WORLD STEEL BRIDGE SYMPOSIUM
APRIL 22–24, 2026
ATLANTA

AT
NASCC: THE STEEL CONFERENCE

Economical and Long-Lasting Short Span Steel Bridges

Michael G. Barker, PhD, PE
University of Wyoming
SSSBA, Director of Education

Tanner Genenbacher, PE
DeLong's, Inc.

PDH Code

19247

Agenda

- Simplifying Short Span Steel Bridge Design
  - Michael Barker
- Bridges of Franklin County: The Missouri Version
  - Tanner Genenbacher
- Assessment Question
- Q&A

eSPAN140™

eBEAM140

ePLATE140

SHORT SPAN STEEL BRIDGE ALLIANCE™

DELONG'S
BUILDING A STRONGER TOMORROW

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Simplifying Short Span Steel Bridge Design

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Short Span Steel Bridge Alliance

www.ShortSpanSteelBridges.org

*A group of **bridge** and **buried soil structure** industry leaders who have joined together to provide **educational information** on the design and construction of short span steel bridges in installations up to **140 feet in length**.*

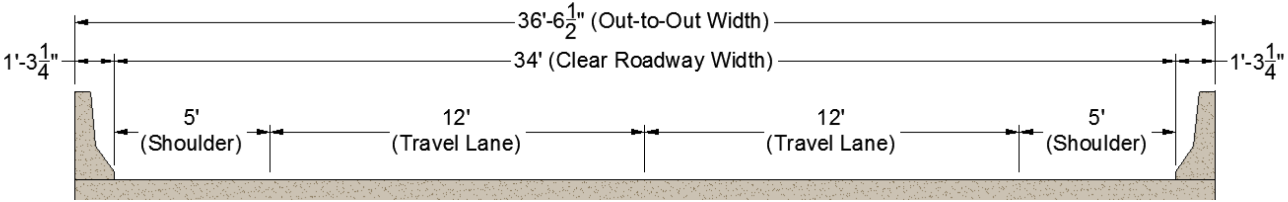
Myrissa Welch, SSAB, Chair SSSBA

Steel Bridge Design

- Design Two-Lane, Simple Span Bridge

Bridge Need and Basic Information

- Decided by Owner/Engineer
  - 80 ft Simple Span Composite – Steel Girders
  - Two 12 ft Travel Lanes, ADT = 5600 one direction
  - 34 ft Roadway Width
  - Jersey Barriers (1 ft – 3 ¼ in wide)



Need a Design for the Bridge SuperStructure

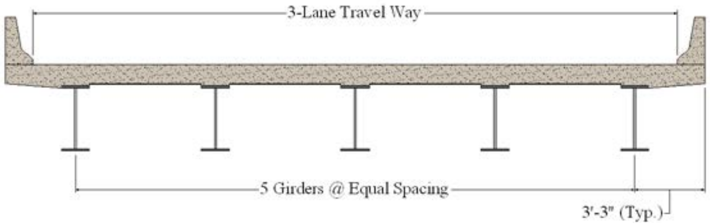
WORLD STEEL BRIDGE SYMPOSIUM 2026

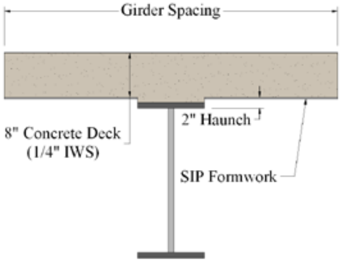
eSPAN140 – Standard Designs Short Span Bridges

Span lengths 20 ft to 140 ft (in 5 ft increments)

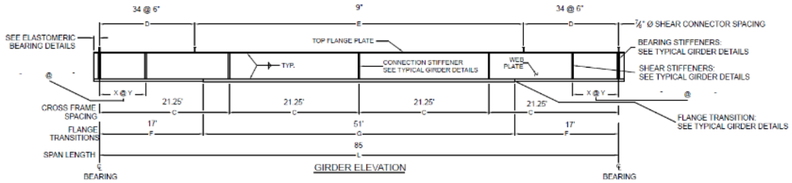
Four girder spacing: 6’-0”, 7’-6”, 9’-0” and 10’-6”,

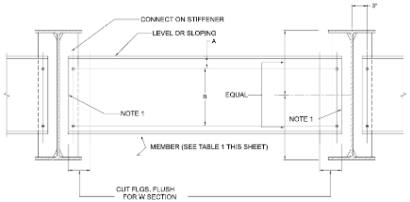
For each of these increments: Steel girders, Shear stud & stiffener layouts, Welding and fabrication details, Elastomeric bearings, and Concrete deck design

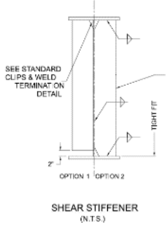




COMPOSITE PLATE GIRDER WITH PARTIALLY STIFFENED WEB - 4 GIRDERS AT 8' 10" GIRDER SPACING, HOMOGENEOUS





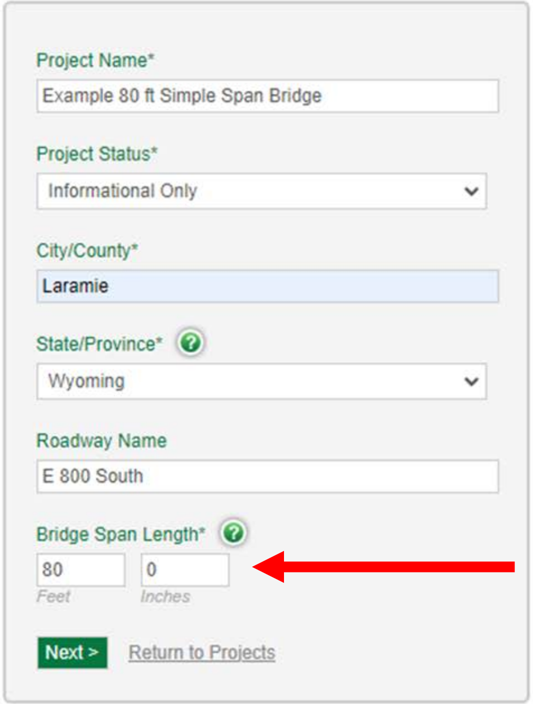


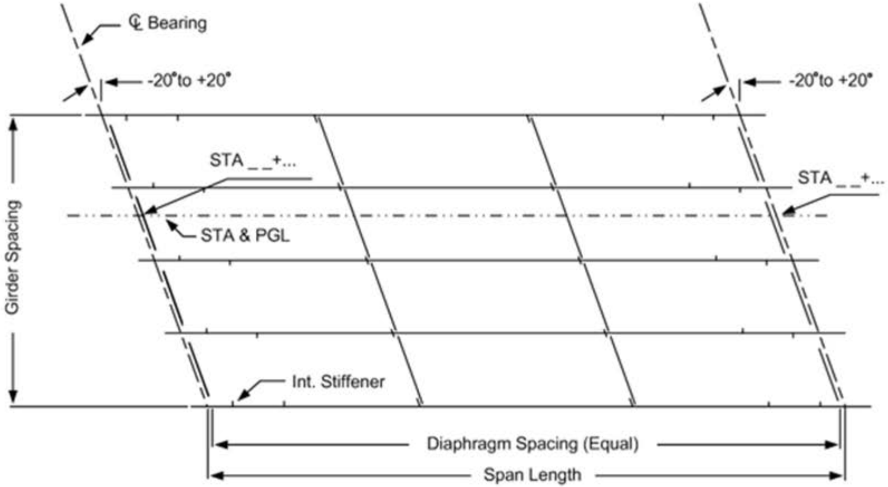
eSPAN140 Preliminary Design

Solution Type*	Bridge Span Length 0'	20'	40'	60'	80'	100'	120'	140'	Skew Angle	Overhang Width
Rolled Beam (40' to 100')**									+/- 20 degrees	3'3" or less
Homogeneous Plate Girder (60' to 140')**									+/- 20 degrees	3'3" or less
Press Brake Tub Girders (0' to 80')									+/- 20 degrees	3'3" or less
Buried Bridges (all)***									+/- 35 degrees****	N/A

* For bridges outside of this range, standard designs will not appear in your solutions book.
** Standard designs for rolled beam and plate girder solutions are rounded in five (5) foot increments.
*** Depending on project requirements this solution will require multiple spans.
**** Can be greater if site geometry allows.

