AASHTOWare BrDR 7.5.0 Prestress Tutorial 8 Prestressed I Beam Thicker Web

PS8 – Prestressed I Beam Thicker Web

BrDR Training

PS8 – Prestressed I Beam Thicker Web

This example describes how to define thicker web of prestressed I girder stem near the support. This example *assumes access to* Example7 (BID10) in the sample database from the installation.

Topics Covered

- Define thicker webs near support for prestressed I girder.
- Compare prestressed I girder ratings between girders with and without thicker web definitions.

Define thicker webs near support for prestressed I girder.

Analysis Results

Open the bridge **Example7** (**BID10**) from the **Bridge Explorer** and rate girder **G1** with vehicle **HS 20-44** in **Inventory** and **Operating** using Load Factor Rating (**LFR** Analysis). Rating results are shown below.

🕰 Analysis Re	sults - Exteri	ior Member							-	- 🗆	Х
Print Print											
Report type:		C Lane/	Impact load	ing type	Display	Format					
Rating Results	Summary	~ O			led Single	rating leve	l per row	\sim			
Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane	
HS 20-44	Axle Load	LFR	Inventory	34.14	0.948	120.00	1 - (100.0)	Design Shear - Concrete	As Requested	As Requested	1
HS 20-44	Axle Load	LFR	Operating	57.01	1.583	120.00	1 - (100.0)	Design Shear - Concrete	As Requested	As Requested	ī -
HS 20-44	Lane	LFR	Inventory	35.70	0.992	120.00	1 - (100.0)	Design Shear - Concrete	As Requested	As Requested	ī –
HS 20-44	Lane	LFR	Operating	59.62	1.656	120.00	1 - (100.0)	Design Shear - Concrete	As Requested	As Requested	1
ASHTO LFR En	gine Versior	7.5.0.3001									
analysis prefere	-										
										Clos	

The rating is controlled by concrete design shear at the right support.

PS8 – Prestressed I Beam Thicker Web

Beam Details

To define thicker web at the supports, open the **Beam Details** window of Girder G1.

	Bridge Workspace - Example7	ANALYSIS		REPOR	TS					? -	□ ×	1							
BRIDO	E WORKSPACE WORKSPACE TOOLS VIEW	DESIGN/RA	TE R	EPORT	ING						^								
æ	🖙 📘 🔲 📄 🖘 🔆	< 🖪																	
Analys Setting	s Analyze Analysis s Events Tabular Specification Engine Resu Results Check Detail Outputs Grap	lts Save h Results		A	Beam (Details						-					- 0		×
	Analysis Results																		
Wor	kspace	# ×	Sche		Span d	letail]	Stress li	mit ranges	Slab	interface	Web end	block							
Bridg	Components															Beam (projection		
	⊨ mr 6-girder system	^				Span umber		Beam shap	e		Girder material		Prestress properties		n		Right end		
	Impact/Dynamic Load Allowance				_		-			1				_		(in)	(in)		
	🛲 Framing Plan Detail				•	1	AASHT	O-PCI BT-7	2 *	Beam C	oncrete (9.9	3) -	AASHTO Losses	Ť	5.800	6.0000	6.0000		
	 																		
	Structure Typical Section																		
	H Superstructure Loads																		
	Concrete Stress Limits																		
	Prestress Properties Definitions																		
	··· 💾 Member Loads																		
	Supports MEMBER ALTERNATIVES																		
	E Exterior Member (E) (C)		_																
	■ Default Materials		Anal																
		ce																	
	···· 🔀 Beam Details																		
	Shrinkage Time																		
	Prective Supports Mild Steel Layout																		
	B 😥 Strand Layout																	V	
	Deck Profile			1 4															
	🗁 Haunch Profile 🖾 Shear Reinforcement Ranges			I 1											OK	App	ly Ca	ancel	
	Live Load Distribution			I 1															
	Points of Interest																		
	⊮- I G2																		
	I G3 (G2)																		
	I G4 (G2) I G5 (G2)																		
	I G5 (G2)																		
	BRIDGE ALTERNATIVES	~																	

Navigate to the **Web end block** tab to enter a thicker web information as shown below.

Bea	m Details					- 0	
pa	n detail	Stress lin	nit ranges	Slab inter	face Web e	block	
	-	Le	ft end	Ric	ht end		
	Span number	Length (ft)	Web width (in)				
Þ	1	2.00	17.00	2.00	17.00		-

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

Compare prestressed I girder ratings between with and without thicker web definitions.

