



Standard Plans for Steel Bridges

Three-span Continuous Span Bridges



**Smarter.
Stronger.
Steel.**



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Three-span Continuous Span Bridges

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by

American Institute of Steel Construction

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AISC STANDARD PLANS FOR STEEL BRIDGES

THREE-SPAN CONTINUOUS SPAN BRIDGES

Design Specification: AASHTO LRFD 10th Edition
Release Date: January 2025

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SHEET INDEX

SHEET NUMBER

SHEET INDEX	1
GENERAL NOTES	2
GENERAL DESIGN CRITERIA	3
FASCIA BEAM DESIGN CRITERIA	4
DECK POURING SEQUENCE	5
THREE SPAN UNITS, CENTER SPAN 150-300 FT, 8 FT SPACING	6-9
THREE SPAN UNITS, CENTER SPAN 150-300 FT, 10 FT SPACING	10-13
THREE SPAN UNITS, CENTER SPAN 150-300 FT, 12 FT SPACING	14-17
THREE SPAN UNITS, CENTER SPAN 150-300 FT, 14 FT SPACING	18-21
CROSS-FRAME & DIAPHRAGM DETAILS	22-24
BOLTED FIELD SPLICES	25-29
DECK DETAILS	30-32



SHEET INDEX

GENERAL NOTES:

Specifications:

AASHTO LRFD Bridge Design Specifications, 10th Edition.

AASHTO Guide Specifications for Wind Loads on Bridges During Construction, 1st Edition.

Materials:

Girder Webs and Flanges

ASTM A709 Gr 50W or Gr HPS 70W as noted in the plate size tables

Gr HPS 70W flanges are noted with a ▲

Stiffeners

A709 Gr 50W

Intermediate transverse shear stiffeners, single sided
Stiffener sizes shown as required by design, 1/2 in. minimum thickness

Lateral Bracing and Diaphragm / Crossframe Members

ASTM A709 Gr 50W

Concrete Deck

f'c = 4 ksi

Reinforcing Steel

Fy = 60 ksi

Bolts

ASTM F3125 Grade A325, diameter provided on detail sheets

Loading:

Live Load

Live load is the controlling force effects from:

HL93
EV3 - Present in multiple lanes
Fatigue design based on ADTTsl = 1000 trucks per day

Dead Load

Dead load assumptions:

For DC1

Slab thickness as shown in plans
Overhang thickness = slab thickness + 4 in.
Concrete haunch weight, 50 plf per beam
Stay-in-place form allowance, 15 psf
Miscellaneous steel weight:
8 ft girder spacing - 30 plf
10 ft girder spacing - 30 plf
12 ft girder spacing - 30 plf
14 ft girder spacing - 45 plf

Total DC1 loads shown on this sheet are computed with the above assumptions and assuming equal loading to all beams in the cross-section.

For DC2

Assumed single slope TL5 railing
600 plf divided to two beams

For DW

2 in. asphalt at 140 pcf

Final Design Dead Loads

8 ft girder spacing designs:

DC1 = 930 plf
DC2 = 300 plf
DW = 160 plf

10 ft girder spacing designs:

DC1 = 1,220 plf
DC2 = 300 plf
DW = 200 plf

12 ft girder spacing designs:

DC1 = 1,540 plf
DC2 = 300 plf
DW = 240 plf

14 ft girder spacing designs:

DC1 = 2,000 plf
DC2 = 300 plf
DW = 280 plf

Note: exterior girders also designed for flange lateral bending moments from overhang brackets and concrete deck finishing machine. Flange lateral bending moments for exterior beams are provided on the **Fascia Beam Design Criteria** sheet.

Wind Load

Wind on completed bridge 44 psf
Wind on open framing during construction, see **General Design Criteria** sheet.