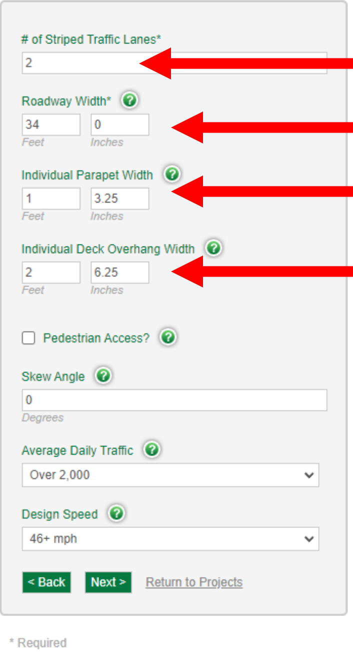
eSPAN140 Preliminary Design

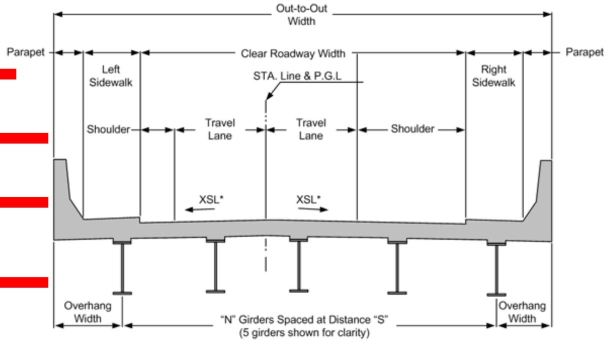




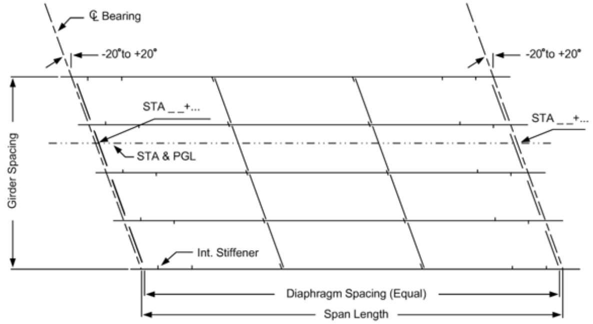
Skew Angle (Overhead View)

eSPAN140 Preliminary Design





Cross-section of Bridge

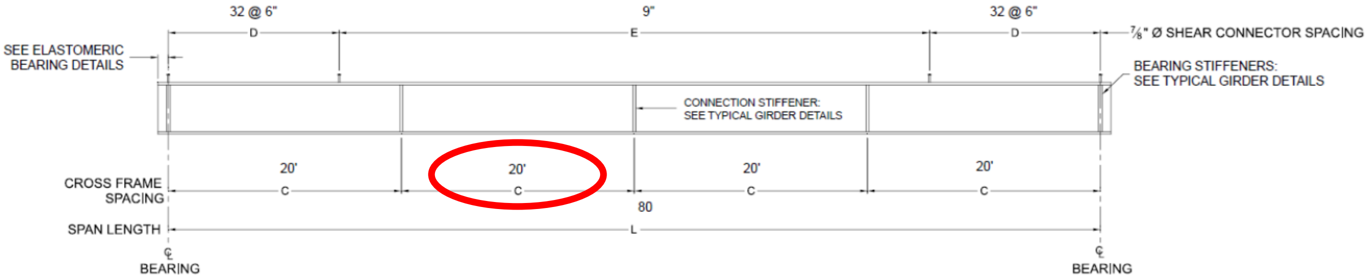


WORLD STEEL BRIDGE SYMPOSIUM 2026

Rolled Beam Recommendation

COMPOSITE ROLLED BEAM WITH PARTIALLY STIFFENED WEB - 4 GIRDERS AT 10' 6" GIRDER SPACING, LIGHTEST WEIGHT

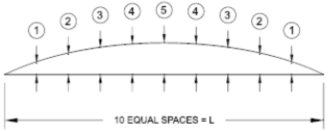
The selected rolled beam section is based on the widest (10'-6") girder spacing used in the development of the standards. The steel industry generally recommends the use of the widest girder spacing possible to reduce the potential number of girder lines for optimum economy.



BEAM ELEVATION

SPAN (L) - ft	ROLLED BEAM	DIAPHRAGM SPACING (C) - ft	SHEAR CONNECTOR MAX. SPACING		WEIGHT
			D	E	
80	W36x210	20'	32 @ 6"	9"	16,800 lbs

STEEL D.L. CAMBER - in					TOTAL D.L. CAMBER - in				
1	2	3	4	5	1	2	3	4	5
0.178"	0.337"	0.461"	0.540"	0.567"	1.255"	2.375"	3.250"	3.807"	3.997"

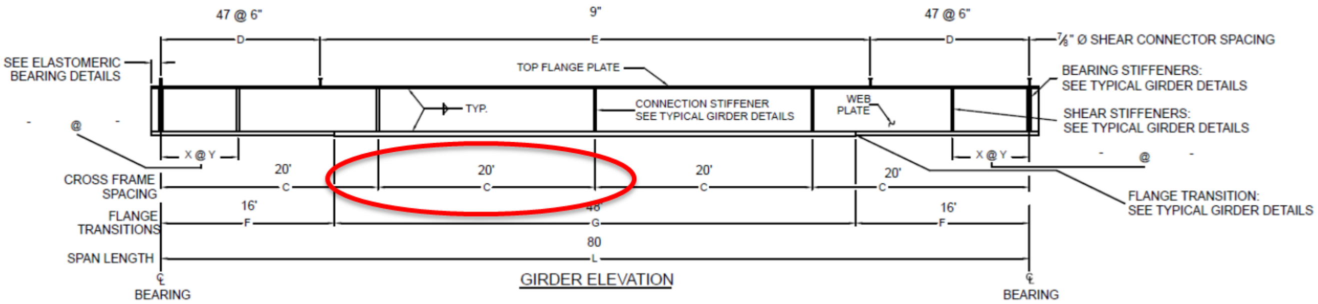


D.L. CAMBER

WORLD STEEL BRIDGE SYMPOSIUM 2026

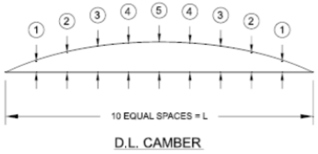
Plate Girder Recommendation

COMPOSITE PLATE GIRDER WITH PARTIALLY STIFFENED WEB - 4 GIRDERS AT 10' 6" GIRDER SPACING, HOMOGENEOUS

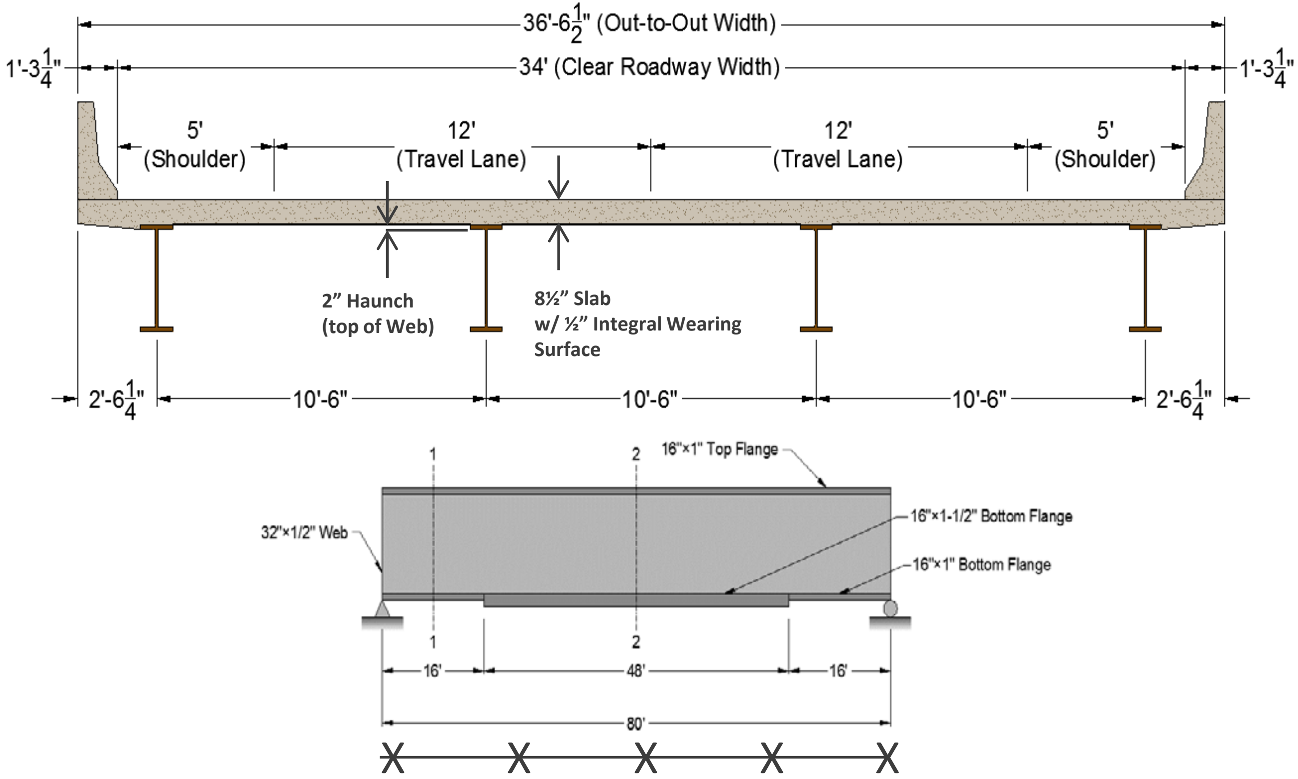


SPAN (L) - ft	PLATE GIRDER SIZE						DIAPHRAGM SPACING (C) - ft	SHEAR STIFFENERS		SHEAR CONNECTOR MAX. SPACING		INDIVIDUAL GIRDER WEIGHT
	TOP FLANGE - in	BOTTOM FLANGE (F)		BOTTOM FLANGE (G)		WEB PLATE- in						
		PLATE - in	LENGTH - Ft	PLATE - in	LENGTH - Ft			X (NO. REQ'd)	Y - ft. (SPACING)	D	E	
80	16 x 1"	16 x 1"	16'	16 x 1 1/2"	48'	32 x 1/2"	20'	-	-	47 @ 6"	9"	14,373 lbs

STEEL D.L. CAMBER - in					TOTAL D.L. CAMBER - in				
1	2	3	4	5	1	2	3	4	5
0.178"	0.334"	0.454"	0.530"	0.557"	1.397"	2.618"	3.554"	4.149"	4.355"



