 2 (LRFD)						
Recent Bridges	3	TrainingBridg	e3 Training Bridge 3 (LRFD)						
 AASHTOWareBrXX Sample Bridges Concrete Example Bridges Steel Example Bridges Deleted Bridges 									

Michael Baker

INTERNATIONAL

Core Tabs

BRIDGE														
		Check Out		Export							Lock	Check Out	Export	Cancel
New	Authorization	Check In	Open	Import	Find	Сору	Paste	Move To	Сору То	Delete	Unlock	Check In	Import	Information
				Batch									Batch	
		Bridge						Manage			Pro	tection	Ex	change

FOLDER			
New	Properties	Add To Favorite	Delete
Fc	older	Man	age

RATE							
Rate	Update BrM Ratings	Rating Results	Recent Rating Results	Manage Analysis Events	Open	Precomputed Data	Load Rating Tool
Rate		Results			Routing	Routing Load Rating Too	



INTERNATIONAL

Modal Tabs

DELETED BRIDGES				_
Empty Folder	Delete	Undelete	Close	
Ma	nage			ĺ

LIBRARY					
New	Copy & Paste	Open	Delete	Schematic	Close
	Manage				

CONFIGURATION

New User Group	Delete User Group	Open	Close
	Manage		

BRIDGE EXPLORER Menu

- Database Information
- Export
 - o Library Data
 - System Data
- Import
 - Library Data
 - System Data
- Print
- Help
- Exit





We N

DS

δ Α	II Us	ers						(Columns of	an be so filtered	orted		-	
[r					1						5			
		User ID	Active	First Name	Last Name	Prefix	Suffix	11	tle		Organizatio	n	Phone 1	
		Bridge		BrDUser	BrDUser									
∦	4	Druge		Brb	Bridge									
		BrRAdmin		BrRAdmin	BrRAdmin									
		BrRMgr		BrRMgr	BrRMgr									
		BrRUser		BrRUser	BrRUser									
		· · · · · · · · ·							Dutiday to a					
E	Adn	ninistrators	er of:				<- Rem	Add ove ->	Bridge is no Design E Manager Rating E Routing	ot a men ngineers rs ngineers Enginee	nber of:			
												New	Duplicate	ete

Save Close

	TrainingBridge1 - AASHTOWa	are Bridge Design and Ratin	g	? – □ ×
		ANALYSIS	SUBSTRUCTURE	
BRIDGE WORKSPACE WORKSPACE TOOL	S VIEW	DESIGN/RATE	DESIGN	
Command 1 Group 1 Group 2 Group 2 Command 1 Group 2 Group 2 Group 2				^
Workspace 🗙	Schematic	>	K Report	×
Bridge Components Workspace is operated by the core tabs and contextual tab sets Workspace window can be docked, moved and resized	Framing Plan x Profile x	Schematic, Report and Anal docked, moved a Tabs can be closed indivic can be dragged out to	Validation x BWS Repo	rt x

INTERNATIONAL

WORKSPACE												
Check Out			Restore									
Check In	Validate	Save	Revert	Close	Export	Open	New	Сору	Paste	Copy & Paste	Delete	Schematic
										ſ		
		Bridge							Mana	ige		

TOOLS						
Multimedia Attachments	General Preferences	Report Tool	Superstructure Definition Wizard	Prestressed Concrete Design Tool	Culvert Design Tool	Import Design Tool File
Bridge						

VIEW	ſ							
Expand Branch	Superstructures							
Collapse Branch	Culverts	Compact	System	Switch				
	Substructures		Onits	WINGOWS				
Bridge Workspace View								

A	TrainingBridge1		
Bridge ID: TrainingBridge1 NBI Structu Description Description (cont'd) Alternatives	rre ID (8): TrainingBridge1	Iy Defined Culverts	A Substructures checkbox will be added to the Bridge Description window
 Superstructures Culverts Substructures 	 Superstructures Culverts Substructures 	 Superstructures Culverts Substructures 	 Superstructures Culverts Substructures
Workspace X Bridge Components Image: TrainingBridge1 Components Image: Components 4500 psi Concrete Grade 50W Grade 50W Grade 60 - Epoxy Grade 60 - Epoxy Image: Diaphragm Definitions Lateral Bracing Definitions Image: Lateral Bracing Definitions LRFD Multiple Presence Factors Image: Environmental Conditions Design Parameters Image: SUPERSTRUCTURE DEFINITIONS SUPERSTRUCTURE DEFINITIONS Image: Bridge Alt1 Image SUPERSTRUCTURES Image: Stiffness Analysis Stiffness Analysis Image: PIERS PIERS	Workspace X Bridge Components Image: TrainingBridge1 Components Image: Components 4500 psi Concrete Grade 50W Grade 60 - Epoxy Image: Diaphragm Definitions Diaphragm Definitions Image: Lateral Bracing Definitions SUPERSTRUCTURE DEFINITIONS Image: Bridge Alt1 Image: Bridge Alt1 Image: Superstructures, Culverts and Superstructures, Culverts, C	Workspace Bridge Components TrainingBridge1 Components 4500 psi Concrete Grade 50W Grade 60 - Epoxy CULVERT DEFINITIONS BRIDGE ALTERNATIVES Bridge Alt1 CULVERTS	 Workspace Bridge Components TrainingBridge1 Components 4500 psi Concrete Grade 50W Grade 60 - Epoxy LRFD Multiple Presence Factors Environmental Conditions Design Parameters BRIDGE ALTERNATIVES Bridge Alt1 Stiffness Analysis PIERS
CULVERTS			