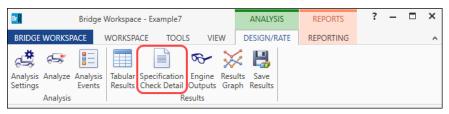
Rerun the LFR Analysis as done previously. The results for rating an HS 20-44 vehicle using Load Factor Rating are shown below.

Analysis Re	sults - Exter	or Member								- 0	×
eport type: Rating Results	Summary		'Impact Ioadi As requeste		Single	r Format rating leve	l per row	~			
Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane	
HS 20-44	Axle Load	LFR	Inventory	55.47	1.541	60.00	1 - (50.0)	PS Tensile Stress - Concrete	As Requested	As Requested	
HS 20-44	Axle Load	LFR	Operating	106.73	2.965	3.33	1 - (2.8)	Design Shear - Concrete	As Requested	As Requested	
HS 20-44	Lane	LFR	Inventory	61.64	1.712	60.00	1 - (50.0)	PS Tensile Stress - Concrete	As Requested	As Requested	
HS 20-44	Lane	LFR	Operating	111.63	3.101	3.33	1 - (2.8)	Design Shear - Concrete	As Requested	As Requested	
ASHTO LFR En nalysis prefere	-										

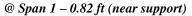
After defining thicker web at supports of G1, rating is controlled by PS tensile stress at mid span.

Specification Check Detail

Open the **Specification Checks** window by clicking on the **Specification Check Detail** button from the **Results** group of the **DESIGN/RATE** ribbon.



Compare the PS basic properties calculation article between location near support and mid span.