Preliminary Design for Plate Girder Bridge



Diaphragms at 20 ft

NEW Short Span Steel Bridge Alliance eBEAM140

Noncomposite and Composite Simple-Span Rolled-Section Steel Bridge Design

Excel Based Rolled Beam Design Software

Version 1.0 - Beta

eBEAM140 Disclaimer: *This document has been prepared in accordance with information available to the American Iron and Steel Institute (AISI) and its Short Span Steel Bridge Alliance (SSSBA) program, at the time of preparation. While it is believed to reasonably reflect the present state of knowledge as to the subject, it has not been prepared for conventional use as an engineering or construction document and should not be used or relied upon for any specific application without competent professional examination and verification of its accuracy, suitability, and applicability by a licensed engineer, architect or other professional. AISI and the SSSBA disclaim any liability arising from information provided by others or from the unauthorized use of the information contained in this document, and do not accept any obligation to issue supplements or corrections in the event of errors being discovered or advances being made in the techniques discussed in the document.*

eBEAM140

https://www.shortspansteelbridges.org/ebeam140/

Start With Demonstration

Noncomposite Bridge

- **52 ft Length**
- **Two 12 ft Lanes**
- **6 Girders at 5'-6" Spacing**
- Overhang 1' – 3"
- Barriers 1' – 0" (50 lb/ft – 50% on Exterior Girder)
- Roadway Width = 28 ft (4 ft of shoulder)
- Bridge Width 30 ft
- **Diaphragm (Centerline) at 26 ft**
- **Unbraced**
- **Corrugated Metal Deck & Gravel (80 psf)**

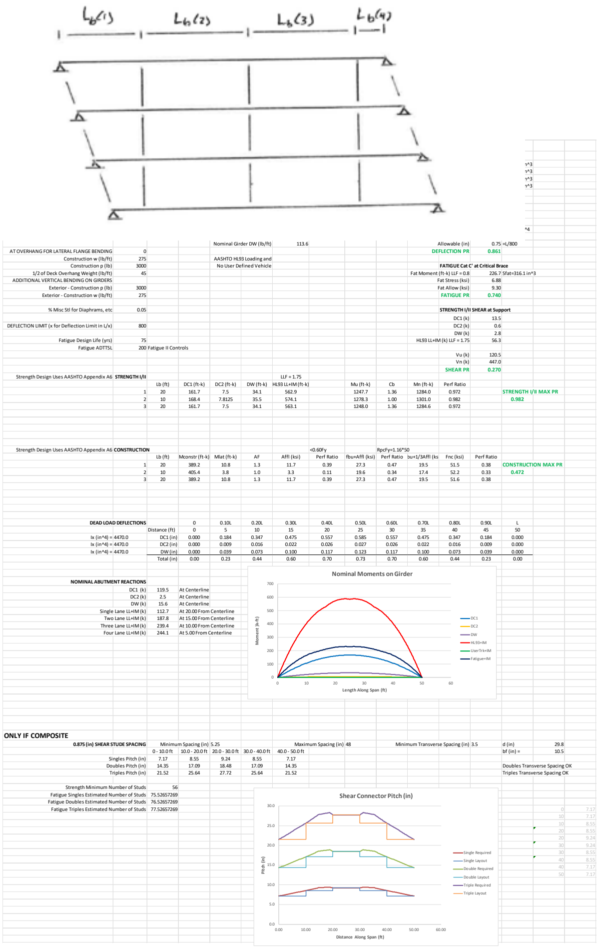
- No Additional DC1 or DC2 Loading
- No Wearing Surface
- No Construction Load (No Lateral Flange)
- Misc Steel of 5%
- 50 ksi Steel, L/D limit 30, Min d = 12
- L/800 Deflection Limit
- Compression Flange not Braced
- Use AASHTO Appendix A6
- 75 Year Design Life & $ADTT_{SL}$ = 200
  - Fatigue II – Finite Life
- No User Defined Vehicle

W36x135 Strength I PR = 0.993

Design Software

Excel Based Rolled Beam Design Software

- NonComposite & Composite Design
- 33, 36, 50, 65 or 70 ksi Steel
- Bridge Layout
- Diaphragm Variable Along Span
- Any Decking: Wood, Grid, CMD, Noncomposite Concrete, Composite Concrete
- Vehicular Loading: AASHTO HL93 & User Defined Vehicle (i.e., U-80)



Design Software

Excel Based Rolled Beam Design Software

- **Diaphragm Variable Along Span: up to 7 Unbraced Lengths: Skewed Bridges**
  - Compression Flange Bracing During Construction
  - Compression Flange Bracing for Final State
- **Any Decking: Wood, Grid, CMD, Noncomposite Concrete, Composite Concrete**
  - For Composite: f’c, full depth or SIP, haunch, sacrificial surface, shear connector design
  - Additional Dead Load (DC1 – Overhang, Utilities, etc)
  - Variable Bridge Railing
  - Steel Beams Individually Considered in Dead Load
- **Wearing Surface**
- **Additional Dead Load (DC2 – Utilities, etc)**

Design Software

Excel Based Rolled Beam Design Software

- **Vehicular Loading**
    - AASHTO HL93 truck, Tandem and Lane
    - User Defined Vehicle (i.e., U-80)

        User Live Load Factor (Strength II)

        Optional Lane Load

        Single or Multi-Lane Distribution

        User Impact Factor
- **Live Load Distribution Factors**
    - Moment & Shear (Based on Decking)
    - Lever Rule if Necessary
    - Single & Multi-Lane
    - Rigid Rotational Analysis
    - User Input LLDF

Design Software

Excel Based Rolled Beam Design Software

- Limit L/D Ratio
- Minimum Depth (diaphragms)
- Maximum Depth (approaches/clearance)
- Option on W40/44
- User Defined Deflection Limit
- Add % Steel for Miscellaneous
- Applies AASHTO 6.10.8 (conservative) or Appendix A6 (optimal) - AASHTO 10
- Calculated Cb for Each Unbraced Length - AASHTO 10
    - User defined Cb

Design Software

Excel Based Rolled Beam Design Software

- Fatigue I or Fatigue II Based on ADTTSL – AASHTO 10
    - Variable Design Life
- Performs Dead, Construction & Live Load Analysis for Each Unbraced Length
- Strength I/II & Constructability Design for Each Unbraced Length
- Service II Near Centerline (Maximum Moment)
- Fatigue at Critical Diaphragm Location (Detail C’)
- Strength & Fatigue Shear Stud Design for Composite – AASHTO 10

Design Software

Excel Based Rolled Beam Design Software

- Allows User to Investigate Alternatives to
  - Diaphragm Spacing
  - Lightest Weight Solution
  - Other Readily Available Sections

ENTER W SECTION FOR MORE INFORMATION

W36X135	NonComposite	Weight (lb/ft) 135

OVERALL PERFORMANCE FOR W36X135

Strength I/II	Service II	Construction	Fatigue	Deflection	Overall
PR	PR	PR	PR	PR	PR
0.993	0.727	0.161	0.599	0.763	0.993
In Lb #	At Centerline	In Lb #	At Critical Brace	At Centerline Equal to	Strength I/II
1		1		L/1049	

PERFORMANCE BY UNBRACED LENGTH FOR W36X135

Unbraced Length	Unbraced Length (ft)	Lb Range	Strength I/II PR	Mn/My	Cb
1	26	0 - 26 ft	0.993	0.778	1.255
2	26	26 - 52 ft	0.993	0.778	1.256

LIST OF ALL W SHAPES RANKED FROM STRENGTH I, SERVICE II & CONSTRUCTION

Top 20 That Meet Min Depth, Max Depth & W40 & W44 Limits

Shape	Strength I/II	Service II	Construction	Fatigue	Deflection	Overall
	PR	PR	PR	PR	PR	PR
W36X135	0.99	0.73	0.16	0.60	0.76	0.99
W33X141	0.92	0.71	0.15	0.58	0.80	0.92
W27X146	0.79	0.77	0.14	0.62	1.05	1.05
W30X148	0.95	0.73	0.16	0.58	0.89	0.95
W40X149	0.90	0.62	0.15	0.51	0.61	0.90
W36X150	0.81	0.64	0.13	0.52	0.66	0.81
W33X152	0.81	0.66	0.14	0.53	0.73	0.81
W36X160	0.73	0.59	0.12	0.48	0.61	0.73
W27X161	0.71	0.70	0.13	0.55	0.94	0.94
W24X162	0.77	0.78	0.14	0.60	1.15	1.15
W40X167	0.70	0.54	0.12	0.43	0.51	0.70
W33X169	0.69	0.59	0.12	0.46	0.64	0.69
W36X170	0.66	0.56	0.11	0.44	0.57	0.66
W30X173	0.59	0.60	0.11	0.47	0.72	0.72
W24X176	0.70	0.72	0.13	0.54	1.05	1.05
W27X178	0.63	0.64	0.12	0.50	0.85	0.85
W36X182	0.61	0.52	0.11	0.41	0.53	0.61
W40X183	0.59	0.48	0.10	0.38	0.45	0.59
W30X191	0.53	0.54	0.10	0.42	0.65	0.65
W24X192	0.63	0.66	0.12	0.50	0.95	0.95

Design Software

Excel Based Rolled Beam Design Software

W44	SERVICE II near Centerline		
	DC1 (ft-k)	183.1	Sx=439.0 in^3
	DC2 (ft-k)	8.5	Sx=439.0 in^3
	DW (ft-k)	0.0	Sx=439.0 in^3
	HL93 LL+IM (ft-k)	670.5	Sx=439.0 in^3
	Serv II Stress	29.1	
Lane	Serv II Allow	40.0	
	SERVICE II PR	0.727	
	LIVE LOAD DEFLECTION		Ix=7800 in^4
	LL Defl (in)	0.60	= L/1049
	Allowable (in)	0.78	=L/800
	DEFLECTION PR	0.763	
	FATIGUE Cat C' at Critical Brace		
	Fat Moment (ft-k) LLF = 0.8	265.8	Sfat=458.6 in^3
	Fat Stress (ksi)	5.57	
	Fat Allow (ksi)	9.30	
	FATIGUE PR	0.599	
	STRENGTH I/II SHEAR at Support		
	DC1 (k)	14.1	
	DC2 (k)	0.7	
	DW (k)	0.0	
	HL93 LL+IM (k) LLF = 1.75	60.6	
	Vu (k)	124.5	
	Vn (k)	591.9	
	SHEAR PR	0.210	