Culverts

Substructures



Modernized UI – Mockups

Michael Baker



Modernized UI – Mockups

Modernized Bridge Workspace tree Superstructures Culverts Substructures Compact

We Make a Difference

8/7/2018



INTERNATIONAL

ANALYSIS DESIGN/RATE

Analysis Settings	Analyze	Analysis Events	Tabular Results	Specification Checks	Engine Outputs	Result Graphs	Analysis Errors	Save Results		
Analysis			Results							

SUBSTRUCTURE

DESIGN										
Design Mode	Generate Model	Load Combinations	Load Palette	Analyze	Specification Check	Tabular Results	Specification Checks	Result Graphs	Soil Plot	3D Schematic
			Result	S						

BRIDGE WORKSPACE Menu

- Print
- Help
- Close

- Bridge and Library's Materials Concrete windows
 - Rearrange the inputs and add a Compute button

A	Bridge Materials - Co	ncrete	
Name:	Class A (US) De	scription: Class A c	cement concrete
	Compressive strength at 28 days (f'c) = Initial compressive strength (f'ci) = Coefficient of thermal expansion = Density (for dead loads) = Density (for modulus of elasticity) =	4.000 0.0000060000 0.150 0.145	ksi ksi 1/F kcf kcf
	Std Modulus of elasticity (Ec) = LRFD Modulus of elasticity (Ec) = Std Initial modulus of elasticity = LRFD Initial modulus of elasticity =	3644.15 3644.15	ksi Can be input or computed ksi ksi
	Poisson's ratio = Composition of concrete = Modulus of rupture = Shear factor =	0.200 Normal 0.480	∨ ksi
	Splitting tensile strength (fct) =	brary OK	ksi Apply Cancel

Michael Baker

- Bridge Impact / Dynamic Load Allowance window
 - Remove the bridge level's Impact / Dynamic Load Allowance window

🗛 Bridge Impact / Dynamic Load Allowance 💶 💷 📧
Standard Impact Factor For structural components where impact is to be included per AASHTO 3.8.1, choose the impact factor to be used:
● Standard AASHTO impact = L + 125
O Modified impact = times AASHTO impact
◯ Constant impact override =
LRFD Dynamic Load Allowance
Fatigue and fracture limit states: 15.0 $\%$
All other limit states: 33.0 🕺
OK Apply Cancel

- Deck Profile window's Shear Connectors tab
 - Switch the order of the Number per Row and Number of Spaces columns

A	Deck Profile	- • •
Type: Plate Deck Concrete Reinforceme	ent Shear Connectors	
Support Number Start Distance (ft)	End Distance ID Row Spaces (in)	e
1 🔽 0.00 161.00	161.00 Stud 0.875	
Shear Stud		
Design Tool	Calos New Duplica	ate Delete
		ply Cancel

- Beam Details window's Span Detail tab
 - Move the Use Creep data to the Member Alternative window

2				Beam Details							
Span Deta	il Continu	ous	Support Detail	Stress Limit Ranges	SI	ab Interfac	e	Co	ntinuity Diaphrag	n Web End Block	
Span Number	n Der Beam Shape Girder Material		Prestress Properties		Use Cree	Use Creep		Creep n		Beam Pr Left End (in)	ojection Right End (in)
1	BT-72	¥	Beam Concr 🗸	Prestress Properties	ł	Yes	~	5.6	6.0000	6.0000	
2	BT-72	¥	Beam Concr 🗸	Prestress Properties	ł	Yes	~	5.6	6.0000	6.0000	
3	BT-72	¥	Beam Concr 🗸	Prestress Properties	ſ	Yes	~	9 .6	6.0000	6.0000	
								OK	Apply	Cancel	

Pier Alternative's Geometry windows

Michael Baker

We Make a Difference

 Replace the custom OpenGL view with static bitmap and labeled text boxes



8/7/2018

Modernized Cap Geometry window

- The static schematic (not drawn to scale) reflects the left and right cantilever types.
- For Frame Pier and Solid Shaft Pier, Cap length is read-only.
- For Pile Bent Pier, Cap length is editable.



