AASHTOWare Bridge Design and Rating Training

Capacity Override at Points of Interest (BrDR 6.5)

Topics Covered

- Capacity Override LRFR
- Capacity Override LRFD

Capacity Override LRFR

Open BID1 in BrR and navigate to SUPERSTRUCTURE DEFINITIONS->Simple Span Structure->Members->G1->Member Alternative->Plate Girder-> Point of Interests->Span 1 80.5.



Figure 1

As seen from the window below, the option for "Override LRFR capacity" for "Positive Flexural Capacity" is not checked. Hence, the beam capacities at 80.5 ft will be computed by the AASHTO LRFR Engine.

Po	ositive Flexu	ural Capacit	y Negativ	e Flexur	al Capacit	ty Engine						
						LRFR						
сара	acity					🔲 Override LR	FR capa	acity				
				*		Comment:					*	
				Ŧ		L					Ŧ	
struc	tion	_										
ver- ide	Moment Capacity	Tension Capacity	Compr. Capacity	Phi	_	Limit State	Over-	Moment Capacity	Tension Capacity	Compr. Capacity	Phi	
	(kip-ft)	(ksi)	(ksi)				ride	(kip-ft)	(ksi)	(ksi)		
	(kip-ft)	(ksi)	(ksi)			STRENGTH-I	nde	(kip-ft)	(ksi)	(ksi)		
	(kip-ft)	(ksi)	(ksi)			STRENGTH-I STRENGTH-II		(kip-ft)	(ksi)	(ksi)		
	(kip-ft)	(ksi)	(ksi)			STRENGTH-I STRENGTH-II SERVICE-II		(kip-ft)	(ksi)	(ksi)		
	(kip-ft)	(ksi)	(ksi)			STRENGTH-I STRENGTH-II SERVICE-II FATIGUE		(kip-ft)	(ksi)	(ksi)		



Open "View Analysis Settings" and choose "LRFR Design Load Rating" template for analysis.



Figure 3

Right click on "Plate Girder" and Select Analyze.



Figure 4

After the LRFR analysis is completed open "View Spec Check" and navigate to Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1.

INPUT: phif = 1.000

Figure 5

--- Compression Flange --fc = stress in the slab f'c = 4.5000 (ksi) Stress = fbu Resist = phif * Fnc 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.

							Over	ride				
Limit	Load	Flexure	Component	fbu	frd	Fnc	Phi	Fnc	Stress	Resist	Design	Status
State	Comb	Туре		(ksi)	(ksi)	(ksi)		(ksi)	(ksi)	(ksi)	Ratio	
STR-I	1, DesInv	Pos	Top Flange	-48.00	0.00	50.00			-48.00	-50.00	1.042	Pass
STR-I	1, DesInv	Pos	Top Flange	-41.35	0.00	50.00			-41.35	-50.00	1.209	Pass
STR-I	1, DesOp	Pos	Top Flange	-46.48	0.00	50.00			-46.48	-50.00	1.076	Pass
STR-I	1, DesOp	Pos	Top Flange	-41.35	0.00	50.00			-41.35	-50.00	1.209	Pass
STR-I	2, DesInv	Pos	Top Flange	-46.95	0.00	50.00			-46.95	-50.00	1.065	Pass
STR-I	2, DesInv	Pos	Top Flange	-41.35	0.00	50.00			-41.35	-50.00	1.209	Pass
STR-I	2, DesOp	Pos	Top Flange	-45.67	0.00	50.00			-45.67	-50.00	1.095	Pass
STR-I	2, DesOp	Pos	Top Flange	-41.35	0.00	50.00			-41.35	-50.00	1.209	Pass

Figure 6

--- Tension Flange ---Stress = fbu + f1/3Resist = phif * Fnt Design Ratio = Resist/Stress --- Override ---Limit Load Flexure Component fbu f1 frd Fnt Phi Fnt Stress Resist Design Status (ksi) (ksi) State Comb Type (ksi) (ksi) (ksi) (ksi) (ksi) Ratio 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 50.00 STR-I 1, DesOp Pos Bot Flange 56.38 0.00 0.00 56.38 50.00 0.887 Fail STR-I 1, DesOp Pos Bot Flange 35.10 0.00 0.00 50.00 35.10 50.00 1.425 Pass STR-I DesInv Bot Flange 58.35 0.00 0.00 50.00 58.35 50.00 0.857 Fail 2, Pos STR-T 2, DesInv Pos Bot Flange 35.10 0.00 0.00 50.00 35,10 50.00 1.425 Pass 2, DesOp 50.00 STR-I Pos Bot Flange 53.04 0.00 0.00 53.04 50.00 0.943 Fail STR-I 2, DesOp Bot Flange 35.10 0.00 0.00 50.00 35.10 50.00 1.425 Pos Pass

Figure 7

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

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

Close the article and the View Spec Check 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.