- Design Summary
  - All Superstructure Design Results Specific to Limit States, Unbraced Lengths, etc.
  - Dead Load Deflections for Camber
  - Abutment Reaction Cases for Multi-Lane
  - If Composite: Strength and Fatigue Stud Design

Strength Design Uses AASHTO Appendix A6	STRENGTH I/II					LLF = 1.75							
		Lb (ft)	DC1 (ft-k)	DC2 (ft-k)	DW (ft-k)	HL93 LL+IM (ft-k)		Mu (ft-k)	Cb	Mn (ft-k)	Perf Ratio		
	1	26	183.1	8.45	0.0	670.4		1412.6	1.26	1422.9	0.993		STRENGTH I/II MAX PR
	2	26	183.1	8.45	0.0	670.5		1412.9	1.26	1423.3	0.993		0.993

Strength Design Uses AASHTO Appendix A6	CONSTRUCTION						<0.60Fy		RpcFy=1.16*50				
		Lb (ft)	Mconstr (ft-k)	Mlat (ft-k)	AF	Affl (ksi)	Perf Ratio	fbu+Affl (ksi)	Perf Ratio	bu+1/3Affl (ks	Fnc (ksi)	Perf Ratio	
	1	26	228.9	0.0	1.0	0.0	0.00	6.3	0.13	6.3	38.9	0.16	CONSTRUCTION MAX PR
	2	26	228.9	0.0	1.0	0.0	0.00	6.3	0.13	6.3	38.9	0.16	0.161

NOMINAL ABUTMENT REACTIONS				
	DC1 (k)	84.5	At Centerline	
	DC2 (k)	2.6	At Centerline	
	DW (k)	0.0	At Centerline	
	Single Lane LL+IM (k)	114.3	At 9.00 From Centerline	
	Two Lane LL+IM (k)	190.4	At 4.00 From Centerline	

Modify Demonstration

Noncomposite Bridge

- 52 ft Length
- Two 12 ft Lanes
- 6 Girders at 5’-6” Spacing
- Overhang 1’ – 3”
- Barriers 1’ – 0” (50 lb/ft – 50% on Exterior Girder)
- Roadway Width = 28 ft (4 ft of shoulder)
- Bridge Width 30 ft
- Diaphragm (Centerline) at 26 ft
- Unbraced
- Corrugated Metal Deck & Gravel (80 psf)

- No Additional DC1 or DC2 Loading
- No Wearing Surface
- No Construction Load (No Lateral Flange)
- Misc Steel of 5%
- 50 ksi Steel, L/D limit 30, Min d = 12
- L/800 Deflection Limit
- Compression Flange not Braced
- Use AASHTO Appendix A6
- 75 Year Design Life & $ADTT_{SL}$ = 200
  - Fatigue II – Finite Life
- No User Defined Vehicle

W36x135 Strength I PR = 0.993

WORLD STEEL BRIDGE SYMPOSIUM 2026

Demonstration: 52' Span, CMD/Gravel, 6 Girders @ 5.5 ft

NonComposite Bridge: W36 x 135

- What if add additional diaphragm: Lb = 19, 14, 19 ft

ENTER W SECTION FOR MORE INFORMATION					Weight (lb/ft)	
W36X135		NonComposite			135	
	OVERALL PERFORMANCE FOR		W36X135			
Strength I/II	Service II	Construction	Fatigue	Deflection		Overall
PR	PR	PR	PR	PR		PR
0.993	0.727	0.161	0.599	0.763		0.993
In Lb #	At Centerline	In Lb #	At Critical Brace	At Centerline Equal to		Strength I/II
1		1		L/1049		
PERFORMANCE BY UNBRACED LENGTH FOR			W36X135			
			Strength I/II			
Unbraced Length	Unbraced Length (ft)	Lb Range	PR	Mn/My	Cb	
1	26	0 - 26 ft	0.993	0.778	1.255	
2	26	26 - 52 ft	0.993	0.778	1.256	

ENTER W SECTION FOR MORE INFORMATION					Weight (lb/ft)	
W33X118		NonComposite			118	
	OVERALL PERFORMANCE FOR		W33X118			
Strength I/II	Service II	Construction	Fatigue	Deflection		Overall
PR	PR	PR	PR	PR		PR
0.981	0.883	0.155	0.703	1.009		1.009
In Lb #	At Centerline	In Lb #	At Critical Brace	At Centerline Equal to		Deflection
2		2		L/793		
PERFORMANCE BY UNBRACED LENGTH FOR			W33X118			
			Strength I/II			
Unbraced Length	Unbraced Length (ft)	Lb Range	PR	Mn/My	Cb	
1	19	0 - 19 ft	0.781	1.139	1.391	
2	14	19 - 33 ft	0.981	0.957	1.005	
3	19	33 - 52 ft	0.781	1.140	1.392	

W33x118 – 5400 lbs Girder Steel Saved
But Additional Diaphragm
And Deflection = L/793

Demonstration: 52’ Span, CMD/Gravel, 6 Girders @ 5.5 ft

NonComposite Bridge: W36 x 135

- What if compression flange braced: Lb = 0 Corrugated Metal Decking

ENTER W SECTION FOR MORE INFORMATION					Weight (lb/ft)	
W36X135		NonComposite			135	
	OVERALL PERFORMANCE FOR		W36X135			
Strength I/II	Service II	Construction	Fatigue	Deflection		Overall
PR	PR	PR	PR	PR		PR
0.993	0.727	0.161	0.599	0.763		0.993
In Lb #	At Centerline	In Lb #	At Critical Brace	At Centerline Equal to		Strength I/II
1		1		L/1049		
PERFORMANCE BY UNBRACED LENGTH FOR			W36X135			
			Strength I/II			
Unbraced Length	Unbraced Length (ft)	Lb Range	PR	Mn/My	Cb	
1	26	0 - 26 ft	0.993	0.778	1.255	
2	26	26 - 52 ft	0.993	0.778	1.256	

ENTER W SECTION FOR MORE INFORMATION					Weight (lb/ft)	
W30X116		NonComposite			116	
	OVERALL PERFORMANCE FOR		W30X116			
Strength I/II	Service II	Construction	Fatigue	Deflection		Overall
PR	PR	PR	PR	PR		PR
0.892	0.963	0.161	0.788	1.207		1.207
In Lb #	At Centerline	In Lb #	At Critical Brace	At Centerline Equal to		Deflection
2		1		L/663		
PERFORMANCE BY UNBRACED LENGTH FOR			W30X116			
Compression Flange Laterally Braced for Final State			Strength I/II			
Unbraced Length	Unbraced Length (ft)	Lb Range	PR	Mn/My	Cb	
1	26	0 - 26 ft	0.892	1.149	1.255	
2	26	26 - 52 ft	0.892	1.149	1.256	

W30x116 – 6000 lbs Girder Steel Saved
But Deflection = L/663

Demonstration: 52’ Span, CMD/Gravel, 6 Girders @ 5.5 ft

NonComposite Bridge: W36 x 135

- What if Logging Truck User Vehicle: 160 kips, 5 Axles

ENTER W SECTION FOR MORE INFORMATION					Weight (lb/ft)	
W36X135		NonComposite			135	
	OVERALL PERFORMANCE FOR W36X135					
Strength I/II	Service II	Construction	Fatigue	Deflection		Overall
PR	PR	PR	PR	PR		PR
0.993	0.727	0.161	0.599	0.763		0.993
In Lb #	At Centerline	In Lb #	At Critical Brace	At Centerline Equal to		Strength I/II
1		1		L/1049		
PERFORMANCE BY UNBRACED LENGTH FOR W36X135						
			Strength I/II			
Unbraced Length	Unbraced Length (ft)	Lb Range	PR	Mn/My	Cb	
1	26	0 - 26 ft	0.993	0.778	1.255	
2	26	26 - 52 ft	0.993	0.778	1.256	

ENTER W SECTION FOR MORE INFORMATION					Weight (lb/ft)	
W36X150		NonComposite			150	
	OVERALL PERFORMANCE FOR W36X150					
Strength I/II	Service II	Construction	Fatigue	Deflection		Overall
PR	PR	PR	PR	PR		PR
0.937	0.736	0.134	0.516	0.658		0.937
In Lb #	At Centerline	In Lb #	At Critical Brace	At Centerline Equal to		Strength I/II
1		1		L/1215		
PERFORMANCE BY UNBRACED LENGTH FOR W36X150						
			Strength I/II			
Unbraced Length	Unbraced Length (ft)	Lb Range	PR	Mn/My	Cb	
1	26	0 - 26 ft	0.937	0.837	1.255	
2	26	26 - 52 ft	0.937	0.837	1.256	

Strength II: LLF = 1.35, No Lane Load, Single Lane, Unbraced W36x150
Strength II: LLF = 1.35, No Lane Load, Single Lane, Braced W33x130

Another Demonstration

Composite Bridge

- **62 ft Length**
- **Two 12 ft Lanes**
- **4 Girders at 9'-0" Spacing**
- Overhang 2' – 0"
- Barriers 1' – 6" (250 lb/ft – 50% on Exterior Girder)
- Roadway Width = 28 ft (4 ft of shoulder)
- Bridge Width 31 ft
- Diaphragms at 21 ft & 41 ft
- 8" Structural Deck, ½" Sacrificial, 2" Haunch
- 2" Stay-in-Place Forms (15 psf)
- 7/8" Shear Studs; f'c = 4000 psi