-	Berne State										
\diamond		All article	5 4								
operties	Generate	Format Bullet list	\checkmark								
fication filter		Report									
			Specification			Limit State		Flex. Sense	Pass/Fai		
	ture Componen ss Calculations	t		PS Concrete Compre	essive Stress	Limit State		N/A	Passed		
Stage 1				PS Concrete Tensile S				N/A	Passed		
Stage 2				PS Flexure Rating				N/A	Passed		
🖌 🚞 Stage 3			🗎 6B.5.3.3 I	PS Moment Capacity	/			N/A	Genera	l Com	ıp
🔺 🚞 Exte	erior Member		✓ 68.5.3.3 I	PS Steel Tensile Stres	is			N/A	Passed		
	Span 1 - 0.00 ft.		8.16.2.7	Design Assumptions				N/A	Genera	l Com	ıp
	Span 1 - 0.82 ft.		9.15.2.3 (Concrete - Cracking	Stress			N/A	Genera	l Com	ıp
	Span 1 - 1.58 ft.		🗸 9.17 Flex	ural Strength				N/A	Passed		
	Span 1 - 3.33 ft. Span 1 - 12.00 f			Ductility Limits - Min				N/A	Genera		
	Span 1 - 12.00 f Span 1 - 24.00 f			pedment of Prestress	sed Strand			N/A	Genera		
	Span 1 - 24.00 f Span 1 - 36.00 f		Computa					N/A	Genera		
	Span 1 - 48.00 f			Properties Calculatio				N/A	Genera		-
	' Span 1 - 60.00 f			Composite Section	Properties			N/A	Genera		
i 🗀 :	Span 1 - 72.00 f	t.	Stresses					N/A	Genera	I Com	p
	Span 1 - 84.00 f										
	Span 1 - 96.00 f										
	Span 1 - 108.00										
<u> </u>	Span 1 - 120.00	π.									
Spec Chec	k Detail for P	S Basic Pr	operties Ca	lculation				_			>
Spec Chec	k Detail for P	S Basic Pr	operties Ca	lculation				_			>
·			operties Ca	lculation				_			
echanics	of Mater Beam Prop	ials erty Cal	Lculation	ns				_		:	
echanics	of Mater Beam Prop	ials erty Cal	Lculation	ns	ridges, Seventeent)	1 Edition - 20	02)	_			
echanics	of Mater Beam Prop tandard Sj	ials erty Cal pecifica	Lculatior ations fo	ns	ridges, Seventeent) Stage 3	a Edition - 20	02)	_			
echanics asic PS 1 AASHTO S	of Mater Beam Prop tandard Sj	ials erty Cal pecifica	Lculatior ations fo	ns or Highway B:		1 Edition - 20	02)	_			
echanics asic PS 1 AASHTO S	of Mater Beam Prop tandard Sj	ials erty Cal pecifica ation =	Lculation ations fo	ns Dr Highway B (ft) - Left		n Edition - 20	02)				
echanics asic PS 1 AASHTO S	of Mater Beam Prop tandard Sj	ials erty Cal pecifica ation =	Lculation ations fo	ns or Highway B:		a Edition - 20	02)	_			
echanics asic PS 1 AASHTO S 5 I Wide	of Mater Beam Prop tandard Sj	ials erty Ca: pecifics ation = Cross	Lculation ations fo 0.8200 Section	ns Dr Highway B (ft) - Left	Stage 3		02)	_			
echanics asic PS 1 AASHTO S S I Wide ame: AAS	of Mater Beam Prop tandard Sy - At Loc. HTO-PCI B	ials erty Ca: pecifics ation = Cross	Lculation ations fo 0.8200 Section Sirder f	ns pr Highway B: (ft) - Left Properties 'c = 6.50(ks:	Stage 3			-			
echanics asic PS 1 AASHTO S 5 I Wide	of Mater Beam Prop tandard S - At Loc HTO-PCI B	ials erty Ca: pecifics ation = Cross	Lculation ations fo 0.8200 Section	hs pr Highway B: (ft) - Left Properties	Stage 3		=				
echanics asic PS 1 AASHTO S S I Wide ame: AASH com Heigi op Flang op Flang	of Mater Beam Prop tandard S - At Loc. HTO-PCI B ht e Width e Thick	ials erty Cai pecifica ation = Cross T-72 (Lculation ations fo 0.8200 Section Girder f	ns pr Highway B: (ft) - Left Properties 'c = 6.50 (ks: 72.00 (in) 42.00 (in) 3.50 (in)	Stage 3						