GENERAL NOTES

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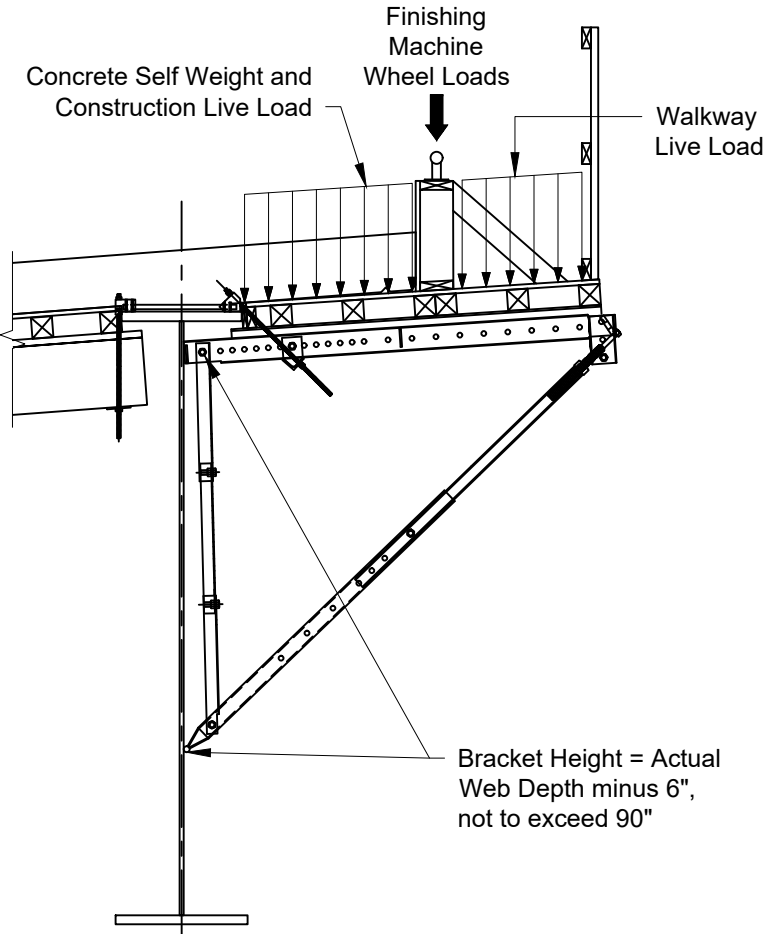