- Additional DC1 Loading = 40 lb/ft
  - 100% on Girder
- 25 lb/ft2 Wearing Surface
- Construction Load (w = 275 lb/ft & p = 3000 lb)
- Misc Steel of 5%
- 50 ksi Steel, L/D limit 30, Min d = 12
- L/800 Deflection Limit
- Compression Flange not Braced - Construction
- Use AASHTO Appendix A6
- 75 Year Design Life & ADTTSL = 1000
  - Fatigue I – Infinite Life
- No User Defined Vehicle

W36x135 Fatigue PR = 0.961

Demonstration: 62 ft Span, 8” Deck w/SIP, 4 Girders @ 9 ft

Composite Bridge

Lightest 10 Sections (see to the right for additional Information)						
Str I, Serv II, Constr	Fatigue	Deflection	L/D	Defl	Mn/My	Weight (tons)
W36X135	W36X135	W36X135	20.9	L/1295	1.88	16.7
W33X141	W33X141	W33X141	22.3	L/1204	1.78	17.5
W27X146			27.2	L/927	1.66	18.1
W40X149	W40X149	W40X149	19.5	L/1553	1.82	18.5
W36X150	W36X150	W36X150	20.7	L/1421	1.78	18.6
W33X152	W33X152	W33X152	22.2	L/1281	1.75	18.8
W36X160	W36X160	W36X160	20.7	L/1491	1.74	19.8
W27X161	W27X161	W27X161	27.0	L/998	1.62	20.0
W24X162			29.8	L/846	1.64	20.1
W40X167	W40X167	W40X167	19.3	L/1726	1.72	20.7

ENTER W SECTION FOR MORE INFORMATION					Weight (lb/ft)	
W36X135		Composite			135	
	OVERALL PERFORMANCE FOR W36X135					
Strength I/II	Service II	Construction	Fatigue	Deflection		Overall
PR	PR	PR	PR	PR		PR
0.793	0.876	0.947	0.961	0.618		0.961
In Lb #	At Centerline	In Lb #	At Critical Brace	At Centerline Equal to		Fatigue
2		2		L/1295		
PERFORMANCE BY UNBRACED LENGTH FOR W36X135						
			Strength I/II			
Unbraced Length	Unbraced Length (ft)	Lb Range	PR	Mn/My	Cb	
1	21	0 - 21 ft	0.721	1.883	1.425	
2	20	21 - 41 ft	0.793	1.883	1.009	
3	21	41 - 62 ft	0.721	1.883	1.425	

W36x135 Fatigue PR = 0.961

Demonstration: 62 ft Span, 8” Deck w/SIP, 4 Girders @ 9 ft

Composite Bridge

W36X135	**Composite**	Consider W40 & W44 Beams?		Yes	Minimum Depth Beam	W12			
Overall PR = 0.961 - Fatigue		L/D Limited to		25	Maximum Depth Beam	W44	**SERVICE II near Centerline**		
Yield Strength (ksi)	50						DC1 (ft-k)	492.3	Sx=439.0 in^3
Bridge Length (ft)	62	Bridge Width (ft)	31.00				DC2 (ft-k)	60.1	S3n=600.0 in^3
Girder Spacing (ft)	9	Roadway Width (ft)	28.00				DW (ft-k)	84.1	S3n=600.0 in^3
Number of Girders	4	Shoulders (ft) each side - Double for One Sided	2.00				HL93 LL+IM (ft-k)	1093.4	Sn=675.0 in^3
Overhang (22.2% of Girder Spacing) (ft)	2	2 Striped Lanes and 2 Design Lanes							
Barrier Width (ft)	1.5				Lateral Distribution Factors		Serv II Stress	41.6	
Barrier Load on Girder (lb/ft)	125	8 in Structural Deck with 2 in SIP Forms			Single Lane/Multi-Lane		Serv II Allow	47.5	
DC Deck Only Loading (psf)	106.25	Deck f'c (psi)	4000		Moment LLDF = 0.660 , 0.767		**SERVICE II PR**	**0.876**	
Wearing Surface (psf)	25	Haunch from Top of Web (in)	2		Fatigue LLDF = 0.550				
Additional DC1 Load on Girder (lb/ft)	40	Nominal Girder DC1 (lb/ft)	1024.6		Shear LLDF = 0.720 , 0.884		**LIVE LOAD DEFLECTION**		In=21650.2 in^4
Additional DC2 Load on Bridge (lb/ft)	0	Nominal Girder DC2 (lb/ft)	125.0				LL Defl (in)	0.57	= L/1295
		Nominal Girder DW (lb/ft)	175.0				Allowable (in)	0.93	=L/800
AT OVERHANG FOR LATERAL FLANGE BENDING	0						**DEFLECTION PR**	**0.618**	
Construction w (lb/ft)	275	AASHTO HL93 Loading and							
Construction p (lb)	3000	No User Defined Vehicle					**FATIGUE Cat C' at Critical Brace**		
1/2 of Deck Overhang Weight (lb/ft)	108.75						Fat Moment (ft-k) LLF = 1.75	380.0	Sfat=692.0 in^3
ADDITIONAL VERTICAL BENDING ON GIRDERS							Fat Stress (ksi)	11.53	
Exterior - Construction p (lb)	3000						Fat Allow (ksi)	12.00	
Exterior - Construction w (lb/ft)	275						**FATIGUE PR**	**0.961**	
% Misc Stl for Diaphrams, etc	5%						**STRENGTH I/II SHEAR at Support**		
							DC1 (k)	31.8	
DEFLECTION LIMIT (x for Deflection Limit in L/x)	800						DC2 (k)	3.9	
							DW (k)	5.4	
Fatigue Design Life (yrs)	75		179298.4375				HL93 LL+IM (k) LLF = 1.75	89.4	
Fatigue ADTTSL	1000	Fatigue I Controls							
							Vu (k)	209.2	
							Vn (k)	591.9	
							SHEAR PR	**0.353**	

WORLD STEEL BRIDGE SYMPOSIUM 2026

Demonstration: 62 ft Span, 8” Deck w/SIP, 4 Girders @ 9 ft

Composite Bridge

	STRENGTH I/II		Compression Flange Laterally Braced for Fi			LLF = 1.75							
		Lb (ft)	DC1 (ft-k)	DC2 (ft-k)	DW (ft-k)	HL93 LL+IM (ft-k)		Mu (ft-k)	Cb	Mn (ft-k)	Perf Ratio		
	1	21	441.1	53.8125	75.3	1000.4		2482.4	1.42	3444.0	0.721		STRENGTH I/II MAX PR
	2	20	492.3	60.0625	84.1	1093.4		2730.1	1.01	3444.0	0.793		0.793
	3	21	441.1	53.8125	75.3	1000.7		2482.8	1.43	3444.0	0.721		

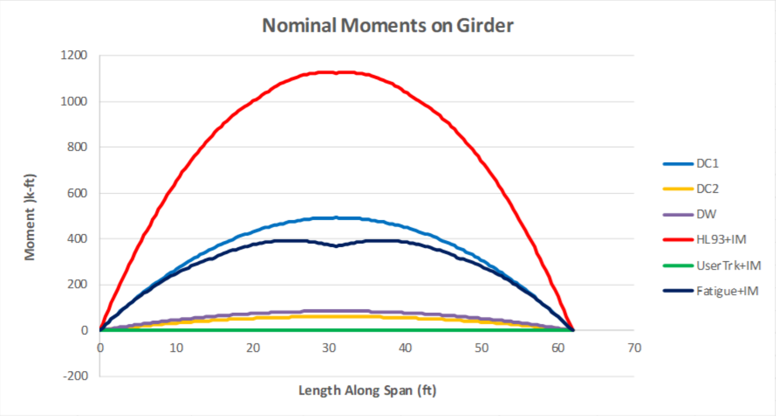
Strength Design Uses AASHTO Appendix A6	CONSTRUCTION						<0.60Fy		RpcFy=1.16*50				
		Lb (ft)	Mconstr (ft-k)	Mlat (ft-k)	AF	Affl (ksi)	Perf Ratio	fbu+Affl (ksi)	Perf Ratio	bu+1/3Affl (ks	Fnc (ksi)	Perf Ratio	
	1	21	791.4	21.6	1.4	18.6	0.62	40.2	0.80	27.8	55.9	0.50	CONSTRUCTION MAX PR
	2	20	883.3	19.9	1.8	23.2	0.77	47.4	0.95	31.9	40.9	0.78	0.947
	3	21	791.4	21.6	1.4	18.6	0.62	40.2	0.80	27.8	55.9	0.50	

DEAD LOAD DEFLECTIONS (Max Loaded Girder)			0	0.10L	0.20L	0.30L	0.40L	0.50L	0.60L	0.70L	0.80L	0.90L	L
		Distance (ft)	0	6.2	12.4	18.6	24.8	31	37.2	43.4	49.6	55.8	62
Ix (in^4) =	7800.0	DC1 (in)	0.000	0.473	0.894	1.224	1.434	1.506	1.434	1.224	0.894	0.473	0.000
I3n (in^4) =	15409.5	DC2 (in)	0.000	0.029	0.055	0.076	0.089	0.093	0.089	0.076	0.055	0.029	0.000
I3n (in^4) =	15409.5	DW (in)	0.000	0.041	0.077	0.106	0.124	0.130	0.124	0.106	0.077	0.041	0.000
		Total (in)	0.00	0.54	1.03	1.41	1.65	1.73	1.65	1.41	1.03	0.54	0.00