echanics asic PS 1 AASHTO S S I Wide ame: AAS cam Heigi op Flang op Flang op Flang	of Mater Beam Prop tandard S - At Loc HTO-PCI B ht e Width e Thick e Haunch 1	ials erty Cal pecifica ation = Cross T-72 (Height	Lculation ations fo 0.8200 Section Sirder f	ns pr Highway B: (ft) - Left Properties c = 6.50(ks: 72.00(in) 42.00(in) 3.50(in) 2.00(in)	Stage 3						
echanics asic PS AASHTO S 5 I Wide ame: AAS cam Heigi op Flang op Flang op Flang op Flang	of Mater Beam Prop tandard S - At Loc HTO-PCI B ht e Width e Haunch i e Haunch	ials erty Caj pecific ation = Cross T-72 (Height 2 Height	Lculation tions fc 0.8200 Section Sirder f' = = = = =	ns pr Highway B: (ft) - Left Properties 'c = 6.50 (ks: 72.00 (in) 42.00 (in) 3.50 (in) 2.00 (in) 2.00 (in)	Stage 3						
abic PS 1 AASHTO S AASHTO S S I Wide amme: AASI eam Heigi op Flang op Flang op Flang op Flang op Flang	of Mater Beam Propp - At Loc HTO-PCI B ht e Width e Thick e Haunch : e Haunch	ials erty Caj pecific ation = Cross T-72 (Height 2 Height	Lculation ations fo 0.8200 Section Sirder f	ns pr Highway B: (ft) - Left Properties c = 6.50(ks: 72.00(in) 42.00(in) 3.50(in) 2.00(in)	Stage 3						
echanics ssic PS 1 AASHTO S S I Wide ame: AASI am Heigi op Flang op Flang op Flang op Flang op Flang op Flang op Flang op Flang	of Mater Beam Prop tandard S - At Loc HTO-PCI B ht e Width e Haunch 1 e Haunch e Haunch e Haunch e Thick	ials erty Cai pecifics ation = Cross T-72 (Height 2 Height 2 Width	Lculation ations fo 0.8200 Section Sirder f ¹ = = = = = = = =	ns pr Highway B: (ft) - Left Properties 'c = 6.50 (ks: 72.00 (in) 3.50 (in) 2.00 (in) 2.00 (in) 2.00 (in) 2.00 (in) 2.00 (in) 2.00 (in)	Stage 3						
echanics ssic PS 1 AASHTO S S I Wide ame: AASI am Heigi op Flang op Flang op Flang op Flang op Flang op Flang op Flang op Flang	of Mater Beam Prop tandard Sj -At Loc HTO-PCI B ht e Width e Haunch e Haunch e Haunch e Width	ials erty Cai pecifics ation = Cross T-72 (Height 2 Height 2 Width	Culation ations for 0.8200 Section Girder f = = = = = = = = = = = = =	hs r Highway B: (ft) - Left Properties 'c = 6.50(ks: 72.00(in) 42.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in)	Stage 3						
echanics asic PS : AASHTO S S I Wide amme: AAS: amme: A	of Mater Beam Prop tandard S - At Loc HTO-PCI B ht e Width e Haunch 1 e Haunch e Haunch e Haunch e Thick	ials erty Cal pecifics ation = Cross T-72 (Height 2 Height 2 Width Height	Loulation tions fo 0.8200 (Section Girder f = = = = = = = = = =	hs pr Highway B: (ft) - Left Properties 'c = 6.50(ks: 72.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 4.50(in)	Stage 3						
echanics ssic PS : MASHTO S' S I Wide ame: AAS cam Heigi op Flang op Flang op Flang op Flang op Flang op Flang op Flang op Flang to Flang ot Flang ot Flang	of Mater Beam Prop tandard S - At Loc HTO-PCI B ht e Width e Haunch 1 e Haunch e Haunch e Haunch e Thick	ials erty Cal pecific ation = Cross T-72 (Height 2 Height 2 Width Height	Section Girder f	ns pr Highway B: (ft) - Left Properties 'c = 6.50 (ks: 72.00 (in) 3.50 (in) 2.00 (in) 2.00 (in) 2.00 (in) 2.00 (in) 2.00 (in) 2.00 (in)	Stage 3				1)	:	
achanics asic PS I ALSHTO S S I Wide ame: AASI ame: AASI ame: AASI ame: AASI pp Flang pp Flang pp Flang pp Flang pt Flang t Flang t Flang t Flang t Flang	of Mater Beam Propy tandard Sj - At Loc HIO-PCI B ht e Width e Haunch i e Haunch i e Haunch i e Haunch i	ials erty Ca: pecific ation = Cross T-72 (Height 2 Width Height Height th	Loulation tions fo 0.8200 Section Girder f = = = = = = = = = = = = = = = = = = =	ns pr Highway B: (ft) - Left Properties c = 6.50(ks: 72.00(in) 42.00(in) 3.50(in) 2.00(in) 2.00(in) 2.00(in) 6.00(in) 4.50(in) .00(ksi)	Stage 3 i) Girder f'ci Web Width	= 5.50(ksi)			1)	:	
