AASHTOWare BrDR 7.5.0 Feature Tutorial Capacity Override at Points of Interest

# Topics Covered

- Capacity Override LRFR
- Capacity Override LRFD

### Capacity Override LRFR

From the **Bridge Explorer**, double click on **BID1** - **TrainingBridge1** (or select and click **Open** from the **Bridge** group of the **BRIDGE** ribbon ) to open the bridge.

BRIDGE EXPLORER       BRIDGE       FOLDER       RATE       TOOLS       VIEW         Image       Import	a P		AAS	HTOWare Bridge Design	n and Rating	?	_		Ж
Import       Import <thimport< th="">       Import       Import</thimport<>	BRIDGE EXPLORER BRIDG	E FOLDER	RATE	TOOLS VIEW					1
BID       Bridge ID       Bridge Name         Recent Bridges       1       TrainingBridge1       Training Bridge 1(LRFD)       U         All Bridges       2       TrainingBridge2       Training Bridge 2(LRFD)       U         2       TrainingBridge3       Training Bridge 3(LRFD)       U         3       TrainingBridge3       Training Bridge 2(LRFD)       U         4       PCITrainingBridge1       PCI TrainingBridge1(LFR)       U         5       PCITrainingBridge2       PCITrainingBridge2(LRFD)       U         6       PCITrainingBridge3       PCI TrainingBridge3(LFR)       U         7       PCITrainingBridge4       PCITrainingBridge4(LRFD)       U	New Open Batch ~	Find Copy Pa	ste Cop Ton	y Remove Delete					4
Image: Constraint of the second se	····· 🊖 Favorites Folder		BID	Bridge ID	Bridae	Vame			Dist
All Bridges       2       TrainingBridge2       Training Bridge 2(LRFD)       U         Image: Template Bridge       3       TrainingBridge3       Training Bridge 3(LRFD)       U         Image: Templates       3       TrainingBridge3       TrainingBridge1(LFR)       U         Image: Templates       4       PCITrainingBridge1       PCI TrainingBridge2(LRFD)       U         Image: Templates       5       PCITrainingBridge2       PCITrainingBridge2(LRFD)       0         Image: Templates       6       PCITrainingBridge3       PCI TrainingBridge3(LFR)       0         Image: Templates       7       PCITrainingBridge4       PCITrainingBridge4(LRFD)       0	🧭 Recent Bridges		1	TrainingBridge1	Training Bridge 1(LRFD)			l	Unkri
Image Interplate Bridge       3       TrainingBridge3       Training Bridge 3(LRFD)       U         Image Interplates       4       PCITrainingBridge1       PCI TrainingBridge1(LFR)       U         Image Interplates       5       PCITrainingBridge2       PCITrainingBridge2(LRFD)       U         Image Interplates       6       PCITrainingBridge3       PCI TrainingBridge3(LRFD)       U         Image Interplates       7       PCITrainingBridge4       PCITrainingBridge4(LRFD)       U	- MI Bridges		2	TrainingBridge2	Training Bridge 2(LRFD)			l	Unkn
4       PCITrainingBridge1       PCI TrainingBridge1(LFR)         5       PCITrainingBridge2       PCITrainingBridge2(LRFD)         6       PCITrainingBridge3       PCI TrainingBridge3(LFR)         7       PCITrainingBridge4       PCITrainingBridge4(LRFD)	Template Bridge		3	TrainingBridge3	Training Bridge 3(LRFD)			l	Unk
5       PCITrainingBridge2       PCITrainingBridge2(LRFD)         6       PCITrainingBridge3       PCI TrainingBridge3(LFR)         7       PCITrainingBridge4       PCITrainingBridge4(LRFD)	📁 Deleted Bridges		4	PCITrainingBridge1	PCI TrainingBridge1(LFR)				
6     PCITrainingBridge3     PCI TrainingBridge3(LFR)       7     PCITrainingBridge4     PCITrainingBridge4(LRFD)	•		5	PCITrainingBridge2	PCITrainingBridge2(LRFD)				1
7 PCITrainingBridge4 PCITrainingBridge4(LRFD)			6	PCITrainingBridge3	PCI TrainingBridge3(LFR)				1
			7	PCITrainingBridge4	PCITrainingBridge4(LRFD)				. 0
			-						•

Navigate to **SUPERSTRUCTURE DEFINITIONS -> Simple Span Structure->Members->G1->Member Alternative->Plate Girder-> Point of Interests-> Span 1 - 80.499999 - Right.** Double click on this point of interest.



Navigate to the **Positive flexural capacity** tab of this window. As seen from the window below, the option for **Override LRFR capacity** is not checked. Hence, the beam capacities at 80.5 ft will be computed by the AASHTO LRFR Engine.

overse stiffeners	tiffepore Estique P		Shoar capacity	Deciti	o flovural	nacity N	Vegativa	flor	ural capacity	Engino			
sverse suiteners Others	uneners raugue brac	cing ASK	Snear capacity	POSILIV	e llexural ca	pacity	vegative	ne	tural capacity	Engine			
ASR Override ASR capacity			)verride LRFD ca	pacity					Qverride LRFR ca	pacity			
Comment:		Comr	nent:					Con	nment:				
ASR inv. tension:	ksi	Stage	Construct	ion									
ASR inv. compr.:	ksi			Over	Moment	Tensic				Over	Moment	Tensic	
ASR oper. tension:	ksi		Limit state	- ride	capacity (kip-ft)	capac (ksi)			Limit state	- ride	capacity (kip-ft)	capac (ksi)	
ASR oper. compr.:	ksi	>	STRENGTH-I			1		>	STRENGTH-I		4-1P - 4		
LFR			STRENGTH-II						STRENGTH-II				
Override LFR capacity			STRENGTH-III						SERVICE-II				
Comment:			STRENGTH-IV						FATIGUE				
			STRENGTH-V										
Moment:	kip-ft Phi:		SERVICE-I										
Tens. stress:	ksi Phi:		SERVICE-II										
Compr. stress:	ksi Phi:		SERVICE-III			-							
			SERVICE-IV	T									
			ATICUE									-	

### From the Analysis group of the DESIGN/RATE ribbon, click on the Analysis Settings button as shown below.

Br 🖁	Bridge Wo	orkspace - Traini	ngBridge1		ANALYSIS	REPORTS	?	_	×
BRIDGE	WORKSPACE	WORKSPACE	TOOLS	VIEW	DESIGN/RATE	REPORTING			
<b>*</b>	æ 🗉			~ ≯	: E				
Analysis Settings	Analyze Analysis Events	Tabular Spec Results Chec	ification Er tk Detail Ou	ngine Resul utputs Grap	lts Save h Results				
	Analysis		Resu	lts					

Click on the **Open template** button in the **Analysis Settings** window. Select the **LRFR Design Load Rating template**. The updated **Analysis Settings** window is shown below.