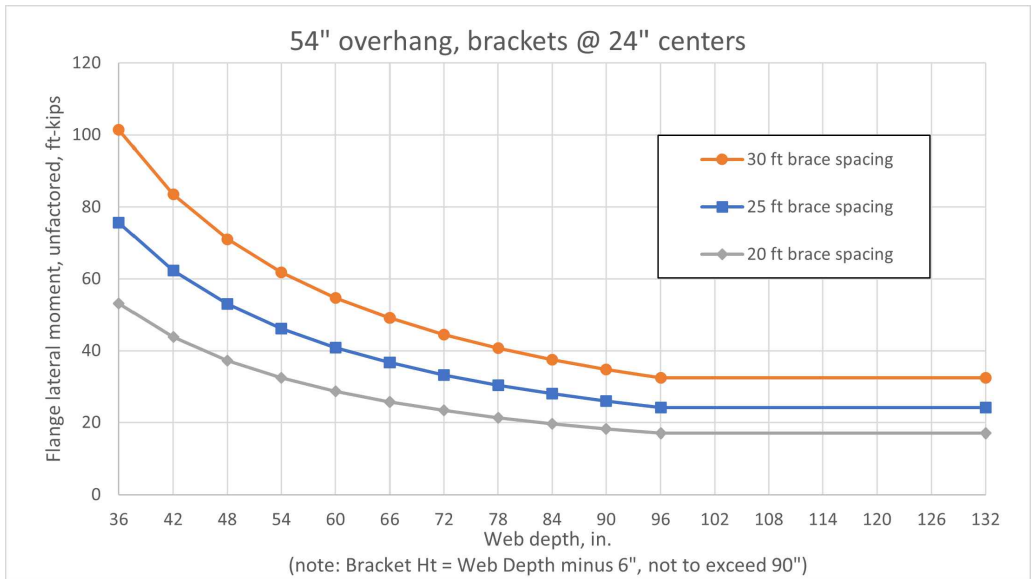
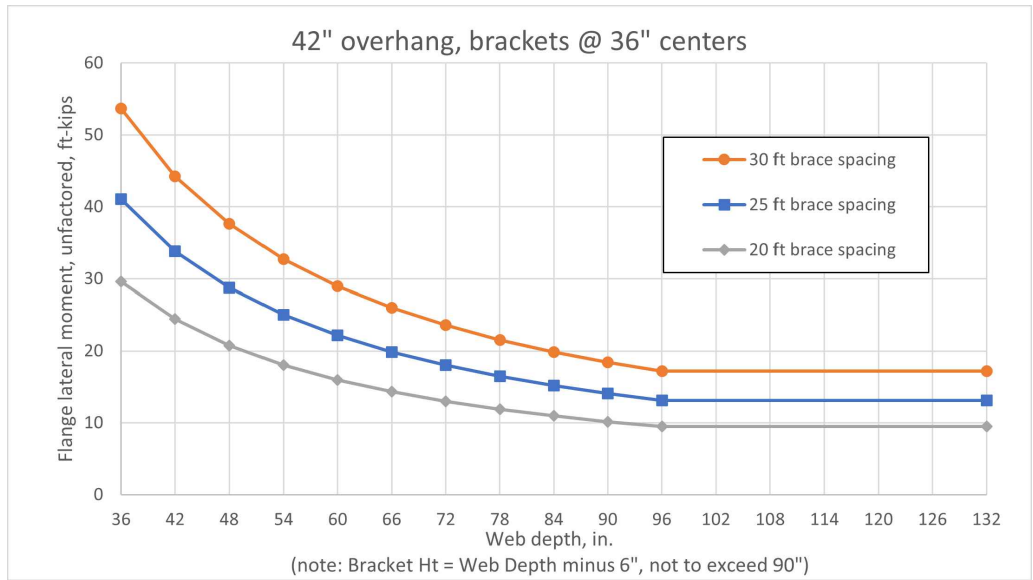
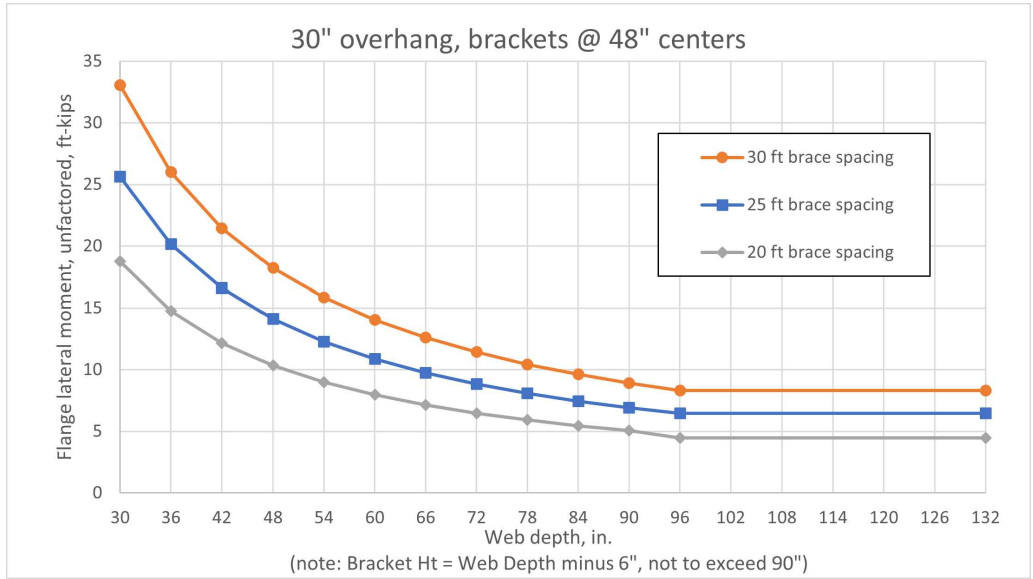
Sheet 2 of 32