- Add Create New in the Dropdown List
 - Select Create New will open the window for the item and a new item can be input or select from the library

A	Stringer Profile
Type: Rolled Shape Shape Top Cover Plat	e Bottom Cover Plate
Shape	Start Distance (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)
W 21x62 Create new shape W 21x62 W 6x20	▼ 0.00 39.92 39.92 FY 36ksi Steel ▼
	New Duplicate Delete
	OK Apply Cancel

- Preferences window's Bridge Workspace tab
 - Move the Rating Live Load Distribution Factor data to the System Defaults window's Superstructure Analysis tab

Preferences	×
Bridge Explorer Bridge Workspace Confirmations Analysis Report Tool	OK
Options	Cancel
✓ Backup data to file every: 15 minutes	
✓ Validate before saving	Help
Display the entered number of decimal positions Rating Live Load Distribution Factor	
Compute simple beam distribution factor based on:	
AASHTO Standard Specifications for Highway Bridges Article 3.6.3 AASHTO Manual for Bridge Evaluation Article 6B.6.2.2	
LFD/ASD Distribution Factor for Exterior Beams	
Use only lever rule for exterior beams	

8/7/2018

We Make a D

- System Defaults window's Bridge Workspace tab
 - Move the Corrosion condition and Stress limit coef. (US) override data to the Stress Limit Sets Concrete window

System	Defaults
General Bridge Workspace Control Options Superstructure A	nalysis Specifications Substructure Analysis Tolerance Custom Agency F
New Bridge System of Units US Customary PS Values Default Average Humidity	Library LRFD Substructure Design Settings Preliminary Mode Design Settings: Preliminary Design Setting (US) Final Mode Design Settings: Final Design Setting (US)
Corrosion condition: Moderate Stress limit coef.(US) override LRFD Wind Loads Default Strength III 3-Second Gust Wind Speed 115.00	mph
	Save Close

8/7/2018

We Make a D

- System Defaults window's Control Options tab
 - Remove the Control Options tab from the System Defaults window

**	System Defau	ılts			
General Bridge Workspace Control Options	Superstructure Analysis	Specifications	Substructure Analysis	Tolerance	Custom Agency F 🔹 🕨
LRFD Distribution Factor Application Method O By axle O By POI	LRFR Distribut OB	ion Factor Applic y axle y POI	ation Method		
LFD Distribution Factor Application Method O By axle O By POI					
				Sa	ave Close

8/7/2018

- Deck Details window's Adjustment Factors tab
 - Remove the Adjustment Factors tab from the Deck Details window

Bridge Workspace - TimberTrainingBridge1		
🖃 🗝 TimberTrainingBridge1		^ I
🗄 ····· 📄 Materials		
🗄 📖 Beam Shapes	🗛 Deck Details	
🗄 📖 Appurtenances		
🗄 📖 Connectors		
间 Diaphragm Definitions		
🚞 Lateral Bracing Definitions	Adjustment Factors	
📑 Impact / Dynamic Load Allowance		N
MPF LRFD Multiple Presence Factors	Moisture con	dition for shear/flexure: Wet
🛓 🧰 Factors	Moistur	e condition for bearing: Wet
📖 🛅 LRFD Substructure Design Settings	Moisture	a condition for modulus:
EC Environmental Conditions	Moisture	condition for modulus.
DP Design Parameters	Shear factor: 2.00	Flat use factor:
🚊 📖 🛅 SUPERSTRUCTURE DEFINITIONS		1.45
🖃 🛲 Structure Definition #1	Wet service (flexure):	Repetitive use factor:
📑 Impact / Dynamic Load Allowance)) (et convice (chear))	Load duration factor
HI Load Case Description	wet service (snear).	
📖 🋲 Framing Plan Detail	Wet service (bearing):	
🚞 Bracing Deterioration) (ot service (medulus):	This data is no longer applicable.
BSC Bracing Spec Check Selection	wet service (modulus).	jsee the Deck window for this data.
🙇 Deck	Size factor (flexure):	Compute
Structure Typical Section		
+++ Superstructure Loads		OK Apply Cancel
🖮 💼 MEMBERS	J	
i∰ I G1		
<u>⊨</u> I G2		
		Girder system superstructure definition
🚡 Supports		with timber deck and timber member
🖮 💼 MEMBER ALTERNATIVES		
□···· I Interior Beam (E) (C)		
🚽 Default Materia	ıls	
LL DIST. Live Load Distri	bution	
Hinge Location	IS	
Beam Details		
🔣 Deck Details	>	
Points of Intere	st	