whalysis type: Line Girder   ane / Impact loading type: A Requested   Apply preference setting: None     Vehicles Output   Traffic direction: Both directions     Vehicles selection     Vehicles   Impact loading     Vehicles     Vehicles   Impact loading   Vehicles   Output   Engine   Description     Traffic direction:     Both directions     Vehicles        Vehicles <th>Design review 🔘 Rating</th> <th></th> <th>Rating method:</th> <th>LFR</th> <th>~</th> <th></th>	Design review 🔘 Rating		Rating method:	LFR	~	
me / Impact loading type: Apply preference setting:   None     Vehicles   Output   Engine   Description     Traffic direction:   Both directions     Vehicle selection     Vehicle selection     Vehicle selection     Vehicle summary     Vehicle summary   Vehicle summary   Vehicle summary   Vehicle summary   Venice state   Verice st	alysis type:	r v	Analysis option:	DL, LL and Spec-Checking	$\sim$	
Vehicles       Output       Engine       Description         Traffic direction:       Both directions <ul> <li>Refresh</li> <li>Temporary vehicles</li> <li>Advanced</li> </ul> Vehicle selection       Vehicle summary         Image: Standard <ul> <li>Persiting vehicles</li> <li>Image: Proventory</li> <li>Persiting vehicles</li> <li>Image: Persiting</li> <li>Persiting</li> <li>Persitioperating</li> </ul> Standard <ul> <li>Standard</li> <li>Persitioperating</li> <li>Per</li></ul>	e / Impact loading type: As Reque	sted ~	Apply preference setting:	None	~	
Traffic direction:       Both directions <ul> <li>Refresh</li> <li>Temporary vehicles</li> <li>Advanced</li> </ul> Vehicle selection       Vehicle summary         Image: Standard       Image: Standard         Image: Atternate Military Loading       Image: Standard         Image: EV3       Image: Atternate Military Loading         Image: EV3	/ehicles Output Engine I	Description				
Image: Standard   Image: Standard <td>Traffic direction: Both directions</td> <td>~</td> <td>Refresh Ten</td> <td>nporary vehicles Adva</td> <td>nced</td> <td></td>	Traffic direction: Both directions	~	Refresh Ten	nporary vehicles Adva	nced	
Open Template		ng Add > Remov < en template Save templ	e from	ng pry ing OK Apply	Cancel	
	Open Template					
Templates Description Analysis Owner Public / Private	Templates	Description	Analysis	Owner	Public / Private	
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IRER Design Load Rating LERR Design Lead Rating LERR D	HS 20 LFK Kating	LRER Design Load Rating			Public	╗
LRFR Legal Load Rating         LRFR         Public	Loso La Lina Lo Li	LRFR Legal Load Rating	LRFR		Public	ᆗ

🔵 Design review (	Rating	Rat	ing method:	LRFR	$\sim$
nalysis type:	Line Girder	∼ Ana	alysis option:	DL, LL and Spec-Checkir	ng v
ne / Impact loading type	As Requested	<ul> <li>✓ Apj</li> </ul>	ply preference setting:	None	~
Vehicles Output	Engine Description				
Vehicle selection	directions V		Refresh Ien Vehicle summary	nporary vehicles Ad	vanced
<ul> <li>⇒ Standard</li> <li>⇒ EV2</li> <li>→ EV3</li> <li>→ H 15-44</li> <li>→ HL-93 (SI)</li> <li>→ HL-93 (US)</li> <li>→ HS 15-44</li> <li>→ HS 20 (SI)</li> <li>→ SU5</li> <li>→ SU6</li> <li>→ SU7</li> <li>→ Type 3</li> <li>→ Type 3S2</li> <li>→ Agency</li> <li>→ User defined</li> <li>→ Temporary</li> </ul>	egal Load e Truck (SI) e Truck (US)	Add to >> Remove from <<	B LRR Design loa B Inventu I HL B Operat I L HL B Legal load I Routin - Special - Permit load	d rating pry 93 (US) ing 93 (US) E Fatigue Truck (US) rating e ized hauling d rating	

Click **OK** to apply the settings and close the window.

To analyze girder G1, right click on Plate Girder and select Analyze as shown below.



After the LRFR analysis is completed click on the **Specification Check Detail** button from the **Results** group of the **DESIGN/RATE** ribbon and navigate to **Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1**.



A Specification Checks for Plate C	rder - 46 of 954			_		х
Properties Specification filter	Articles All articles Format Bullet list Report					
Guperstructure Component     Guperstructure 1	Specification reference × 6.10.4.2.2 Flexure	Limit State	Flex. Sense N/A	Pass/Fa Failed	il	
<ul> <li>▶ Stage 2</li> <li>▲ Stage 3</li> <li>▲ Plate Girder</li> <li>⇒ Span 1 - 0.00 ft.</li> <li>⇒ Span 1 - 13.66 ft.</li> <li>⇒ Span 1 - 16.10 ft.</li> <li>⇒ Span 1 - 27.31 ft.</li> <li>⇒ Span 1 - 32.20 ft.</li> <li>⇒ Span 1 - 48.30 ft.</li> <li>⇒ Span 1 - 64.40 ft.</li> <li>⇒ Span 1 - 64.40 ft.</li> <li>⇒ Span 1 - 80.50 ft.</li> <li>⇒ Span 1 - 80.98 ft.</li> <li>⇒ Span 1 - 94.39 ft.</li> </ul>	<ul> <li>G.10.6.2.2 Composite Secti</li> <li>Spec Check Detail for 6.10.7.2.1 General</li> <li>G.10.6.2.3 Composite Secti</li> <li>A 6.10.6.2.3 Composite Secti</li> <li>A 6.10.7.1.1 General</li> <li>G.10.7.2.1 General</li> <li>G.10.8.2.1 General</li> <li>G.10.8.2.3 Lateral Torsion</li> <li>G.10.8.2.3.rt Lateral Torsion</li> <li>G.10.2.5.rt Lateral Torsion</li> <li>G.10.2.7.rt Lateral Torsion</li> <li>G.10.2.7.rt Lateral Torsion</li> </ul>	ce Sections in P cations, Ninth E ) (ft) - Left us Bracing Regio Lon: No ) Option: No ), redistributio	Cositive Flexu Edition) Stage 3 on on did not occ	ur.	Ĩ	
Span 1 - 50.00 ft.	✓ 6.10.9 LRFD Shear Resistar		NZA	0	К	
j span 1 - 112.70 ft i Span 1 - 121.23 ft i Span 1 - 128.80 ft	6.10_General_Flexural_Results		N/A N/A	Failed	a Comp	

The resistance factor **phif** value is **1.0** as shown above.