Design Assumptions and Criteria, Continuous Span Bridges:

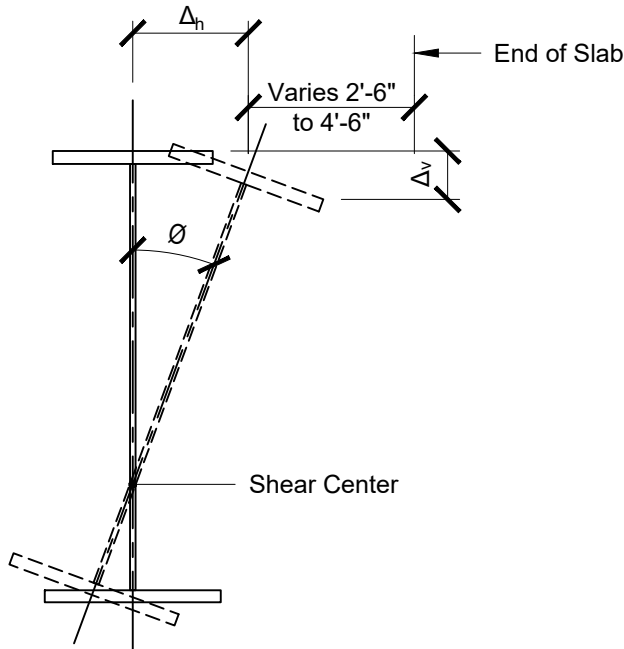
1. Girder Design
 - a. All designs performed using NSBA LRFD SIMON.
 - b. Interior and exterior beams were designed. In LRFD SIMON, the "BOTH" option is used for the LL distribution factors. This results in a single beam designed for the governing shear and moment distribution factors for an interior and exterior beam. The composite slab effective width is based on an exterior beam.
 - c. Live load distribution follows AASHTO LRFD 4.6.2.2 for all beam spacings and span lengths. Designs where the AASHTO distribution factor equations are used beyond the range of applicability are noted in the design tables.
 - d. A skew of 20 degrees from normal is assumed for all designs.
 - e. Live load deflection satisfies AASHTO LRFD 2.5.2.6.2 Criteria for Deflection for vehicular bridges, L/800.
 - f. Girder depth satisfies AASHTO LRFD 2.5.2.6.3 Optional Criteria for Span-to-Depth Ratios.
 - g. Fatigue design based on Category C for shear studs welded to top flanges and Category C' for welded transverse stiffeners, $ADTT_{SL} = 1,000$ vehicles per day and a 75-year design life.
 - h. Maximum segment length, 140 feet.
 - i. Three-span-continuous units are designed for end span lengths equal to 78% of the center span length.
 - j. All continuous span bridges have field splices adjacent to each pier at approximately 0.7L of the end span.
 - k. Some continuous span bridges have additional splices at approximately 0.25L of the end span to meet shipping length requirements. These are noted in the plans.
 - l. Maximum shipping weight, 50 tons.
 - m. Maximum web depth, 11 feet.
 - n. Minimum top flange width, $b_{tfs} \geq L_{fs} / 85$ where L_{fs} is the field section length. AASHTO LRFD (C6.10.2.2-1).
 - o. Flange widths held constant in a field section.
 - p. Minimum flange thickness, 1 in. Maximum flange thickness, 3 in. Flange thickness increments, 1/4 in.
 - q. Minimum web thickness, 1/2 in. Web thickness increments, 1/8 in.
 - r. No more than two complete joint penetration flange butt welds per flange in any field section.
 - s. When a single size flange is used in a field section, the weight reduction of a complete joint penetration transition was first evaluated and then eliminated based on weight, cost, and stress considerations.
 - t. Single-sided transverse shear stiffeners are used when needed.
 - u. Longitudinal stiffeners are not used.
 - v. All girders are composite for positive and negative bending.
 - w. Negative moment longitudinal deck reinforcing is 1% of the gross deck cross-section. This reinforcing extends at least between the field splices, or longer as required by AASHTO LRFD 6.10.1.7 for the Service II Limit State. Designer to determine if the factored deck casting and construction loads require this reinforcing steel to be extended. See the **Deck Details** sheets for additional details.
 - x. Shear stud design based on LRFD SIMON and AASHTO LRFD 9th edition. For flanges ≤ 16 in. wide, three 7/8 in. diameter studs in a transverse row are used. All other flange widths use four studs in a transverse row.
2. Diaphragm and Cross-Frame Design
 - a. Intermediate diaphragms and cross-frames are designed as below. End diaphragms or cross-frames that support the deck and/or expansion joint are not considered as part of these standards.
 - b. Diaphragm and cross-frame spacing varies within in the span. Maximum spacing does not exceed 30 ft.
 - c. Depth of bracing is at least 0.8 times girder web height.
 - d. For cross-frame design, the effective depth of the chords was assumed to be 5 in. vertically from the top and bottom of web. This dimension is used for "D" in the S/D checks. For all S/D checks, "S" is S / Cosine 20 deg assuming a maximum 20 degree skew for all designs.
 - e. Solid diaphragms are used when the girder spacing to web depth ratio, $S/D > 3.5$.
 - f. K-frames are used when $1.5 < S/D \leq 3.5$.
 - g. X-frames are used when $S/D \leq 1.5$.
 - h. Angles are used for all cross-frame members.
 - i. Cross-Frame members are designed as secondary members.
 - j. Cross-Frame members are designed for tension / compression loading.
 - k. Cross-frame member stiffness is based on 0.65AE stiffness reduction factor for eccentrically loaded angles, AASHTO LRFD C4.6.3.3.4.
 - l. Diaphragms and cross-frames are designed for combined stability-induced loads along with simultaneous deck casting forces. The finishing machine is assumed to be centered at a brace point location.