- Relocate the beam description items in the Bridge Workspace tree before the Live Load Distribution item or after the Impact item if the Live Load Distribution item is not there
 - Girder Profile
 - Floorbeam Profile
 - Stringer Profile
 - Cross Sections and Cross Section Ranges
 - Beam Details

Project Explorer

Br														
File	e Edit View Window	He	lp											
	🖻 🖬 📽 陆 🌤 🗎	ЖI	b C 4	ð 🧶	R I), 🎁 🖁	🇞 🕴 🖿	1						
	Σ RESU μ _P 01	4	🖊 🕄 ALL	NXT 📗		0 ×			~					
P	reliminary 🗸 🖄 🖓	R	•	1	6	i 🦛 ek	Ş							
1	' El El III <i>e</i> El (har (n 🖻 🕅	× 28 /	2 🖸		1 8							
R	L					Projec	t Expl	orer						• ×
	All Projects	BID	Project ID	Project Number	Project District	Project County	Facility Carried	Project Description	Project Bridge ID	Status	Bridge ID	Feat. Intersected	Engineering Manager	Structural Engineer
	District 1	1	Project D1	1	01	01			1	In-design	TrainingBridge1	SR 6060	PM1	SE1
		2	Project D1	1	01	01			2	In-service	TrainingBridge2	N/A	PM1	SE1
	Project D2													

Prestress Design Tool

	Prestress Design Tool											x	
P	ass/Fail	Span Number	Beam Sha	pe		Material		Stress Limit	Strand Config		Harp Distance (ft)		
		1	BT-72	¥	Beam	Concrete	~	Stress Limit Set #1	¥	Harped	¥	32.00	
		2	BT-72	V	Beam	Concrete	~	Stress Limit Set #1	¥	Harped	V	32.00	
	Fail	3	BT-72	¥	Beam	Concrete	~	Stress Limit Set #1	¥	Harped	V	32.00	
	pan Num Number of Jacking F Eccentric Eccentric Eccentric Settings	iber 3 of strands P = 1425 city at end Loss = 9 force (aft PS force	s = 46 19 kips I-span = 30.2 I = 16.69 ind 3.56% Fina ter initial loss a (after all loss	8 25 ii 25 ii 25 ii 25 ii 25 ii 25 ii 25 ii 25 ii 25 ii 26 ii 27 ii 27 ii 27 ii 28 ii 29 ii 29 ii 20 i	eview nches 3 1288.9 1080.1	Details = 24.18% 5 kips 64 kips	Com	oute Span Apply Sp	ban	Compute A		Apply All	~

BWS Report

Br

res File Edit View Bridge Substructure Tools Window Help D 😅 🖬 🖆 🎦 🦄 🗼 🕹 🖻 💼 🖨 🤣 💆 🔂 🏙 🗞 -🗐 🎟 🚈 👯 🖳 🗄 🗐 🦓 🕄 ALL NXT 🚺 🏄 🖉 🕕 🔆 ¥ Preliminary 🗸 🖉 🎢 🔯 🗩 🗹 🖬 🖉 🗟 🦰 🤟 🖆 💷 📳 🎬 🖉 💩 🖌 🦳 🛄 📉 🚴 🤌 🖺 🖹 🗑 B View BWS Report 33 Bridge Design/Rating b ß Bridge Workspace - TrainingBridge1 - - X A TrainingBridge **—**····· - O X TrainingBridge1 , and a Username: brr Date: Tuesday, September 27, 2016 10:15:14 Bridge ID TrainingBridge1 Training Bridge 1(LRFD) NBI Structure ID (8): TrainingBridge1 Description: Description Location: Pittsburgh Total Length: 161.00 (ft) Facility Carried: SR 0051 Route Number: 0051 Feature Intersected: SR 6060 Mi Post: 17.00 (mi) Units: US Customary Year Built: 1999 Recent ADTT: District: District 11 County: 01 Abbeville State Highway Agency Owner: 1 On the NHS National Highway System: Functional Class: Unknown Global Reference Point X Coordinate: 0.000 (ft) >

Live Demo Modernized User Interface



We Make a Difference



Got any questions?

RADBUG Meeting, 2018