achanics asic PS I ALSHTO S S I Wide ame: AASI ame: AASI ame: AASI ame: AASI pp Flang pp Flang pp Flang pp Flang pt Flang t Flang t Flang t Flang t Flang	of Mater Beam Prop - At Loc - At Loc HTO-PCI B ht e Width e Haunch e Haunch e Haunch e Haunch Slab Wid	ials erty Ca: pecific ation = Cross T-72 (Height 2 Width Height Height th	Loulation tions fo 0.8200 Section Girder f = = = = = = = = = = = = = = = = = = =	hs r Highway B: (ft) - Left Properties 'c = 6.50(ks: 72.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 6.00(in) 4.50(in) .00(ksi) .00(ksi) .00(in)	Stage 3 i) Girder f'ci Web Width Haunch Width	= 5.50(ksi)		42.00(in)	1)	:	
echanics asic PS : AdSHTO S: S I Wide ame: AAS: eam Heig op Flang op Flang op Flang op Flang op Flang ot Flang ot Flang t Flang t Flang t Flang t Flang	of Mater Beam Prop - At Loc -	ials erty Cai pecificz ation = Cross T-72 (Height 2 Width Height = th = ckness =	Lculation tions fc 0.8200 Section Girder f = = = = = = = = = = = = = = = = = = =	hs r Highway B: (ft) - Left Properties 'c = 6.50(ks: '2.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 4.50(in) .00(ksi) .00(in) .50(in)	Stage 3 i) Girder f'ci Web Width Haunch Width	= 5.50(ksi)		42.00(in)	1)	:	
echanics aric PS 1 AASHTO S S I Wide mme: AASI am Heigi pp Flang pp Flang pp Flang pp Flang pt Flang t Flang t Flang t Flang t Flang t Flang t Flang t Flang t Flang t Flang	of Mater Beam Prop - At Loc - At Loc HTO-PCI B ht e Width e Haunch e Haunch e Haunch e Haunch Slab Wid	ials erty Cai pecifica ation = Cross T-72 (Height 2 Width Height th = ckness = am Sect:	Loulation ations fo 0.8200 Section Sirder f' = = = = = = = = = = = = = = = = = = 0. = 7.	<pre>hs fr Highway B: (ft) - Left Properties c = 6.50(ks: 72.00(in) 42.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 4.50(in) .00(ksi) .00(in) .50(in) erties</pre>	Stage 3 i) Girder f'ci Web Width Haunch Width	= 5.50(ksi)		42.00(in)	1)	:	
echanics aric PS J AASHTO S 5 I Wide ame: AASI am Heigi op Flang op Flang op Flang op Flang op Flang ot Flang ot Flang ot Flang ot Flang ot Flang ot Flang ot Flang	of Mater Beam Propy tandard S - At Loc HTO-PCI B ht e Width e Haunch i e Haunch i e Haunch S I ab Widt Slab Wid Slab Thi Basic Be	ials erty Ca pecifics ation = Cross T-72 (Height 2 Height 2 Width Height th = ckness = am Sect:	Lculations for 0.8200 0 Section Sirder f' = = = = = = = = = = 90 = 7. Lon Prope	<pre>hs fr Highway B: (ft) - Left Properties c = 6.50(ks: 72.00(in) 42.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 4.50(in) 4.50(in) .00(ksi) .00(in) .50(in) erties</pre>	Stage 3 i) Girder f'ci Web Width Haunch Width Haunch Thickness	= 5.50(ksi)		42.00(in)	1)		
echanics aric PS J AASHTO S J AASHTO S J S I Wide mme: AASJ eam Heigj op Flang op Flang op Flang op Flang op Flang op Flang op Flang ot Flang ot Flang t flang	of Mater Beam Prop tandard S - At Loc HTO-PCI B ht e Width e Haunch e Haunch e Haunch s Width Slab Wid Slab Wid Slab Thi Basic Be	ials erty Cai pecifica ation = Cross T-72 (Height 2 Height 2 Width Height th = ckness = am Sect:	Loulation tions fo 0.8200 Section Sirder f' = = = = = = = = = = = = =	As pr Highway B: (ft) - Left Properties 'c = 6.50(ks: 72.00(in) 42.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 4.50(in) 4.50(in) .00(ksi) .00(ksi) .00(in) .50(in) erties 	Stage 3 i) Girder f'ci Web Width Haunch Width Haunch Thickness 72)	= 5.50(ksi)		42.00(in)	1)	:	