Demonstration: 62 ft Span, 8” Deck w/SIP, 4 Girders @ 9 ft

Composite Bridge

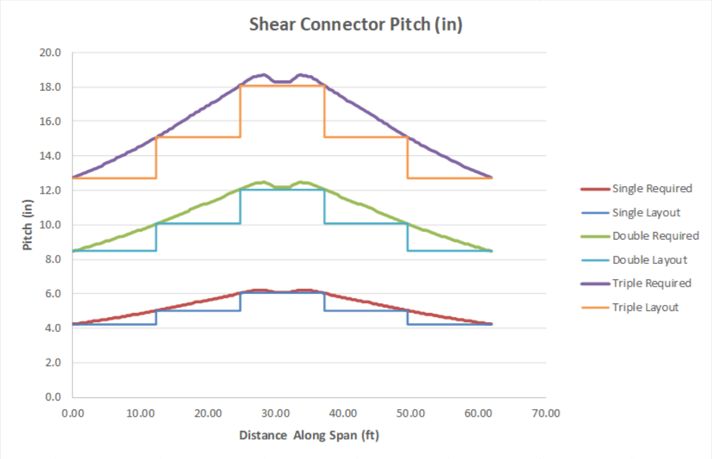
NOMINAL ABUTMENT REACTIONS		
DC1 (k)	123.3	At Centerline
DC2 (k)	15.5	At Centerline
DW (k)	21.7	At Centerline
Single Lane LL+IM (k)	121.4	At 9.00 From Centerline
Two Lane LL+IM (k)	202.4	At 4.00 From Centerline



Demonstration: 62 ft Span, 8” Deck w/SIP, 4 Girders @ 9 ft

Composite Bridge – Shear Studs

ONLY IF COMPOSITE											
0.875 (in) SHEAR STUDE SPACING		Minimum Spacing (in)	3.5			Maximum Spacing (in)	48	Minimum Transverse Spacing (in)	3.5	d (in)	35.6
	0 - 12.4 ft	12.4 - 24.8 ft	24.8 - 37.2 ft	37.2 - 49.6 ft	49.6 - 62.0 ft					bf (in) =	12
Singles Pitch (in)	4.23	5.03	6.03	5.03	4.23						
Doubles Pitch (in)	8.47	10.05	12.06	10.05	8.47					Doubles Transverse Spacing	
Triples Pitch (in)	12.70	15.08	18.08	15.08	12.70					Triples Transverse Spacing C	
Strength Minimum Number of Studs	127										
Fatigue Singles Estimated Number of Studs	155.172541										
Fatigue Doubles Estimated Number of Studs	156.172541										
Fatigue Triples Estimated Number of Studs	157.172541										0
											12.4
											12.4
											24.8
											24.8
											37.2
											37.2
											49.6
											49.6
											62



eBEAM140 Summary

Rolled Shape Bridge Design: Composite & NonComposite

- User Manual & Examples
- Released on www.ShortSpanSteelBridges.org September 2025

https://www.shortspansteelbridges.org/ebeam140/

Plate Girder Bridge Design in 2026

SOON Short Span Steel Bridge Alliance ePLATE140

Noncomposite and Composite Simple-Span Plate-Girder Steel Bridge Design

Excel Based Prismatic Plate Girder Design Softwar

ePLATE140

eBEAM140 Disclaimer: *This document has been prepared in accordance with information available to the American Iron and Steel Institute (AISI) and its Short Span Steel Bridge Alliance (SSSBA) progr... at the time of preparation. While it is believed to reasonably reflect the pres... of knowledge as to the subject, it has not been prepared for conventi... n engineering or construction document and should not be u... pon for any specific application without competent professi... on and verification of its accuracy, suitability, and applicabili... ed engineer, architect or other professional. AISI and the SSSBA discl... y liability arising from information provided by others or from the unautho... ed use of the information contained in this document, and do not accept any obligation to issue supplements or corrections in the event of errors being discovered or advances being made in the techniques discussed in the document.*

SIMILAR

ePLATE140 Design Software - 2026

Excel Based Plate Girder Design Software

- Allows User to Investigate Alternatives to
  - Diaphragm Spacing
  - Lightest Weight Solution
  - Other Readily Available Flanges & Webs

Target L/D:
- Target L/D – 2”
- Target L/D
- Target L/D + 2”
- Target L/D + 4”
- Target L/D + 6”

5 different Web Depths

5100 possible design combinations User Specified Solution

ENTER SECTION FOR MORE INFORMATION

bfc	tfc	D	tw	bft	tft	Weight (lb/ft)	Total Wt (tons)
13.00	0.750	38.00	0.500	17.00	0.750	141	22.6

bfc>=D/6 OK
bfc/2tfc<=12 OK
D/tw<=150 OK
2Dcp/tw<=lrw OK
Iyc/Iyt>=0.3 OK

OVERALL PERFORMANCE FOR TF:13 x 0.75 Web:38 x 0.5 BF:17 x 0.75

Strength I/II	Service II	Construction	Fatigue	Deflection	Overall
PR	PR	PR	PR	PR	PR
0.917	0.973	0.933	0.703	0.807	0.973
In Lb #	At Centerline	In Lb #	At Critical Brace	At Centerline Equal to	Service II
3		2		L/992	

Meets Reqrments for A6?
Yes
Construction Uses A6

PERFORMANCE BY UNBRACED LENGTH FOR TF:13 x 0.75 Web:38 x 0.5 BF:17 x 0.75

Compression Flange Laterally Braced for Final State

Unbraced Length	Unbraced Length (ft)	Lb Range	Strength I/II PR	Mn/My	Cb
1	20	0 - 20 ft	0.703	1.995	1.509
2	20	20 - 40 ft	0.917	1.995	1.052
3	20	40 - 60 ft	0.917	1.995	1.052
4	20	60 - 80 ft	0.703	1.995	1.509

LIST OF GIRDERS RANKED FROM STRENGTH I, SERVICE II & CONSTRUCTION

Shape	Strength I/II PR	Service II PR	Construction PR	Fatigue PR	Deflection PR	Overall PR	Total Wt (tons)
TF:13 x 0.75 Web:38 x 0.5 BF:17 x 0.75	0.92	0.97	0.93	0.70	0.81	0.97	22.6
TF:13 x 0.75 Web:38 x 0.5 BF:13 x 1	0.91	0.97	0.93	0.69	0.80	0.97	22.7
TF:14 x 0.75 Web:36 x 0.5 BF:18 x 0.75	0.95	0.99	0.87	0.72	0.87	0.99	22.9
TF:13 x 0.75 Web:38 x 0.5 BF:18 x 0.75	0.89	0.94	0.93	0.68	0.78	0.94	23.0
TF:14 x 0.75 Web:38 x 0.5 BF:17 x 0.75	0.92	0.97	0.81	0.70	0.81	0.97	23.0
TF:14 x 0.75 Web:34 x 0.5 BF:15 x 1	0.97	0.99	0.93	0.71	0.91	0.99	23.1
TF:14 x 0.75 Web:36 x 0.5 BF:14 x 1	0.94	0.97	0.86	0.70	0.85	0.97	23.1
TF:15 x 0.75 Web:36 x 0.5 BF:18 x 0.75	0.95	0.99	0.78	0.72	0.87	0.99	23.3
TF:13 x 0.75 Web:38 x 0.5 BF:14 x 1	0.88	0.92	0.92	0.66	0.76	0.92	23.3
TF:14 x 0.75 Web:38 x 0.5 BF:18 x 0.75	0.89	0.94	0.81	0.68	0.78	0.94	23.4
TF:15 x 0.75 Web:38 x 0.5 BF:17 x 0.75	0.92	0.97	0.73	0.70	0.81	0.97	23.4
TF:15 x 0.75 Web:34 x 0.5 BF:15 x 1	0.97	0.99	0.83	0.71	0.91	0.99	23.5
TF:14 x 0.75 Web:34 x 0.5 BF:16 x 1	0.94	0.94	0.93	0.68	0.87	0.94	23.7
TF:12 x 1 Web:36 x 0.5 BF:18 x 0.75	0.95	0.99	0.88	0.72	0.87	0.99	23.7
TF:14 x 0.75 Web:36 x 0.5 BF:15 x 1	0.91	0.93	0.86	0.67	0.81	0.93	23.7
TF:16 x 0.75 Web:36 x 0.5 BF:18 x 0.75	0.96	0.99	0.72	0.72	0.87	0.99	23.7
TF:14 x 0.75 Web:38 x 0.5 BF:14 x 1	0.88	0.92	0.80	0.66	0.76	0.92	23.7

ePLATE140 Plans

Develop Users Manual & Examples

Industry Review

Release Sept 2026

ePLATE140

Resource Tools for Simple Span Steel Bridge Design

eSPAN140™

Preliminary Rolled Shape and Plate Girder

eBEAM140

Optimized Rolled Shape

ePLATE140

Optimized Plate Girder

Performance of Today's Short Span Steel Bridges

Cost Effective

- Simple & Practical Details
- Lighter Equipment
- Smaller Abutments

Speed of Construction

- Accelerated Bridge Construction
- Modular Construction

Longevity - 100+ yrs

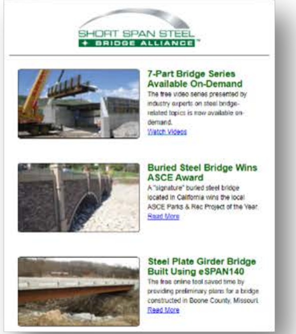
- Durable Materials
- Corrosion Protection Systems
- Integral Abutments & Jointless Decks

Resilient & Sustainable

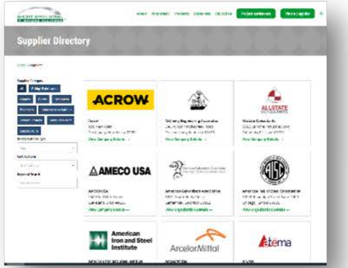
www.ShortSpanSteelBridges.org

5 Ways to Keep Learning About Steel Bridges

1. Subscribe to the Weekly Newsletter



2. Find a Supplier



3. Design a Bridge in 5-Minutes

eSPAN140™

eBEAM140

4. Receive Free Project Assistance

5. Schedule a Workshop/Webinar

www.ShortSpanSteelBridges.org

Questions? Dan Snyder, Director, SSSBA, dsnyder@steel.org, (301) 367-6179

Website: ShortSpanSteelBridges.org
Twitter: @ShortSpanSteel
Facebook: Short Span Steel Bridge Alliance

Bridges of Franklin County: The Missouri Version

Tanner Genenbacher, PE
DeLong’s, Inc.