Po	ositive Flexu	ural Capacit	y Negativ	/e Flexu	ral Capa	city Engine						
						LBFB						
сара	acity					Verride LR	FR capa	acity				
				*		Comment:					*	
struc	tion	T		Ŧ							Ŧ	
ver- ide	Moment Capacity (kip-ft)	Tension Capacity (ksi)	Compr. Capacity (ksi)	Phi		Limit State	Over- ride	Moment Capacity (kip-ft)	Tension Capacity (ksi)	Compr. Capacity (ksi)	Phi	
						STRENGTH-I	V		100.000	90.000	0.600	
						STRENGTH-II						
						SERVICE-II						
						FATIGUE						

Figure 8

Click Ok to save the data and right click on "Plate Girder" and select Analyze.

After the LRFR analysis is completed open "View Spec Check" and navigate to Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1.

The "phif" value remains the same as above but it has been overridden 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.

```
--- Compression Flange ---
fc
      = stress in the slab
f'c = 4.5000 (ksi)
Stress = fbu
Resist = phif * Fnc
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 ---
                                                                                  Fnc Stress Resist
Limit
           Load
                        Flexure Component
                                                fbu
                                                        frd
                                                                 Fnc
                                                                         Phi
                                                                                                          Design
                                               (ksi)
 State
           Comb
                         Туре
                                                     (ksi)
                                                              (ksi)
                                                                                  (ksi) (ksi)
                                                                                                   (ksi)
```

STR-I 1, DesInv Pos Top Flange -48.00 0.00 50.00 0.60 90.00 -48.00 -54.00 1.125 STR-I 1, DesInv Pos Top Flange -41.35 0.00 50.00 0.60 90.00 -48.00 -54.00 1.125 STR-I 1, DesOp Pos Top Flange -46.48 0.00 50.00 0.60 90.00 -46.48 -54.00 1.306 STR-I 1, DesOp Pos Top Flange -46.48 0.00 50.00 0.60 90.00 -46.48 -54.00 1.162 STR-I 1, DesOp Pos Top Flange -46.48 0.00 50.00 0.60 90.00 -46.48 -54.00 1.162 STR-I 2, DesInv Pos Top Flange -46.95 0.00 50.00 0.60 90.00 -46.495 -54.00 1.306 STR-I 2, DesInv Pos Top Flange -46.95 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 STR-I 2, DesOp Pos														
STR-I 1, DesInv Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 STR-I 1, DesOp Fos Top Flange -46.48 0.00 50.00 0.60 90.00 -46.48 -54.00 1.162 STR-I 1, DesOp Fos Top Flange -46.48 0.00 50.00 0.60 90.00 -46.48 -54.00 1.162 STR-I 1, DesOp Fos Top Flange -46.95 0.00 50.00 0.60 90.00 -46.48 -54.00 1.306 STR-I 2, DesInv Fos Top Flange -46.95 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 STR-I 2, DesInv Fos Top Flange -46.95 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 STR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.56 -54.00 1.306 STR-I 2, DesOp Fos To	STR-I	1, D	esInv)	Pos	Top Flam	ige -48.00	0.00	50.00	0.60	90.00	-48.00	-54.00	1.125	Pass
STR-I 1, DesOp Fos Top Flange -46.48 0.00 50.00 0.60 90.00 -46.48 -54.00 1.162 STR-I 1, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -46.48 -54.00 1.162 STR-I 1, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 STR-I 2, DesInv Fos Top Flange -46.95 0.00 50.00 0.60 90.00 -46.95 -54.00 1.306 STR-I 2, DesInv Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -46.95 -54.00 1.306 STR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -45.67 -54.00 1.306 STR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -45.67 -54.00 1.306 STR-I 2, DesOp Fos Top	STR-I	1, D	esInv)	Pos	Top Flam	ige -41.35	0.00	50.00	0.60	90.00	-41.35	-54.00	1.306	Pass
SIR-I 1, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 SIR-I 2, DesInv Fos Top Flange -46.95 0.00 50.00 0.60 90.00 -46.95 -54.00 1.150 SIR-I 2, DesInv Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -46.95 -54.00 1.150 SIR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 SIR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -45.67 -54.00 1.306 SIR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -45.67 -54.00 1.306 SIR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 <	STR-I	1, D)esOp	Pos	Top Flam	ige -46.48	0.00	50.00	0.60	90.00	-46.48	-54.00	1.162	Pass
SIR-I 2, DesInv Pos Top Flange -46.95 0.00 50.00 0.60 90.00 -46.95 -54.00 1.150 SIR-I 2, DesInv Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -46.95 -54.00 1.306 SIR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 SIR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 SIR-I 2, DesOp Fos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306	STR-I	1, D)esOp	Pos	Top Flam	ige -41.35	0.00	50.00	0.60	90.00	-41.35	-54.00	1.306	Pass
STR-I 2, DesInv Pos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306 STR-I 2, DesOp Pos Top Flange -45.67 0.00 50.00 0.60 90.00 -45.67 -54.00 1.182 STR-I 2, DesOp Pos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.182 STR-I 2, DesOp Pos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306	STR-I	2, D	esInv)	Pos	Top Flam	ige -46.95	0.00	50.00	0.60	90.00	-46.95	-54.00	1.150	Pass
STR-I 2, DesOp Pos Top Flange -45.67 0.00 50.00 0.60 90.00 -45.67 -54.00 1.182 STR-I 2, DesOp Pos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306	STR-I	2, D	esInv)	Pos	Top Flam	ige -41.35	0.00	50.00	0.60	90.00	-41.35	-54.00	1.306	Pass
STR-I 2, DesOp Pos Top Flange -41.35 0.00 50.00 0.60 90.00 -41.35 -54.00 1.306	STR-I	2, D)esOp	Pos	Top Flam	ige -45.67	0.00	50.00	0.60	90.00	-45.67	-54.00	1.182	Pass
	STR-I	2, D)esOp	Pos	Top Flam	ige -41.35	0.00	50.00	0.60	90.00	-41.35	-54.00	1.306	Pass