echanics aric PS J AASHTO S J AASHTO S J S I Wide mme: AASJ eam Heigj op Flang op Flang op Flang op Flang op Flang op Flang op Flang ot Flang ot Flang t flang	of Mater Beam Propy tandard S - At Loc HTO-PCI B ht e Width e Haunch i e Haunch i e Haunch S I ab Widt Slab Wid Slab Thi Basic Be	ials erty Cai pecifica ation = Cross T-72 (Height 2 Height 2 Width Height th = ckness = am Sect:	Loulation tions fo 0.8200 Section Sirder f' = = = = = = = = = = = = =	<pre>hs fr Highway B: (ft) - Left Properties c = 6.50(ks: 72.00(in) 42.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 4.50(in) 4.50(in) .00(ksi) .00(in) .50(in) erties</pre>	Stage 3 i) Girder f'ci Web Width Haunch Width Haunch Thickness 72)	= 5.50(ksi)		42.00(in)	1)	:	
echanics aric PS J AASHTO S J AASHTO S J S I Wide mme: AASJ eam Heigj op Flang op Flang op Flang op Flang op Flang op Flang op Flang ot Flang ot Flang t flang	of Mater Beam Prop tandard S - At Loc HTO-PCI B ht e Width e Haunch e Haunch e Haunch s Width Slab Wid Slab Wid Slab Thi Basic Be	ials erty Cal pecifica ation = Cross T-72 (Height 2 Height 2 Width Height th = ckness = am Sect: =	Lculations fc 0.8200 0 Section Sirder f' = = = = = = = = = = = = = = = = = 12 7165	ns rr Highway B: (ft) - Left Properties rc = 6.50(ks: 72.00(in) 42.00(in) 3.50(in) 2.00(in) 2.00(in) 2.00(in) 6.00(in) 4.50(in) .00(ksi) .00(ksi) .00(in) erties 394.1438 (in: 50.2327 (in:	Stage 3 i) Girder f'ci Web Width Haunch Width Haunch Thickness 72)	= 5.50(ksi)		42.00(in)	1)		
echanics aric PS J AASHTO S S I Wide ame: AASI am Heig op Flang op Flang op Flang op Flang op Flang ot	of Mater Beam Propy tandard Sj - At Loc HTO-PCI B ht e Width e Haunch i e Haunch i e Haunch i e Haunch i Slab Wid Slab Thi. Basic Be Inertia Dist to 1 Beam	ials erty Ca pecifics ation = Cross T-72 (Height 2 Width Height th = ckness = am Sect: = = Netural Top of	Lculation ations fo 0.8200 o Section Sirder f' = = = = = = = = = = = = = = = = = = =	<pre>hs Highway B: ftt) - Left Properties c = 6.50(ks: 72.00(in) 42.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 4.50(in) 4.50(in) .00(ksi) .00(ksi) .00(ksi) .00(in) .50(in) erties </pre>	Stage 3 i) Girder f'ci Web Width Haunch Width Haunch Thickness (2) (4) ion Modulus m Top of Beam	= 5.50(ksi)		42.00(in)	1)		
echanics asic PS 1 ALSHTO S S I Wide ame: AAS ame: AAS ame: AAS ame: AAS ame and a p Flang op Flang op Flang op Flang op Flang op Flang ot Flang t Flang t Flang t Flang t Flang t Flang t Flang t Flang ot Flang ot Flang t Flang ot Flang t	of Mater Beam Prop HTO-PCI B ht e Width e Haunch le Haunch le Haunch le Haunch S Slab Widt Slab Widt Slab Widt Slab Thi Basic Be Inertia Dist to 1 Beam n)	ials erty Cal pecificz ation = Cross T-72 (Height 2 Height 2 Width Height th = ckness = am Sect: = =	Loulation for section Section Sirder f' = = = = = = = = = = = = =	As pr Highway B: (ft) - Left Properties 'c = 6.50(ks: 72.00(in) 42.00(in) 2.00(in) 2.00(in) 2.00(in) 2.00(in) 4.50(in) .00(ksi) .00(ksi) .00(ksi) .00(in) .50(Stage 3 i) Girder f'ci Web Width Haunch Width Haunch Thickness ^2) ^4) ion Modulus m Top of Beam (in ~3)	= 5.50(ksi)		42.00(in)	1)		