Rec Check Detail for 6.10.7.2.1 General Х . --- Compression Flange --fc = stress in the slab f'c = 4.5000 (ksi) Stress = fbu Resist = phif \* Fnc Design = Design Design Ratio = Resist/Stress Note: If the capacity has been overridden, the Resistance is computed as override phi\*override capacity. Otherwise the Resistance is computed as per the Specification. Override Load Flexure fbu frd Fnc Phi Fnc Stress Resist Status Limit Component Design State Comb Type (ksi) (ksi) (ksi) (ksi) (ksi) (ksi) Ratio \_\_\_\_ Top Flange Top Flange Top Flange Top Flange Top Flange Top Flange 1, DesInv 1, DesInv 0.00 50.00 50.00 STR-I Pos -48.00 -48.00 -50.00 1.042 Pass STR-I Pos -41.35 -41.35 -50.00 1.209 Pass Pos Pos Pos STR-I 1, DesOp -46.48 0.00 50.00 -46.48 -50.00 1.076 Pass 1, DesOp 1, DesOp 2, DesInv 2, DesInv STR-I STR-I -41.35 0.00 50.00 -41.35 1.209 -50.00 Pass -46.95 -46.95 -50.00 Pass 50.00 STR-I Pos -41.35 0.00 -41.35 -50.00 1.209 Pass STR-I 2, DesOp 2, DesOp Top Flange Top Flange -45.67 -41.35 0.00 -50.00 1.095 Pos -45.67 Pass STR-I Pos 0.00 50.00 -41.35 -50.00 1.209 Pass ОК

Stress = Resist = Design Ra	fbu + fl/3 phif * Fnt atio = Resist/St	ress	Tension Flange											
Limit State	Load Comb	Flexure Type	Component	fbu (ksi)	fl (ksi)	frd (ksi)	Fnt (ksi)	Over Phi	ride Fnt (ksi)	Stress (ksi)	Resist (ksi)	Design Ratio	Status	
STR-I	1, DesInv	Pos	Bot Flange	62.68	0.00	0.00	50.00			62.68	50.00	0.798	Fail	
STR-I	1, DesInv	Pos	Bot Flange	35.10	0.00	0.00	50.00			35.10	50.00	1.425	Pass	
SIR-I	1, Desop	Pos	Bot Flange	56.37	0.00	0.00	50.00			56.37	50.00	0.887	Pall	
STR-1 STR-T	2 Destru	POS	Bot Flange	58 35	0.00	0.00	50.00			58 35	50.00	1.425	Fass	
STR-T	2 DesInv	Pos	Bot Flange	35 10	0.00	0.00	50.00			35 10	50.00	1 425	Page	
STR-T	2. DesOn	Pos	Bot Flange	53.03	0.00	0.00	50.00			53.03	50.00	0.943	Fail	
		Dog	Bot Flange	35 10	0.00	0 00	50.00			35.10	50.00	1.425	Pass	

The above two figures show the computed resistances for the compression and the tension flanges at location 80.5 ft as  $F_{nc}$  and  $F_{nt}$  respectively.

Close the article and the Specification Checks window.

Again, navigate to **SUPERSTRUCTURE DEFINITIONS->Simple Span Structure->Members->G1->Member** Alternative->Plate Girder-> Point of Interests->Span 1 80.5.

Check the **Override LRFR capacity** for **Positive Flexural Capacity** and input the values as shown below.

ce from st support: 80.499999	ft or Span: Spa	an 1 V Fraction: 0.50000	0 Side	Left 🔘 Righ	nt				
sverse stiffeners Othe	r stiffeners Fatigue	Bracing ASR Shear capacity	Positive flexural	apacity Neg	gative flexur	al capacity	Engine		
ASR		LRFD			LRFR -				
Override ASR capacit	y .	Override LRFD ca	apacity		0 🗹	verride LRFR	capacity		
Comment:		Comment:			Comm	ient:			
ASR inv. tension:	ksi	Stage: Construct	tion						
ASR inv. compr.:	ksi		Over Moment	Tencic			Over	Mamont	Tancia
ASR oper. tension:	ksi	Limit state	- capacity	capac		Limit state	-	capacity	capac
ASR oper. compr.:	ksi	> STRENGTH-I	пае (кір-ті)	(KSI)	3 5	TRENGTH-I	ride	(кір-тт)	(KSI)
I FR		STRENGTH-II				TRENGTH-II			
Override LFR capacit	У	STRENGTH-III			s	ERVICE-II			
Commont		STRENGTH-IV			E	ATIGUE	ī		
Commenta								I	
at Of Interest		STRENGTH-V	- Sid				~~		~~~
nt Of Interest ce from sist support: 80.499999	ft or Span: Spa	an 1 V Fraction: 0.50000		Left O Rigi	ht gative flexu	ral canacity	Engine		~~~
at Of Interest ce from sist support: support: support: 0the	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity	00 Sid	Left O Rigi	ht gative flexu	ral capacity	Engine		
nt Of Interest ce from 80.499999 ist support: 00the ASR	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity	DO Sid Positive flexural apacity	Left O Rigi	ht gative flexu	ral capacity	Engine		
at Of Interest ce from st support: 80.499999 sverse stiffeners Othe ASR Override ASR capaci Comment:	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity LRFD Comment:	DO Sid Positive flexural apacity	Left Rigi	ht gative flexu LRFR Comr	ral capacity Dverride LRFR nent:	Engine		
nt Of Interest ce from 80.499999 ist support: 80.499999 isverse stiffeners Othe ASR Override ASR capaci Comment: ASR inv. tension:	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity LRFD Comment: Stage: Construct	DO Sid DO Sid Positive flexural apacity	Left O Rigi	ht gative flexu LRFR Q C Comr	ral capacity Verride LRFF nent:	Engine		
At Of Interest ce from 80.499999 st support: 80.499999 sverse stiffeners Othe ASR Override ASR capaci Comment: ASR inv. tension: ASR inv. tension:	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity URFD Comment: Stage: Construct	DO Sid DO Positive flexural apacity tion	Left O Rigit capacity Neg	ht gative flexu LRFR Comr	ral capacity Verride LRFR nent:	Engine capacity Tension	Compr.	
ASR inv. compr.: ASR oper. tension:	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity Comment: Stage: Construct Limit state	Do Sid Do Sid Positive flexural apacity tion Over Momen capacit ride (kip-ft)	Left O Rigit capacity Neg	ht gative flexu	ral capacity Vverride LRFR nent:	Engine capacity Tension capacity (csi)	Compr. capacity (kea)	Phi
tt Of Interest ce from 80.499999 ist support: 80.499999 isverse stiffeners Othe ASR Override ASR capaci Comment: ASR inv. tension: ASR inv. tension: ASR oper. tension: ASR oper. compr.:	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity LRFD Comment: Stage: Construct Limit state > STRENGTH-I	DO Sid DO Positive flexural apacity tion Over Momen capacit (kip-ft)	Left O Rigi capacity Neg	ht gative flexu LRFR	ral capacity ral capacity verride LRFR nent:	Engine capacity (ksi) 100	Compr. capacity (ksi) 90	Phi
At Of Interest ce from 80.499999 ist support: 80.499999 isverse stiffeners Othe ASR Override ASR capaci Comment: ASR inv. tension: ASR oper. tension: ASR oper. compr.: LFR	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity URFD Override LRFD c Comment: Stage: Construc Limit state StreNGTH-I STRENGTH-II	DO Sid DO Positive flexural apacity etion Over Momen - capacit ride (kip-ft)	Left O Rigi capacity Neg	ht gative flexu LRFR Comr	ral capacity Verride LRFR nent: Limit state STRENGTH-1 STRENGTH-1	Engine capacity Tension capacity (ksi) 100	Compr. capacity (ksi) 90	Phi 0.6
At Of Interest ce from 80.499999 st support: 80.499999 sverse stiffeners Othe ASR Override ASR capacit Comment: ASR inv. tension: ASR oper. tension: ASR oper. compr.: LFR Override LFR capacit	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity URFD Comment: Stage: Construct Limit state STRENGTH-I STRENGTH-I STRENGTH-III	DO Sid DO Positive flexural apacity ttion Over Momen - capacit (kip-ft)	Left O Rigit capacity Neg	ht gative flexu LRFR Comr	ral capacity Vverride LRFR nent: Limit state STRENGTH-I STRENGTH-I STRENGTH-I STRENGTH-I	Engine capacity Tension capacity (ksi) 100	Compr. capacity (ksi) 90	Phi 0.6
tt Of Interest ce from 80.499999 sverse stiffeners Othe ASR	ft or Span: Spa r stiffeners Fatigue	an 1 V Fraction: 0.50000 Bracing ASR Shear capacity IRFD Comment: Stage: Construct Stage: Construct Stage: Construct Stage: Construct StrengTH-II STRENGTH-II STRENGTH-II STRENGTH-II	DO Sid DO Sid Positive flexural apacity ttion	capacity Neg	ht gative flexu	ral capacity Verride LRFR nent: Limit state STRENGTH-I STRENGTH-I STRENGTH SERVICE-II STRIGUE	Engine capacity Tension capacity (ksi) 100	Compr. capacity (ksi) 90	Phi 0.6