Figure 9

Status

Ratio

--- Tension Flange ---Stress = fbu + fl/3 Resist = phif * Fnt Design Ratio = Resist/Stress

								Ove	rride				
Limit	Load	Flexure	Component	fbu	fl	frd	Fnt	Phi	Fnt	Stress	Resist	Design	Status
State	Comb	Туре		(ksi)	(ksi)	(ksi)	(ksi)		(ksi)	(ksi)	(ksi)	Ratio	
STR-I	1, DesInv	Pos	Bot Flange	62.68	0.00	0.00	50.00	0.60	100.00	62.68	60.00	0.957	Fail
STR-I	1, DesInv	Pos	Bot Flange	35.10	0.00	0.00	50.00	0.60	100.00	35.10	60.00	1.710	Pass
STR-I	1, DesOp	Pos	Bot Flange	56.38	0.00	0.00	50.00	0.60	100.00	56.38	60.00	1.064	Pass
STR-I	1, DesOp	Pos	Bot Flange	35.10	0.00	0.00	50.00	0.60	100.00	35.10	60.00	1.710	Pass
STR-I	2, DesInv	Pos	Bot Flange	58.35	0.00	0.00	50.00	0.60	100.00	58.35	60.00	1.028	Pass
STR-I	2, DesInv	Pos	Bot Flange	35.10	0.00	0.00	50.00	0.60	100.00	35.10	60.00	1.710	Pass
STR-I	2, DesOp	Pos	Bot Flange	53.04	0.00	0.00	50.00	0.60	100.00	53.04	60.00	1.131	Pass
STR-I	2, DesOp	Pos	Bot Flange	35.10	0.00	0.00	50.00	0.60	100.00	35.10	60.00	1.710	Pass

Figure 10

Capacity Override LRFD

Open BID1 in BrD and navigate to SUPERSTRUCTURE DEFINITIONS->Simple Span Structure->Members->G1->Member Alternative->Plate Girder-> Point of Interests->Span 1 80.5.



Figure 11

As seen from the window below, the option for "Override LRFD capacity" for "Positive Flexural Capacity" is not checked. Hence, the beam capacities at 80.5 ft will be computed by the AASHTO LRFD Engine.

D	Shear Capa	icity Po	ositive Flexu	ural Capacit	y Negativ	ve Flexu	al Ca
	LRFD Override LR	FD capa	acity				
	Comment:					<u>م</u>	
						Ŧ	
	Stage:	Construc	tion	-			_
	Limit State	Over- ride	Moment Capacity (kip-ft)	Tension Capacity (ksi)	Compr. Capacity (ksi)	Phi	
	STRENGTH-I]
	STRENGTH-II]
	STRENGTH-III]
	STRENGTH-I						

Figure 12

Open "View Analysis Settings" and choose "HL 93 Design Review" template for LRFD analysis.