PS8 – Prestressed I Beam Thicker Web

@ Span 1 - 60 ft (mid-span)

Articles All articles All articles All articles Format Bullet list Bullet list Bullet list Superstructure Component Prestress Calculations Stage 1 Stage 2 Stage 3 Span 1 - 0.00 ft. Span 1 - 0.82 ft. Span 1 - 0.82 ft. Span 1 - 1.20 ft. Span 1 - 1.20 ft. Span 1 - 1.20 ft. Span 1 - 2400 ft. Span 1 - 3.33 ft. Span 1 - 3.60 ft. Span 1 - 3.60 ft. Span 1 - 48.00 ft. Span 1 - 48.00 ft. Span 1 - 60.00 ft. Span 1 - 60.00 ft.	imit State Flex. Sen N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	se Pass/Fail Passed Passed General Comp. Passed Passed General Comp.
Properties Generate Format Bullet list Superstructure Component Report Superstructure Component Specification reference L Stage 1 Stage 2 68.5.33 PS Concrete Tensile Stress 68.5.33 PS Clearce Tensile Stress Stage 3 68.5.33 PS Flexure Rating 68.5.33 PS Shore Rating 68.5.33 PS Shore Rating Span 1 - 0.00 ft. Span 1 - 0.02 ft. 9.15.23 Concrete - Cracking Stress 9.15.23 Concrete - Cracking Stress Span 1 - 1.58 ft. Span 1 - 12.00 ft. 9.15.2.3 Concrete - Cracking Stress 9.17 Flexural Strength Span 1 - 3.33 ft. Span 1 - 24.00 ft. 9.17 Flexural Strength 9.18.2.1 Ductility Limits - Minimum Steel Span 1 - 48.00 ft. Span 1 - 48.00 ft. 9.20.2.1 Shear Strength Provided by Concrete	N/A N/A N/A N/A N/A N/A N/A	Passed Passed Passed General Comp. Passed Passed
Bullet list Cification filter Report Superstructure Component > > Specification reference > Stage 1 > Stage 2 > Stage 2 > Stage 2 > Stage 3 > Exterior Member > Span 1 - 0.00 ft. > Span 1 - 0.02 ft. > Span 1 - 0.28 ft. > Span 1 - 1.58 ft. > Span 1 - 1.200 ft. > Span 1 - 24.00 ft. > Span 1 - 24.00 ft. > Span 1 - 24.00 ft. > Span 1 - 48.00 ft. > Span 1 - 48.00 ft. > Span 1 - 48.00 ft.	N/A N/A N/A N/A N/A N/A N/A	Passed Passed Passed General Comp. Passed Passed
Superstructure Component Specification reference L Image: Stage 1 ✓ 68.5.3.3 PS Concrete Compressive Stress Image: Stage 2 ✓ 68.5.3.3 PS Concrete Tensile Stress Image: Stage 3 ✓ 68.5.3.3 PS Flexure Rating Image: Stage 3 ✓ 68.5.3.3 PS Shore Rating Image: Stage 3 ✓ 68.5.3.3 PS Shore Rating Image: Stage 1 ✓ 68.5.3.3 PS Shore Rating Image: Stage 3 ✓ 68.5.3.3 PS Shore Rating Image: Stage 1 ♥ 50.5.3 PS Shore Rating <	N/A N/A N/A N/A N/A N/A N/A	Passed Passed Passed General Comp. Passed Passed
 Prestress Calculations Stage 1 Stage 2 Stage 3 Exterior Member Span 1 - 0.00 ft. Span 1 - 0.82 ft. Span 1 - 1.58 ft. Span 1 - 1.200 ft. Span 1 - 1.200 ft. Span 1 - 1.200 ft. Span 1 - 2.400 ft. Span 1 - 3.33 ft. Span 1 - 3.00 ft. Span 1 - 3.00 ft. Span 1 - 48.00 ft. Span 1 - 48.00 ft. 	N/A N/A N/A N/A N/A N/A N/A	Passed Passed Passed General Comp. Passed Passed
 Stage 1 Stage 2 Stage 3 Exterior Member Span 1 - 0.82 ft. Span 1 - 1.58 ft. Span 1 - 1.20 ft. Span 1 - 12.00 ft. Span 1 - 44.00 ft. Span 1 - 48.00 ft. Span	N/A N/A N/A N/A N/A N/A	Passed Passed General Comp. Passed Passed
 Stage 2 Stage 3 Exterior Member Span 1 - 0.00 ft. Span 1 - 0.02 ft. Span 1 - 0.82 ft. Span 1 - 1.58 ft. Span 1 - 1.58 ft. Span 1 - 1.200 ft. Span 1 - 12.00 ft. Span 1 - 48.00 ft.	N/A N/A N/A N/A N/A	Passed General Comp. Passed Passed
▲	N/A N/A N/A N/A N/A	General Comp. Passed Passed
▲	N/A N/A N/A N/A	Passed Passed