Click **OK** to save the data and right click on **Plate Girder** and select **Analyze**.

After the LRFR analysis is completed, click on the **Specification Check Detail** button from the **Results** group of the **DESIGN/RATE** ribbon and navigate to **Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1**.

The **phif** value has been overridden to 0.60 for a specific limit state case (mentioned in the POI 80.5 ft. window) as can be seen from the figures below. The **Resist** field reflects the implementation of the capacity override. The value in the **Resist** column is Phi \* Fnc (from the **Override** columns) in cases where there are values in the **Override** columns.

Spec Check	k Detail for 6.10.7.2.	1 General											- C	1 :
fc = s f'c = d Stress = : Resist = p Design Ra Note: If	stress in the 4.5000 (ksi) fbu phif * Fnc tio = Resist/S the capacity h	Co slab tress as been over	empression Fl.	ange Resistance	: is compu	uted as o	verride ph	i*overr:	ide capaci	ty.				
Othe Limit State	erwise the Res Load Comb	istance is o Flexure Type	computed as po Component	er the Spe fbu (ksi)	frd (ksi)	Fnc (ksi)	Overr Phi	ride Fnc (ksi)	Stress (ksi)	Resist (ksi)	Design Ratio	Status		
STR-I STR-I STR-I STR-I STR-I STR-I STR-I STR-I	1, DesInv 1, DesInv 1, DesOp 1, DesOp 2, DesInv 2, DesInv 2, DesOp 2, DesOp	Pos Pos Pos Pos Pos Pos Pos Pos	Top Flange Top Flange Top Flange Top Flange Top Flange Top Flange Top Flange	-48.00 -41.35 -46.48 -41.35 -46.95 -41.35 -45.67 -41.35	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00	0.60 0.60 0.60 0.60 0.60 0.60 0.60 0.60	90.00 90.00 90.00 90.00 90.00 90.00 90.00 90.00	-48.00 -41.35 -46.48 -41.35 -46.95 -41.35 -45.67 -41.35	-54.00 -54.00 -54.00 -54.00 -54.00 -54.00 -54.00 -54.00	1.125 1.306 1.162 1.306 1.150 1.306 1.182 1.306	Pass Pass Pass Pass Pass Pass Pass Pass		
Spec Checl	k Detail for 6.10.7.2.	1 General												ок
tress = : esist = ] esign Ra:	fbu + fl/3 phif * Fnt tio = Resist/S		Tension Flan	ge										
Limit State	Load Comb	Flexure Type	Component	fbu (ksi)	fl (ksi)	frd (ksi)	Fnt (ksi)	Ov Phi	/erride Fnt (ksi)	Stress (ksi)	Resist (ksi)	Design Ratio	Status	
STR-I STR-I STR-I STR-I STR-I STR-I STR-I STR-I STR-I	1, DesInv 1, DesInv 1, DesOp 1, DesOp 2, DesInv 2, DesInv 2, DesOp 2, DesOp	Pos Pos Pos Pos Pos Pos Pos Pos	Bot Flange Bot Flange Bot Flange Bot Flange Bot Flange Bot Flange Bot Flange	62.68 35.10 56.37 35.10 58.35 35.10 53.03 35.10	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00	0.60 0.60 0.60 0.60 0.60 0.60 0.60 0.60	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	62.68 35.10 56.37 35.10 58.35 35.10 53.03 35.10	60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00	0.957 1.710 1.064 1.710 1.028 1.710 1.131 1.710	Fail Pass Pass Pass Pass Pass Pass Pass	-
														OK

# Capacity Override LRFD

From the **Bridge Explorer**, double click on **BID1** - **TrainingBridge1** (or select and click **Open** from the **Bridge** group of the **BRIDGE** ribbon ) to open the bridge.