Problem Statement

Over the Years, Preconception that Concrete is Always Less Expensive Than Steel for Simple Span Bridges

- Many Times Steel is Not Even Considered
- Owners Paying More Than They Could for Bridges
- Unwarranted Lack of Competition Not Good

COST ESTIMATE GUIDE FOR RURAL PRELIMINARY DESIGN
(These cost figures were last updated on 1-1-2017)

Bridge Structures	Sq. foot
Prestressed Concrete	$95
Steel Girder	$120

Assumes Concrete is 20% less Expensive 1-(95/120) or

Steel is 26% more Expensive (120/95)-1

MoDOT Bridge Construction

Between January 2009 to May 2018:

10 yrs

How Many Typical Concrete Bridges Did MoDOT Build?

378

- Prestressed NU
- PC I Beam
- PC Box
- PC Bulb T, Dbl T & Slab

How Many Typical Steel Bridges?

16

15 Plate and 1 Wideflange, Excludes:

- Major River Crossings
- Tight Horizontal Curves
- Widenings
- And Special Configurations

4% Typical Steel Bridges

Steel & Concrete Bridge Costs in Missouri

In 2018, Delong's, the SSSBA and MoDOT worked together to study steel and concrete costs for typical bridges. Two workshops delivered in Missouri:

- Learn & Earn Workshop, Kansas City, May 2018
- Learn & Earn Workshop, St. Louis, November 2018
- Presented to MoDOT, Consultants & Contractors

DELONG'S
BUILDING A STRONGER TOMORROW

SHORT SPAN STEEL
BRIDGE ALLIANCE™

MoDOT

Results Showed Steel & Concrete Bridges are Competitive for Short Spans

Problem Solution

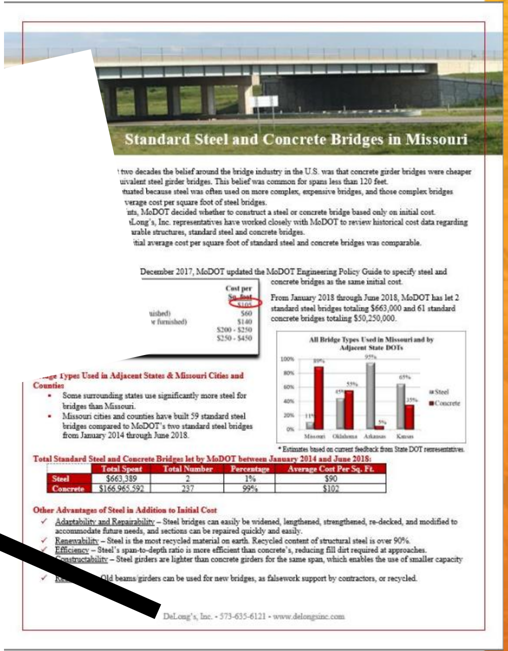
Over the Years, Preconception that Concrete is Always Less Expensive Than Steel for Simple Span Bridges

- Many Times Steel is Not Even Considered
- Owners Paying More Than Th…
- Unwarranted …

MoDOT Removed Cost Guidance

December 2018

And Competed Steel Bridges



Standard Steel and Concrete Bridges in Missouri

…t two decades the belief around the bridge industry in the U.S. was that concrete girder bridges were cheaper …uivalent steel girder bridges. This belief was common for spans less than 120 feet.
…tuated because steel was often used on more complex, expensive bridges, and those complex bridges …verage cost per square foot of steel bridges.
…nts, MoDOT decided whether to construct a steel or concrete bridge based only on initial cost.
…eLong's, Inc. representatives have worked closely with MoDOT to review historical cost data regarding …arable structures, standard steel and concrete bridges.
…itial average cost per square foot of standard steel and concrete bridges was comparable.

December 2017, MoDOT updated the MoDOT Engineering Policy Guide to specify steel and concrete bridges as the same initial cost.

	Cost per Sq. foot
	$105
…nished)	$60
…v furnished)	$140
	$200 - $250
	$250 - $450

From January 2018 through June 2018, MoDOT has let 2 standard steel bridges totaling $663,000 and 61 standard concrete bridges totaling $50,250,000.

…ge Types Used in Adjacent States & Missouri Cities and Counties

- Some surrounding states use significantly more steel for bridges than Missouri.
- Missouri cities and counties have built 59 standard steel bridges compared to MoDOT's two standard steel bridges from January 2014 through June 2018.

All Bridge Types Used in Missouri and by Adjacent State DOTs

* Estimates based on current feedback from State DOT representatives.

Total Standard Steel and Concrete Bridges let by MoDOT between January 2014 and June 2018:

	Total Spent	Total Number	Percentage	Average Cost Per Sq. Ft.
Steel	$663,389	2	1%	$90
Concrete	$166,965,592	237	99%	$102

Other Advantages of Steel in Addition to Initial Cost

- ✓ Adaptability and Repairability – Steel bridges can easily be widened, lengthened, strengthened, re-decked, and modified to accommodate future needs, and sections can be repaired quickly and easily.
- ✓ Renewability – Steel is the most recycled material on earth. Recycled content of structural steel is over 90%.
- ✓ Efficiency – Steel's span-to-depth ratio is more efficient than concrete's, reducing fill dirt required at approaches.
- ✓ Constructability – Steel girders are lighter than concrete girders for the same span, which enables the use of smaller capacity
- ✓ Re… Old beams/girders can be used for new bridges, as falsework support by contractors, or recycled.

DeLong's, Inc. • 573-635-6121 • www.delongsinc.com

But Many States Have Similar Policies

- Or At Least Similar Mentalities

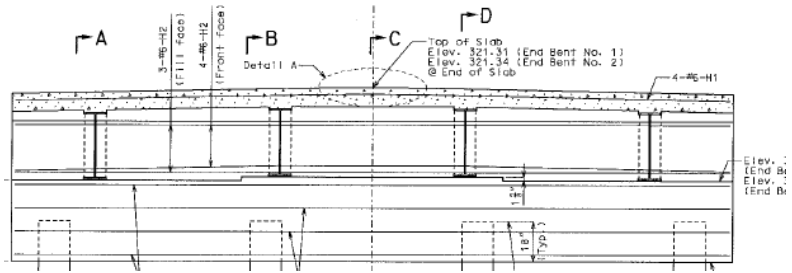
WORLD STEEL BRIDGE SYMPOSIUM 2026

So What Happened When Competing Short Span Steel Bridges?

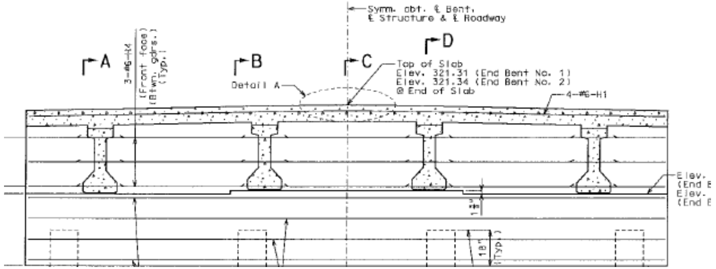
Scott County, MO, 45 ft Simple Span, 26 ft–8 in Width, Built 2019

Increase Length for Hydraulic Opening; Increase Width for Lanes

Composite Rolled W Shapes



Prestressed I Beams



8 Bids from General Contractors
4 for Steel
4 for Concrete

Low Bid Steel – **Galvanized Beams**

Closest Concrete Bid 19% Higher
Difference of $290,000

Another Example – Large Design-Build Bridge Bundling Project

Fixing Access to Rural Missouri (FARM) Bridge Program: 31 Bridges, $26 mil

Bids & Award

- Best Value for
- a Fixed Budget

Category	Available Points	Team 1 Primarily Concrete	Team 2 Primarily Concrete	Team 3 Primarily Steel
Bridge Bundling Part 1	40	39.7	38.3	40
Bridge Bundling Part 2 (Bonus)	15	1.5	0	1.5
Quality & Longevity	30	18.7	20	21.7
Completion & Maintenance of Trafiic	15	5.8	11.8	8.9
TOTAL SCORE	100	65.7	70.1	72.1

Design-Build Team

LEHMAN Construction Company
WILSON & COMPANY — HIGHER RELATIONSHIPS
DeLong's INC.