Image: Span 1 - 0.00 ft. Image: Span 1 - 0.82 ft. Image: Span 1 - 0.82 ft. Image: Span 1 - 0.82 ft. Image: Span 1 - 1.58 ft. Image: Span 1 - 1.58 ft. Image: Span 1 - 1.58 ft. Image: Span 1 - 1.58 ft. Image: Span 1 - 1.58 ft. Image: Span 1 - 1.58 ft. Image: Span 1 - 1.58 ft. Image: Span 1 - 1.58 ft. Image: Span 1 - 1.200 ft. Image: Span 1 - 1.200 ft. Image: Span 1 - 24.00 ft. Image: Span 1 - 26.00 ft. Image: Span 1 - 24.00 ft. Image: Span 1 - 26.00 ft. Image: Span 1 - 24.00 ft. Image: Span 1 - 26.00 ft. Image: Span 1 - 24.00 ft. Image: Span 1 - 26.00 ft. Image: Span 1 - 26.00 ft. Image: Span 1 - 26.00 ft. Image: Span 1 - 28.00 ft. Image: Span 1 - 28.00 ft. Image: Span 1 - 28.00 ft. Image: Span 1 - 28.00 ft. Image: Span 1 - 28.00 ft. Image: Span 20.2 ft. Image: Span 1 - 28.00 ft. Image: Span 20.2 ft. Image: Span 1 - 28.00 ft. Image: Span 20.2 ft. Image: Span 1 - 28.00 ft. Image: Span 20.2 ft. Image: Span 1 - 28.00 ft. Image: Span 20.2 ft. Image: Span 1 - 28.00 ft. Image: Span 20.2 ft. Image: Span 1 - 28.00 ft.	N/A N/A N/A	Passed
Span 1 - 0.82 ft. 8.16.2.7 Design Assumptions Span 1 - 1.58 ft. 9.15.2.3 Concrete - Cracking Stress Span 1 - 3.33 ft. 9.17 Flexural Strength Span 1 - 24.00 ft. 9.18.2.1 Ductility Limits - Minimum Steel Span 1 - 48.00 ft. 9.20.2.1 Shear Strength Provided by Concrete Span 1 - 48.00 ft. 9.20.2.1 Shear Strength Provided by Concrete	N/A N/A N/A	
	N/A N/A	deneral comp.
	N/A	General Comp.
Span 1 - 12.00 ft. Span 1 - 24.00 ft. Span 1 - 36.00 ft. Span 1 - 48.00 ft. Span 1 - 48.		Passed
Span 1 - 24.00 ft. Span 1 - 36.00 ft. Span 1 - 48.00 ft. Span 1 - 48.00 ft. 9 - 20.2.1 Shear Strength Provided by Concrete 9 - 20.2.2 Shear Strength Provided by Concrete	N/A	General Comp.
Span 1 - 48.00 ft. 9 20.2.2 Shear Strength Provided by Concrete 9 20.2.2 Shear Strength Provided by Concrete	N/A	General Comp.
9 20 2 2 Shear Strength Provided by Concrete	N/A	General Comp.
	N/A	General Comp.
Span 1 - 72.00 ft.	N/A	General Comp.
Span 1 - 84.00 ft.	N/A	General Comp.
Span 1 - 96.00 ft.	N/A	General Comp.
Span 1 - 108.00 ft. 9.28 Embedment of Prestressed Strand	N/A	General Comp.
🔄 Span 1 - 120.00 ft.	N/A	General Comp.
PS Basic Properties Calculation	N/A	General Comp.
 PS Gross Composite Section Properties Stresses 	N/A N/A	General Comp. General Comp.
Spec Check Detail for PS Basic Properties Calculation		- 🗆
25 I Wide - At Location = 60.0000 (ft) - Left Stage 3 Cross Section Properties		
Tame: AASHTO-PCI BT-72 Girder f'c = 6.50(ksi) Girder f'c =	5.50(ksi)	
Beam Height = 72.00(in) Web Width	=	6.00(in)
op Flange Width = 42.00(in)		
op Flange Thick = 3.50(in) op Flange Haunch Height = 2.00(in)		
op Flange Haunch 2 Height = 2.00(in)		
op Flange Haunch 2 Width = 2.00(in) Bot Flange Width = 26.00(in)		
Sot Flange Width = $20.00(1n)$ Sot Flange Thick = $6.00(in)$		
Bot Flange Haunch Height = 4.50(in)		
(lab f'c) = 4.00 (ksi)		
	=	42.00(in)
	=	0.25(in)
ffective Slab Width = 90.00(in) Haunch Width ffective Slab Thickness = 7.50(in) Haunch Thickness		
Effective Slab Width = 90.00(in) Haunch Width Effective Slab Thickness = 7.50(in) Haunch Thickness Computed Basic Beam Section Properties		
Effective Slab Width = 90.00(in) Haunch Width Effective Slab Thickness = 7.50(in) Haunch Thickness Computed Basic Beam Section Properties		
Effective Slab Width = 90.00(in) Haunch Width Effective Slab Thickness = 7.50(in) Haunch Thickness Computed Basic Beam Section Properties		
Effective Slab Width = 90.00(in) Haunch Width Effective Slab Thickness = 7.50(in) Haunch Thickness Computed Basic Beam Section Properties		
Effective Slab Width = 90.00(in) Haunch Width Effective Slab Thickness = 7.50(in) Haunch Thickness Computed Basic Beam Section Properties Hrea = 767.0000 (in^2) Ioment of Inertia = 545857.2181 (in^4)		
Effective Slab Width = 90.00(in) Haunch Width Effective Slab Thickness = 7.50(in) Haunch Thickness Computed Basic Beam Section Properties Harea = 767.0000 (in^2) Moment of Inertia = 545857.2181 (in^4)		
Effective Slab Width = 90.00(in) Haunch Width Effective Slab Thickness = 7.50(in) Haunch Thickness Computed Basic Beam Section Properties		