Br 🖁		AA	SHTOWare Bridge De	sign and Rating	?	_		×
BRIDGE EXPLORER BRID	GE FOLDER	RATE	TOOLS VIEW	,				
New Open Satch V	Find Copy	Paste Cop To Y	y Remove Delete From					
Bridge		Manage	2					-
		BID	Bridge ID	Bri	dge Name			Dist
Recent Bridges		1	TrainingBridge1	Training Bridge 1(LRF	D)		U	nkn
All Bridges		2	TrainingBridge2	Training Bridge 2(LRF	D)		U	nkn
Template bridge		3	TrainingBridge3	Training Bridge 3(LRF	D)		U	nk
Deleted Bridges		4	PCITrainingBridge1	PCI TrainingBridge1(L	FR)			
• • • • • • • • • • • • • • • • • • •		5	PCITrainingBridge2	PCITrainingBridge2(LF	(FD)			$\geq$
		6	PCITrainingBridge3	PCI TrainingBridge3(L	FR)			
		7	PCITrainingBridge4	PCITrainingBridge4(LF	RFD)			1
		-						1
		-					h	1
		~~~~					Vini	

Navigate to **SUPERSTRUCTURE DEFINITIONS -> Simple Span Structure->Members->G1->Member Alternative->Plate Girder-> Point of Interests-> Span 1 - 80.499999 -Right.** Double click on this point of interest.



Navigate to the **Positive flexural capacity** tab of this window. As seen from the window below, the option for **Override LRFD capacity** is not checked. Hence, the beam capacities at 80.5 ft will be computed by the AASHTO LRFD Engine.

most support: 80.4999	99 ft or	Span: S	pan 1 🔍	F	raction: 0.50000	)	Side -	.eft 🔘 Rig	ght
ransverse stiffeners Ot	her stiffeners	Fatigue	Bracing	ASR	Shear capacity	Positiv	e flexural ca	pacity Ne	egative
ASR				- LRFE	)				
Override ASR capa	acity				Override LRFD ca	pacity			
Comment:				Con	iment:				
ASR inv. tension:	ksi			Stag	e: Construct	ion			
ASR inv. compr.:	ksi					Over	Moment	Tensic	
ASR oper. tension:	ksi				Limit state	- ride	capacity (kip-ft)	capac (ksi)	
ASR oper. compr.:	ksi			>	STRENGTH-I	nue	(kip-it)	(KSI)	
					STRENGTH-II				
Override LFR capa	city				STRENGTH-III				
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Comment:					STRENGTH-V				
Moment:	kip-ft	Phi:		_	SERVICE-I				
Tens. stress:	ksi	Phi:		_	SERVICE-II				
Compr. stress:	ksi	Phi:			SERVICE-III			-	
					SERVICE-IV				
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						-		•	

Click **OK** to apply the data and close the window.

From the Analysis group of the DESIGN/RATE ribbon, click on the Analysis Settings button as shown below.



Click on the **Open template** button in the **Analysis Settings** window. Select the **HL 93 Design Review** template. The updated **Analysis Settings** window is shown below.

Analysis type: Line Girder Analysis option: DL, LL and Spec-Checking Apply preference setting: None Vehicles Vehicles Vehicles Vehicles Vehicles Vehicles Vehicles Vehicles Vehicles Vehicles Vehicles Standard - Alternate Military Loading - V2 - EV3 - H 15-44 - H 20-44 - SU5 - SU6 - SU5 - SU6 - SU5 - SU6 - SU5 - SU6 - Type 3.3 - Type 3.3 - Type 3.2 - Ty	> \	
ne / Impact loading type: As Requested Vehicles Output Engine Description Traffic direction: Both directions Vehicle selection Vehicles	nced	
Vehicles     Output     Engine     Description       Traffic direction:     Both directions       Refresh     Temporary vehicles     Advait     Advait       Vehicle selection     Vehicle summary       Image: Constraint of the selection of the	nced	
Traffic direction:       Both directions       Refresh       Temporary vehicles       Advait         Vehicle selection       Vehicle summary       Image: Comparison of the selection       Vehicle summary         Image: Comparison of the selection       Vehicle summary       Image: Comparison of the selection       Image: Comparison of the selection         Image: Comparison of the selection       Image: Comparison of the selection       Vehicle summary       Image: Comparison of the selection         Image: Comparison of the selection       Image: Comparison of the selection       Image: Comparison of the selection       Image: Comparison of the selection         Image: Comparison of the selection       Image: Comparison of the selection       Image: Comparison of the selection       Image: Comparison of the selection         Image: Comparison of the selection       Image: Comparison of the selection       Image: Comparison of the selection       Image: Comparison of the selection         Image: Comparison of the selection       Image: Comparison of the selection       Image: Comparison of the selection       Image: Comparison of the selection       Image: Comparison of the selection         Image: Comparison of the selection of t	nced	
<ul> <li>Venice solution</li> <li>Venice solution</li> <li>Venice solution</li> <li>Venice solution</li> <li>Venice solution</li> <li>Rating vehicles</li> <li>Inventory</li> <li>Operating</li> <li>Legal operating</li> <li>Legal operating</li> <li>Permit inventory</li> <li>Permit operating</li> <li>Solution</li> <li>Substantian</li> <li>Substan</li></ul>		
Reset Clear Open template OK Apply	Cancel	
Turchter Description Archeir	Dublic ( Drivete	
HL 93 Design Review HL 93 Design Review I RFD	Public / Private	
HS 20 LFR Rating HS 20 LFR Rating LFR	Public	-
LRFR Design Load Rating LRFR Design Load Rating LRFR	Public	-
LRFR Legal Load Rating LRFR Legal Load Rating LRFR	Public	

O Design review Rating		Design method:	LRFD	~
analysis type: Line Girder	~	Analysis option:	DL, LL and Spec-Checking	$\sim$
ane / Impact loading type: As Requested	~	Apply preference settin	ng: None	$\sim$
Traffic direction: Both directions Vehicle selection	ription V	Refresh Te Vehicle summary	emporary vehicles Advance	d
i → Vehicles → Standard → Alternate Military Loading → EV2 → EV3 → HL-93 (US) → HS 20 (SI) → HS 20 (SI) → HS 20 (SI) → HS 20-44 → LRFD Fatigue Truck (SI) → LRFD Fatigue Truck (US) → Agency → User defined → Temporary	Add t >> Remove f	Design vehicles Design loads □ Design loads □ HL-93 (U □ Permit loads □ Fatigue loads □ LRFD Fati o	s S) igue Truck (US)	

Click **OK** to apply the settings and close the window.

To analyze, right click on Plate Girder and select Analyze.