Figure 13

Right click on "Plate Girder" and Select Analyze.



Figure 14

After the LRFD analysis is completed open "View Spec Check" and navigate to Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1.



Figure 15

--- Compression Flange --fc = stress in the slab f'c = 4.5000 (ksi) Stress = fbu Resist = phif * Fnc 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.

							Over	ride				
Limit State	Load Comb	Flexure Type	Component	fbu (ksi)	frd (ksi)	Fnc (ksi)	Phi	Fnc (ksi)	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
STR-I	1	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
STR-I	2	Pos	Top Flange	-46.95	0.00	50.00			-46.95	-50.00	1.065	Pass
STR-I	2	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
STR-III	1	Pos	Top Flange	-41.35	0.00	50.00			-41.35	-50.00	1.209	Pass
STR-III	1	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
STR-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
STR-V	1	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
STR-V	2	Pos	Top Flange	-45.67	0.00	50.00			-45.67	-50.00	1.095	Pass
STR-V	2	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass

Figure 16

--- Tension Flange ---Stress = fbu + fl/3 Resist = phif * Fnt Design Ratio = Resist/Stress

								Over	ride				
Limit	Load	Flexure	Component	fbu	fl (kai)	frd	Fnt	Phi	Fnt	Stress	Resist	Design	Status
		туре		(KSI)	(KSI)	(KSI)	(KSI)		(KSI)	(KSI)	(KSI)	Rac10	
STR-I	1	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-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	56.38	0.00	0.00	50.00			56.38	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	53.04	0.00	0.00	50.00			53.04	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

Figure 17

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

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

Close the article and the View Spec Check 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 have to be overridden.

) Shear Capa	acity Po	ositive Flexu	iral Capacit	У Negativ	/e Flexur
LRFD 📝 Override LF	FD capa	acity			
Comment:					*
					Ŧ
Stage:	Final		•	L.	
Limit State	Over- ride	Moment Capacity (kip-ft)	Tension Capacity (ksi)	Compr. Capacity (ksi)	Phi
STRENGTH-I	1		120	90.000	0.600
STRENGTH-II					
STRENGTH II					

Figure 18

Click Ok to save the data and right click on "Plate Girder" and select Analyze.

After the LRFD analysis is completed open "View Spec Check" and navigate to Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1.

The "phif" value remains the same as above but it has been overridden for 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

--- Compression Flange --fc = stress in the slab f'c = 4.5000 (ksi) Stress = fbu Resist = phif * Fnc 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.

							Ove	rride				
Limit State	Load Comb	Flexure Type	Component	fbu (ksi)	frd (ksi)	Fnc (ksi)	Phi	Fnc (ksi)	Stress (ksi)	Resist (ksi)	Design Ratio	Status
STR-I	1	Pos	Top Flange	-48.00	0.00	50.00	0.60	90.00	-48.00	-54.00	1.125	Pass
STR-I	1	Pos	Top Flange	-29.07	0.00	50.00	0.60	90.00	-29.07	-54.00	1.857	Pass
STR-I	2	Pos	Top Flange	-46.95	0.00	50.00	0.60	90.00	-46.95	-54.00	1.150	Pass
STR-I	2	Pos	Top Flange	-29.07	0.00	50.00	0.60	90.00	-29.07	-54.00	1.857	Pass
STR-III	1	Pos	Top Flange	-41.35	0.00	50.00			-41.35	-50.00	1.209	Pass
STR-III	1	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
STR-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
STR-V	1	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass
STR-V	2	Pos	Top Flange	-45.67	0.00	50.00			-45.67	-50.00	1.095	Pass
STR-V	2	Pos	Top Flange	-29.07	0.00	50.00			-29.07	-50.00	1.720	Pass

Figure 19

--- Tension Flange ---Stress = fbu + fl/3 Resist = phif * Fnt Design Ratio = Resist/Stress

								Ove	rride				
Limit	Load	Flexure	Component	fbu	fl	frd	Fnt	Phi	Fnt	Stress	Resist	Design	Status
State	Comb	Type		(ksi)	(ksi)	(ksi)	(ksi)		(ksi)	(ksi)	(ksi)	Ratio	
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	2.992	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	2.992	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	56.38	0.00	0.00	50.00			56.38	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	53.04	0.00	0.00	50.00			53.04	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

Figure 20