FARM BRIDGE PROGRAM — Fixing Access to Rural Missouri

How did Steel win the bid? – for the 25 multi-span bridges

- Bridge Bundling (40 pts + 1.5 pts bonus) highest score → Economy of Steel Bridges
  - 31 Bridges replaced
  - Innovative Simple for Dead, Continuous for Live (SDCL) designs
- Quality & Longevity (21.7 pts) highest score → Performance of Steel Bridges
  - Galvanized beams – 100 yr expectation in rural setting
  - Full-depth CIP deck
- Completion & Maintenance of Traffic (8.9 pts) 2nd highest → Equipment & Ease of Construction
  - Ease and pace of construction
  - Weight of bridge and lighter equipment

Now for the Bridges of Franklin County

5 Bridges in Franklin County to be Replaced (2023 – 2025)

Bridge	Hendrix Road	Little Indian Creek	Huff Road	Little Boone Creek	Lockhart Road
Type of Bridge	Steel	Steel	Steel	Concrete	Steel
Low Bid	$549,202	$494,630	$638,787	$651,130	$564,806
Lowest Other Material	$748,163	$518,490	$685,604	$722,735	$577,939
% Higher Other Material	36.2%			11.0%	2.3%
Number of Bids	3	6	7	6	4
Order of Bids	Steel	Steel	Steel	Concrete	Steel
	Concrete	Concrete	Steel	Concrete	Steel
	Steel	Concrete	Concrete	Steel	Concrete
		Steel	Steel		Steel
		Concrete	Concrete	Steel	
		Concrete	Concrete	Steel	
			Concrete		

Saved $198,961

Saved $23,860

Saved $46,817

Saved $13,133

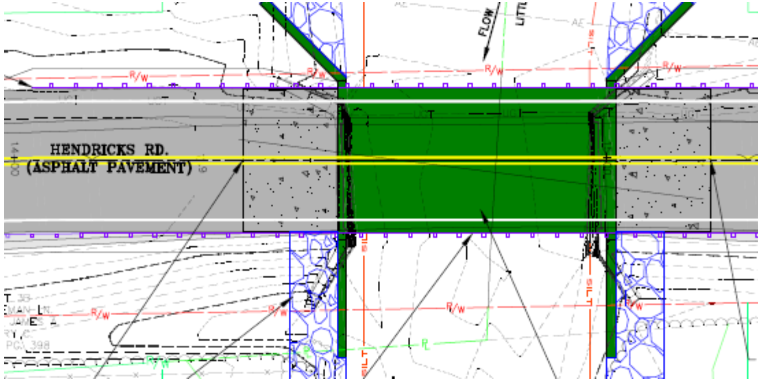
Delongs Fabricated

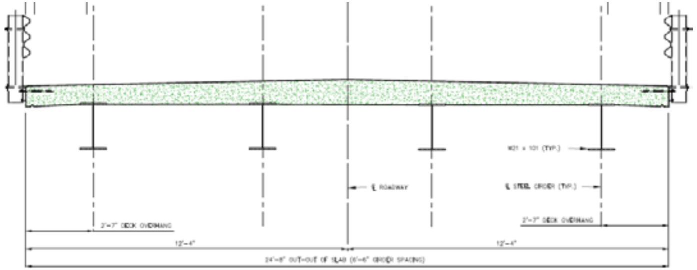
Delongs Fabricated

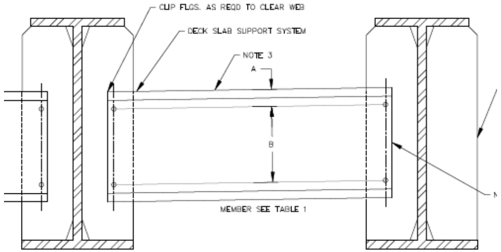
Steel Saved $282,771

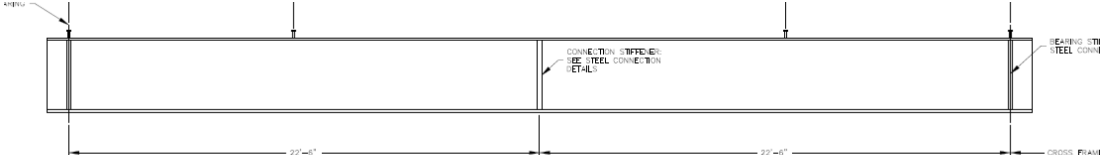
Hendrix Road Bridge

- 45 ft Span; 24 ft Roadway Width
- Four W21x101 Girders @ 6 ft – 6 in
- Weathering Steel
- No Skew
- Integral Abutment
- Channel Diaphragms
- SIP Form Deck
- Simple Bridge Railing

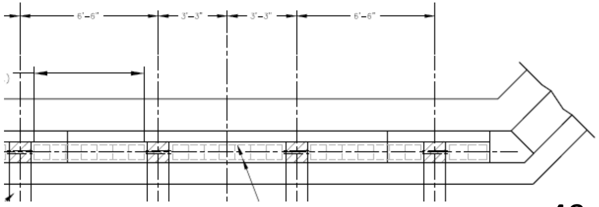








One Interior Diaphragm

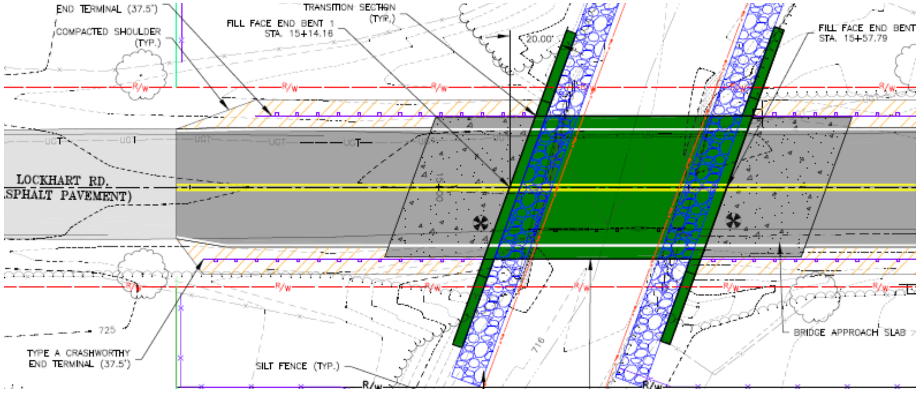


Hendrix Road Bridge

WORLD STEEL BRIDGE SYMPOSIUM 2026

Hendrix Road Bridge

Lockhart Road Bridge



41ft – 6 in Span; 28 ft Roadway Width

Five W18x86 Girders @ 6 ft – 2 in

Weathering Steel

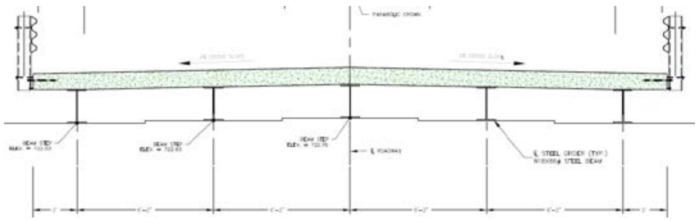
20º Skew

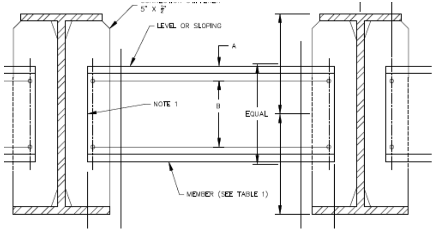
Integral Abutment

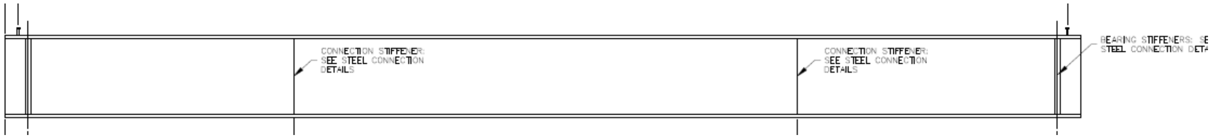
Normal Diaphragms

Solid Deck

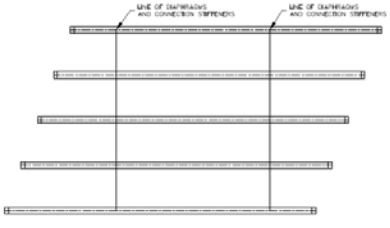
Simple Bridge Railing







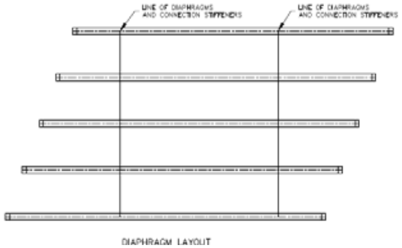
Two Interior Diaphragms - Staggered



WORLD STEEL BRIDGE SYMPOSIUM 2026

Lockhart Road Bridge

Lockhart Road Bridge



Recent MoDOT Bridge Construction

Between ~~January 2009 to May 2018~~ 2021 to 2025

~~10~~ 5 yrs

How Many Typical Concrete Bridges Did MoDOT Build?

~~378~~ 230

- 39%

- Prestressed NU
- PC I Beam
- PC Box
- PC Bulb T, Dbl T & Slab

How Many Typical Steel Bridges?

~~16~~ 24

+ 50%

~~15~~ 8 Plate and ~~1~~ 16 Wideflange, Excludes:

- Major River Crossings
- Tight Horizontal Curves
- Widenings
- And Special Configurations

Does Not Include
Bridge Bundling Bridges
- 25 Steel: FARM
- 24 Steel: NW MO
- 12 Steel: SW MO
- 4 Steel: Kaysinger Basin
- 7 Steel: Improve I-70 Rocheport to COMO

~~4~~ 10% Typical Steel Bridges – AND Competition Saving Missouri Money!

Summary & Conclusions

- **Competition Between Steel & Concrete is Healthy For:**
  - Costs
  - Quality of Bridges
  - Industry Responsiveness
  - Industry Capabilities

- **Steel and Concrete are Competitive on First Costs & Life Cycle Costs**

- **Steel or Concrete May Be the Lowest Cost for a Particular Project**

Owners, Designers & Contractors Should Consider Both Concrete & Steel for Bridge Projects

Assessment Question

What is the next free bridge design resource currently being developed by SSSBA that is set to be released in September of 2026?

A) ePIE140
B) ePLATE140
C) eBEAM140
D) eSPAN140

WORLD STEEL BRIDGE SYMPOSIUM 2026

PDH CODE **19247**

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