After the LRFD analysis is completed click on the **Specification Check Detail** button from the **Results** group of the **DESIGN/RATE** ribbon and navigate to **Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1**.



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i S	pan 1 - 16.10 ft.		NA 6 10 7 1 1 G		1			
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i s i s i s	pan 1 - 27.31 ft. pan 1 - 32.20 ft. pan 1 - 40.73 ft.		NA 6.10.7.1.2 No ★ 6.10.7.2.1 Ge 6.10.7.2.2 No	eneral ominal Flexural Resi eneral ominal Flexural Resi	6 Steel Structures 6.10 I-Section Flexural Members 6.10.7 Flexural Resistance-Compos: 6.10.7.2 Noncompact Sections 6.10.7.2.1 General	ite Sections in Po	ositive Flexure	È
S S S S S S	pan 1 - 27.31 ft. pan 1 - 32.20 ft. pan 1 - 40.73 ft. pan 1 - 48.30 ft.		NA 6.10.7.1.1 Ge NA 6.10.7.1.2 No ★ 6.10.7.2.1 Ge 6.10.7.2.2 No ★ 6.10.7.3 Flex	eneral ominal Flexural Resi eneral ominal Flexural Resi ural Resistance - Di	6 Steel Structures 6.10 I-Section Flexural Members 6.10.7 Flexural Resistance-Compos: 6.10.7.2 Noncompact Sections 6.10.7.2.1 General (AASHTO LRFD Bridge Design Specif:	ite Sections in Po ications, Ninth Ec	ositive Flexure dition)	2
S S S S S S S S S	pan 1 - 27.31 ft. pan 1 - 32.20 ft. pan 1 - 40.73 ft. pan 1 - 48.30 ft. pan 1 - 54.14 ft.		NA 6.10.7.1.2 No	eneral ominal Flexural Res eneral ominal Flexural Res ural Resistance - Di scretely Braced Flai	6 Steel Structures 6.10 I-Section Flexural Members 6.10.7 Flexural Resistance-Compos: 6.10.7.2 Noncompact Sections 6.10.7.2.1 General (AASHTO LRFD Bridge Design Specif: Steel Plate - At Location = 80.500	ite Sections in Po ications, Ninth Ec 00 (ft) - Left	ositive Flexure dition) Stage 3	2
5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	pan 1 - 27.31 ft. pan 1 - 32.20 ft. pan 1 - 40.73 ft. pan 1 - 48.30 ft. pan 1 - 54.14 ft. pan 1 - 64.40 ft.		MA 6.10.7.1.2 No	eneral ominal Flexural Res eneral ominal Flexural Res ural Resistance - Di scretely Braced Flai scretely Braced Flai	6 Steel Structures 6.10 I-Section Flexural Members 6.10.7 Flexural Resistance-Compos: 6.10.7.2 Noncompact Sections 6.10.7.2.1 General (AASHTO LRRD Bridge Design Specif: Steel Plate - At Location = 80.500 Section within Top Flance Continue	ite Sections in Po ications, Ninth Ec 00 (ft) - Left	ositive Flexure dition) Stage 3	2
s S S S S S S S S S S S S S S S S S S S	pan 1 - 27.31 ft. pan 1 - 32.20 ft. pan 1 - 40.73 ft. pan 1 - 48.30 ft. pan 1 - 54.14 ft. pan 1 - 67.56 ft.		NA 6.10.7.1.2 No NA 6.10.7.1.2 No ★ 6.10.7.2.1 Ge ■ 6.10.7.2.1 Ge ↓ 6.10.7.3 Flex NA 6.10.8.1.1 Di NA 6.10.8.1.2 Di NA 6.10.8.1.3 Co	eneral aminal Flexural Res eneral ominal Flexural Res ural Resistance - Do scretely Braced Flar scretely Braced Flar pontinuously Braced	6 Steel Structures 6.10 I-Section Flexural Members 6.10.7 Flexural Resistance-Compos: 6.10.7.2 Noncompact Sections 6.10.7.2.1 General (AASHTO LRTD Bridge Design Specif: Steel Plate - At Location = 80.500 Section within Top Flange Continue	ite Sections in Po ications, Ninth Eo 00 (ft) - Left ous Bracing Region	ositive Flexure dition) Stage 3 n	2
s s s s s s s s s s s s s s s s s s s	pan 1 - 27.31 ft. pan 1 - 32.20 ft. pan 1 - 40.73 ft. pan 1 - 48.30 ft. pan 1 - 54.14 ft. pan 1 - 67.56 ft. pan 1 - 80.50 ft.		NA 6.10.7.1.2 No NA 6.10.7.1.2 No ★ 6.10.7.2.1 Ge ■ 6.10.7.2 No ★ 6.10.7.3 Flex NA 6.10.8.1.1 Di NA 6.10.8.1.2 Di NA 6.10.8.1.3 Co ■ 6.10.8.2.1 Ge	eneral priminal Flexural Resi pominal Flexural Resi ural Resistance - Di scretely Braced Flar scretely Braced Flar potinuously Braced eneral	<pre>6 Steel Structures 6.10 I-Section Flexural Members 6.10.7 Flexural Resistance-Compos: 6.10.7.2 Noncompact Sections 6.10.7.2.1 General (AASHTO LRFD Bridge Design Specif: Steel Plate - At Location = 80.500 Section within Top Flange Continue INPUT: Dbif = 1.000</pre>	ite Sections in Po ications, Ninth Eo 00 (ft) - Left ous Bracing Region	ositive Flexure dition) Stage 3 n	2
s S S S S S S S S S S S S S S S S S S S	pan 1 - 27.31 ft. pan 1 - 32.20 ft. pan 1 - 40.73 ft. pan 1 - 48.30 ft. pan 1 - 54.14 ft. pan 1 - 64.40 ft. pan 1 - 67.56 ft. pan 1 - 80.50 ft. pan 1 - 80.98 ft.		NA 6.10.7.1.1 Ge NA 6.10.7.1.2 Nc ★ 6.10.7.2.1 Ge 6.10.7.2.2 Nc ★ 6.10.7.3 Flex: NA 6.10.8.1.1 Di: NA 6.10.8.1.2 Di: NA 6.10.8.1.2 Ge ■ 6.10.8.2.1 Ge ■ 6.10.8.2.2 Lo	eneral primal Flexural Resi pominal Flexural Resi ural Resistance - Di scretely Braced Flar scretely Braced Flar pontinuously Braced eneral scal Buckling Resist	6 Steel Structures 6.10 I-Section Flexural Members 6.10.7 Flexural Resistance-Compos: 6.10.7.2 Noncompact Sections 6.10.7.2.1 General (AASHTO LRFD Bridge Design Specif: Steel Plate - At Location = 80.500 Section within Top Flange Continue INPUT: phif = 1.000 Section Type: Composite	ite Sections in Po ications, Ninth Eo 00 (ft) - Left ous Bracing Region	ositive Flexure dition) Stage 3 n	2
s S S S S S S S S S S S S S S S S S S S	pan 1 - 27.31 ft. pan 1 - 32.20 ft. pan 1 - 40.73 ft. pan 1 - 48.30 ft. pan 1 - 54.14 ft. pan 1 - 54.14 ft. pan 1 - 64.40 ft. pan 1 - 67.56 ft. pan 1 - 80.96 ft. pan 1 - 90.39 ft. pan 1 - 96.60 ft.		NA 6.10.7.1.1 Ge NA 6.10.7.1.2 Nc ★ 6.10.7.2.1 Ge 6.10.7.2.2 Nc ★ 6.10.7.3 Flex: NA 6.10.8.1.1 Di: NA 6.10.8.1.2 Di: NA 6.10.8.1.2 Ge ■ 6.10.8.2.2 Lo ■ 6.10.8.2.3 La	eneral ominal Flexural Resi ominal Flexural Resi ural Resistance - Di scretely Braced Flar scretely Braced Flar ontinuously Braced eneral iccal Buckling Resista teral Torsional Buck	6 Steel Structures 6.10 I-Section Flexural Members 6.10.7 Flexural Resistance-Compos: 6.10.7.2 Noncompact Sections 6.10.7.2.1 General (AASHTO LRFD Bridge Design Specif: Steel Plate - At Location = 80.500 Section within Top Flange Continue INPUT: phif = 1.000 Section Type: Composite Compact: Yes Allow Plastic Analysis Control Operation	ite Sections in Po ications, Ninth Eo 00 (ft) - Left ous Bracing Region	ositive Flexure dition) Stage 3 n	<u>-</u>
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s s s s s s s s s s s s s s s s s s s	pan 1 - 27.31 ft. pan 1 - 32.20 ft. pan 1 - 40.73 ft. pan 1 - 40.73 ft. pan 1 - 48.30 ft. pan 1 - 48.30 ft. pan 1 - 48.40 ft. pan 1 - 64.40 ft. pan 1 - 80.98 ft. pan 1 - 80.50 ft. pan 1 - 94.39 ft. pan 1 - 107.81 ft pan 1 - 107.81 ft pan 1 - 112.70 ft pan 1 - 112.83 ft pan 1 - 128.80 ft pan 1 - 128.80 ft		NA 6.10.7.1.1 Ge NA 6.10.7.1.2 Nc ★ 6.10.7.2.1 Ge 6.10.7.2.2 Nc ★ 6.10.7.3 Flex NA 6.10.8.1.1 Di NA 6.10.8.1.2 Di NA 6.10.8.1.3 Cc ■ 6.10.8.2.1 Ge ■ 6.10.8.2.3 La ■ 6.10.8.2.3 La ■ 6.10.8.2.3 rtl ■ 6.10.8.3 Flex ★ 6.10.9.1 Sheri ■ 6.10.9 S	eneral ominal Flexural Resi aneral ominal Flexural Resi ural Resistance - Di scretely Braced Flar scretely Braced Flar pontinuously Braced eneral ucal Buckling Resista teral Torsional Buck b Lateral Torsional Buck b Lateral Torsional Buck ural Resistance Bas Shear Resistance - Gen	<pre>6 Steel Structures 6.10 I-Section Flexural Members 6.10.7 Flexural Resistance-Compos: 6.10.7.2 Noncompact Sections 6.10.7.2.1 General (AASHTO LRFD Bridge Design Specif: Steel Plate - At Location = 80.500 Section within Top Flange Continua INPUT: phif = 1.000 Section Type: Composite Compact: Yes Allow Plastic Analysis Control Op Allow Moment Redistribution Qualified: 1 4</pre>	ite Sections in Po ications, Ninth Eo 00 (ft) - Left ous Bracing Region tion: No ol Option: No No, redistribution	ositive Flexure dition) Stage 3 n n did not occur	с. ОК

The resistance factor **phif** value is 1.0 as shown above.

= c = ress = sist = p sign Ra	stress in th 4.5000 (ksi fbu phif * Fnc tio = Resist	 e slab .) :/Stress	Compression F	lange								
te: If : Oth	the capacity erwise the F Load Comb	has been ov esistance is Flexure Type	erridden, the computed as p Component	Resistanc per the Sp fbu (ksi)	e is comp ecificati frd (ksi)	Fnc (ksi)	override pi Overn Phi	ni*overn nide Fnc (ksi)	ide capac Stress (ksi)	Resist (ksi)	Design Ratio	Status
STR-I	1	Pos	Top Flange	-48.00	0.00	50.00			-48.00	-50.00	1.042	Pass
TR-I	1	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
TR-I	2	Pos	Top Flange	-46.95	0.00	50.00			-46.95	-50.00	1.065	Pass
TR-I	2	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
TR-III	1	Pos	Top Flange	-41.35	0.00	50.00			-41.35	-50.00	1.209	Pass
TR-III	1	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
TR-III	2	Pos	Top Flange	-41.35	0.00	50.00			-41.35	-50.00	1.209	Pass
STR-III	2	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
STR-V	1	Pos	Top Flange	-46.48	0.00	50.00			-46.48	-50.00	1.076	Pass
	1	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
SIR-V		Pos	Top Flange	-45.67	0.00	50.00			-45.67	-50.00	1.095	Pass
TR-V	2	-										

Stress = fbu + Resist = phif Design Ratio = Limit Lo State Co 	+ fl/3 * Fnt = Resist/Stress Dad Flexure Dmb Type	Tension Flange Component	fbu	fl	fred		Over	ride					•
Limit Lo State Co STR-I 1	oad Flexure omb Type	Component	fbu	fl	fad	$\square$	Over	ride					
Limit Lo State Co STR-I 1	oad Flexure omb Type	Component	fbu (kei)	fl	fred								
STR-I 1			(101)	(ksi)	(ksi)	Fnt (ksi)	Phi	Fnt (ksi)	Stress (ksi)	Resist (ksi)	Design Ratio	Status	
	Pos	Bot Flange	62.68	0.00	0.00	50.00			62.68	50.00	0.798	Fail	
STR-I 1	Pos	Bot Flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	Pass	
STR-I 2	Pos	Bot Flange	58.35	0.00	0.00	50.00			58.35	50.00	0.857	Fail	
STR-I 2	Pos	Bot Flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	Pass	
STR-III 1	Pos	Bot Flange	35.10	0.00	0.00	50.00			35.10	50.00	1.425	Pass	
STR-III 1	Pos	Bot Flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	Pass	
STR-111 2	Pos	Bot Flange	35.10	0.00	0.00	50.00			35.10	50.00	1.425	Pass	
STR-111 2	Pos	Bot Flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	Pass	
STR-V 1	Pos	Bot Flange	56.37	0.00	0.00	50.00			56.37	50.00	0.887	Fail	
SIR-V I	Pos	Bot Flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	Pass	
SIR-V 2	Pos	Bot Flange	53.03	0.00	0.00	50.00			53.03	50.00	0.943	Fall	
51K-V 2	Pos	bot flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	rass	
						-							
													JK

The above two figures show the computed resistances for the compression and the tension flanges at location 80.5 ft. as  $F_{nc}$  and  $F_{nt}$  respectively .

Close the article and the Specification Checks window.

Again, navigate to **SUPERSTRUCTURE DEFINITIONS->Simple Span Structure->Members->G1->Member** Alternative->Plate Girder-> Point of Interests->Span 1 80.5.

Check the **Override LRFD capacity** for **Positive Flexural Capacity** and input the values as shown below. The **Stage** field indicates that during which stage of design, the capacity values must be overridden.

stance from tmost support: 80.499999	ft or Sp	oan: Span 1	<ul> <li>✓ Fraction</li> </ul>	on: 0.5000	000		Left O	Right
Transverse stiffeners Other	stiffeners Fa	tigue Bracing	ASR She	ar capacity	y Posit	ive flexural o	apacity	Negative fl
ASR			LRFD					
Override ASR capacity	Y		🗸 Over	ride LRFD	capacity			
Comment:			Commen	t:				Co
ASR inv. tension:	ksi		Stage:	Final	]			~
ASR inv. compr.: ASR oper. tension:	ksi ksi		L	imit state	Over	Moment capacity	Tensic capac	
ASR oper. compr.:	ksi				ride	(kip-ft)	(ksi)	<b>A</b>
			> STR	ENGTH-I				
			STR	ENGTH-II				-
Override LFR capacity			STR	ENGTH-III				
Point Of Interest			(-205				_	
Point Of Interest stance from ftmost support: 80.499999	ft or Spa	an: Span 1	Fraction	n: 0.50000	00	Side I	–	Right
Point Of Interest stance from ftmost support: 80.499999 Transverse stiffeners Other	ft or Spi	an: Span 1	Fraction     ASR Shee	a: 0.50000	00 Positiv	Side I	Left O	Right 4
Point Of Interest stance from ftmost support: 80.499999 Transverse stiffeners Other	ft or Spa stiffeners Fat	an: Span 1 igue Bracing	Fraction     ASR Shee	a: 0.50000 ar capacity	00 Positiv	Side -	Left O	Right 4
Point Of Interest stance from ftmost support: 80.499999 Transverse stiffeners Other ASR Override ASR capacity	ft or Spi stiffeners Fat	an: Span 1 igue Bracing	Fraction     ASR Shee     LRFD     Overr	n: 0.50000 nr capacity ide LRFD c	00 Positiv apacity	Side I	 Left O pacity	Right Negative flex
Point Of Interest stance from ftmost support: 80.4999999 Transverse stiffeners Other ASR Override ASR capacity Comment:	ft or Spa stiffeners Fat	an: Span 1 igue Bracing	Fraction	1: 0.50000 Ir capacity ide LRFD cr	00 Positiv apacity	Side -	– Left O pacity	Right Regative flex
Point Of Interest stance from ftmost support: 80.499999 Transverse stiffeners Other ASR Override ASR capacity Comment: ASR inv. tension:	ft or Spi stiffeners Fat	an: Span 1 igue Bracing	Fraction ASR Shee LRFD Comment Stage:	a: 0.50000 ar capacity ide LRFD co Final	00 Positiv apacity	Side I	Left O	Right Con
Point Of Interest stance from ftmost support: 80.4999999 Transverse stiffeners Other ASR Override ASR capacity Comment: ASR inv. tension: ASR inv. compr.:	ft or Spa stiffeners Fat	an: Span 1 igue Bracing	<ul> <li>Fraction</li> <li>ASR Sheat</li> <li>LRFD</li> <li>Overr</li> <li>Comment</li> <li>Stage:</li> </ul>	i: 0.50000 ir capacity ide LRFD co Final	00 Positiv apacity	Side - l re flexural ca	 pacity	Right Regative flex
Point Of Interest stance from ftmost support: 80.499999 Transverse stiffeners Other ASR Override ASR capacity Comment: ASR inv. tension: ASR inv. compr.: ASR oper. tension:	ft or Spa stiffeners Fat	an: Span 1 igue Bracing	Fraction ASR Shee LRFD Comment Stage:	i: 0.50000 ar capacity ide LRFD co Final	00 Positiv apacity Tension capacity (ksi)	Compr. capacity (ksi)	Left O pacity	Right Con
Point Of Interest stance from ftmost support: 80.4999999 Transverse stiffeners Other ASR Override ASR capacity Comment: ASR inv. tension: ASR inv. compr.: ASR oper. tension: ASR oper. compr.:	ft or Spa stiffeners Fat	an: Span 1 igue Bracing	✓ Fraction ASR Shee	i: 0.50000 ir capacity ide LRFD c it state	D0 Positiv apacity Tension capacity (ksi) 120	Compr. capacity (ksi) 90	Phi 0.6	Right Con
Point Of Interest stance from ftmost support: 80.499999 Transverse stiffeners Other ASR Override ASR capacity Comment: ASR inv. tension: ASR inv. tension: ASR oper. tension: ASR oper. compr.:	ft or Spa stiffeners Fat ksi ksi ksi ksi	an: Span 1 igue Bracing	<ul> <li>✓ Fraction</li> <li>ASR Sheat</li> <li>LRFD</li> <li>✓ Overr</li> <li>Comment</li> <li>Stage:</li> <li>Lim</li> <li>&gt; STRE</li> <li>STRE</li> </ul>	it state	D0 Positiv apacity Tension capacity (ksi) 120	Compr. capacity (ksi) 90	Phi 0.6	Right Con
Point Of Interest stance from ftmost support: 80.499999 Transverse stiffeners Other ASR Override ASR capacity Comment: ASR inv. tension: ASR oper. tension: ASR oper. tension: Compression: ASR oper. compression: ASR oper. compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compression: Compres	ft or Spi stiffeners Fat	an: Span 1 igue Bracing	✓ Fraction ASR Sheat Carrier Comment Stage: Lim > STRE STRE STRE	II: 0.50000 II: 0.50000 II: capacity Iide LRFD co II: capacity Iide LRFD co II: capacity II: cap	D0 Positiv apacity Tension capacity (ksi) 120	Compr. capacity (ksi) 90	Phi 0.6	Right Con

Click **OK** to save the data and right click on **Plate Girder** and select **Analyze**.

After the LRFD analysis is completed click on the **Specification Check Detail** button from the **Results** group of the **DESIGN/RATE** ribbon and navigate to **Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1**.

The **phif** value has been overridden to 0.60 for a specific limit state case (mentioned in the POI 80.5 ft. window) as can be seen from the figures below. The **Resist** field reflects the implementation of the capacity override. The value in the **Resist** column is Phi \* Fnc (from the **Override** columns) in cases where there are values in the **Override** columns.

c = s c = 4 cress = f sist = p sign Rat	stress in th 4.5000 (ksj Ebu bhif * Fnc tio = Resist	 he slab	compression r.	Designment				- 1 - 4					
imit tate	Load Comb	Flexure Type	Computed as p	fbu (ksi)	frd (ksi)	Fnc (ksi)	Ove Phi	rride Fnc (ksi)	Stress (ksi)	Resist (ksi)	Design Ratio	Status	
TR-I TR-I TR-I	1 1 2	Pos Pos Pos	Top Flange Top Flange Top Flange	-48.00 -29.07	0.00	50.00 50.00	0.60	90.00	-48.00	-54.00 -54.00	1.125	Pass Pass	
TR-I TR-III	2 1	Pos Pos Pos	Top Flange Top Flange Top Flange	-29.07	0.00	50.00 50.00 50.00	0.60	90.00	-29.07 -41.35 -29.07	-54.00	1.857	Pass Pass Pass	
TR-III TR-III	2	Pos Pos Pos	Top Flange Top Flange Top Flange	-41.35	0.00	50.00			-41.35	-50.00	1.209	Pass Pass Pass	
STR-V	1	Pos Pos Pos	Top Flange Top Flange Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass	

Spec Check	Detail for 6.10.7	.2.1 General										-	- 🗆	×
Stress = f Resist = p Design Rat	Ebu + fl/3 bhif * Fnt :io = Resist,	1	Tension Flange											
Limit State	Load Comb	Flexure Type	Component	fbu (ksi)	fl (ksi)	frd (ksi)	Fnt (ksi)	Ove Phi	rride Fnt (ksi)	Stress (ksi)	Resist (ksi)	Design Ratio	Status	1
STR-I	1	Pos	Bot Flange	62.68	0.00	0.00	50.00	0.60	120.00	62.68	72.00	1.149	Pass	
STR-I	1	Pos	Bot Flange	24.06	0.00	0.00	50.00	0.60	120.00	24.06	72.00	2.993	Pass	
STR-I	2	Pos	Bot Flange	58.35	0.00	0.00	50.00	0.60	120.00	58.35	72.00	1.234	Pass	
STR-I	2	Pos	Bot Flange	24.06	0.00	0.00	50.00	0.60	120.00	24.06	72.00	2.993	Pass	
STR-III	1	Pos	Bot Flange	35.10	0.00	0.00	50.00			35.10	50.00	1.425	Pass	
STR-III	1	Pos	Bot Flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	Pass	
STR-III	2	Pos	Bot Flange	35.10	0.00	0.00	50.00			35.10	50.00	1.425	Pass	
STR-III	2	Pos	Bot Flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	Pass	
STR-V	1	Pos	Bot Flange	56.37	0.00	0.00	50.00			56.37	50.00	0.887	Fail	
STR-V	1	Pos	Bot Flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	Pass	
STR-V	2	Pos	Bot Flange	53.03	0.00	0.00	50.00			53.03	50.00	0.943	Fail	
STR-V	2	Pos	Bot Flange	24.06	0.00	0.00	50.00			24.06	50.00	2.078	Pass	
													0	K