3. Wind Load Design
 - a. Lateral deflection and flange lateral bending stresses due to wind on the fully erected steel framing were evaluated. Lateral bracing is not required for the design conditions assumed in 3.1 and 3.2, below. Other conditions may require bracing for wind load deflection or stress.
- 3.1 Service Design Criteria
 - a. Lateral deflections due to wind loads on the fully erected steel satisfy the Span / 150 requirement established by PennDOT BD-620M. All references to BD-620M are to the April 29, 2016 edition.
 - b. For this deflection check, a 32 psf assumed pressure is applied to fascia beams only for a superstructure height = 30 ft. For other superstructure heights, refer to PennDOT BD-620M.
- 3.2 Strength Design Criteria
 - Girder flange lateral bending is checked for strength as follows:
 - a. Maximum wind load positive and negative moment regions were checked. Check other plate transitions in final design.
 - b. Fascia beam checked for global bending of the span and local bending between cross-frames.
 - c. Wind loads on erected steel determined from the *AASHTO Guide Specification for Wind Loads on Bridges During Construction, 2017*.
 - Inactive wind condition, V = 115 mph. Superstructure height, 30 ft
 - Superstructure construction duration 6 weeks - 1 year, R = 0.73
 - $K_z = 1.0$, $C_d = 2.2$ for fascia beam, per AASHTO Guide Specifications for other beams.
4. Bolted Field Splices
 - a. All bolted field splices use 1 in. diameter ASTM F3125 Grade A325 bolts and standard sized holes.
 - b. All connection and fill plates are Gr 50W.
 - c. Slip resistance is based on a Class B surface condition.
 - d. For connections where the bottom flange and a portion of the web are required to be in tension to resist the factored moments at the point of splice an additional check was made to determine if the slab has adequate compression strength. This check is not in AASHTO. If the slab is unable to provide a compression capacity equal to the tensile forces of the bottom flange and web in tension, the connection was designed as a noncomposite splice. If or when this situation occurs, these splices are noted "Non-Composite" in the **Bolted Field Splices** sheets. This condition was not encountered in any of the three-span standard designs.





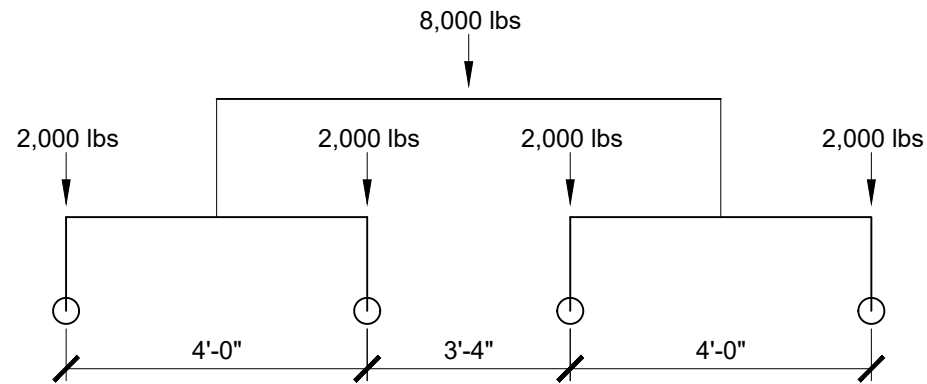
TYPICAL SECTION



GIRDER ROTATION DIAGRAM

Fascia Beam Design Criteria:

1. Finishing machine wheel load, 4 @ 2000 pounds. Loads shown are representative of finishing machines used for bridge widths and types shown on these plans.
2. Concrete density, 160 pcf, to account for formwork weight allowance.
3. Construction live load on deck, 50 psf.
4. Walkway live load, 50 psf. Assumed walkway width, 2 ft.
5. Overhang slab thickness equals nominal slab thickness + 4 in. assuming slab is flush to underside of top flange and an assumed 4 in. haunch.
6. Finishing machine is assumed to be midway between cross-frames for lateral bending moment calculations.
 - a. Factored load combination: AASHTO LRFD 3.4.2, 1.25 DC + 1.5 LL
 - b. An equivalent service bending moment is computed for LRFD SIMON input. LRFD SIMON uses a 1.4 factor on all lateral bending moments. Moments shown on the accompanying graphs are unfactored and are a total weighted average of the dead and live load lateral flange bending moments.
7. Bracket spacing assumed as follows. Bracket spacing is based on limiting capacities of common commercially available hangers and brackets. Assumed safe working load of 6,000 lbs. per hanger. Assumed safe working load of 3,750 lbs. per diagonal.
 - a. 30 in. overhangs, 48 in. bracket spacing.
 - b. 42 in. overhang, 36 in. bracket spacing.
 - c. 54 in. overhang, 24 in. bracket spacing.
8. Girder service load rotations, θ , are limited to 1 degree.
9. Lateral deflection at the top of web, Δ_h , limited to 0.25 in. Vertical deflection of the edge of slab, Δ_v , limited to 0.5 in. Both limits checked for maximum finishing machine loading and are instantaneous values.

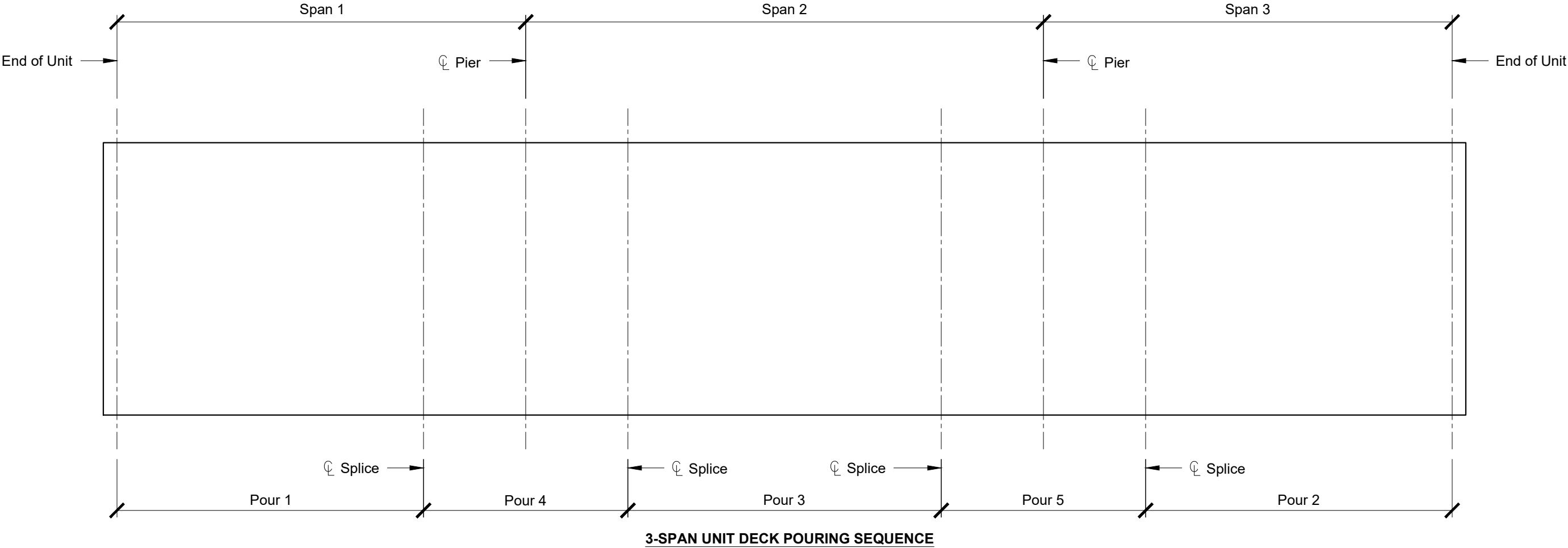


ASSUMED FINISHING MACHINE



FASCIA BEAM DESIGN CRITERIA

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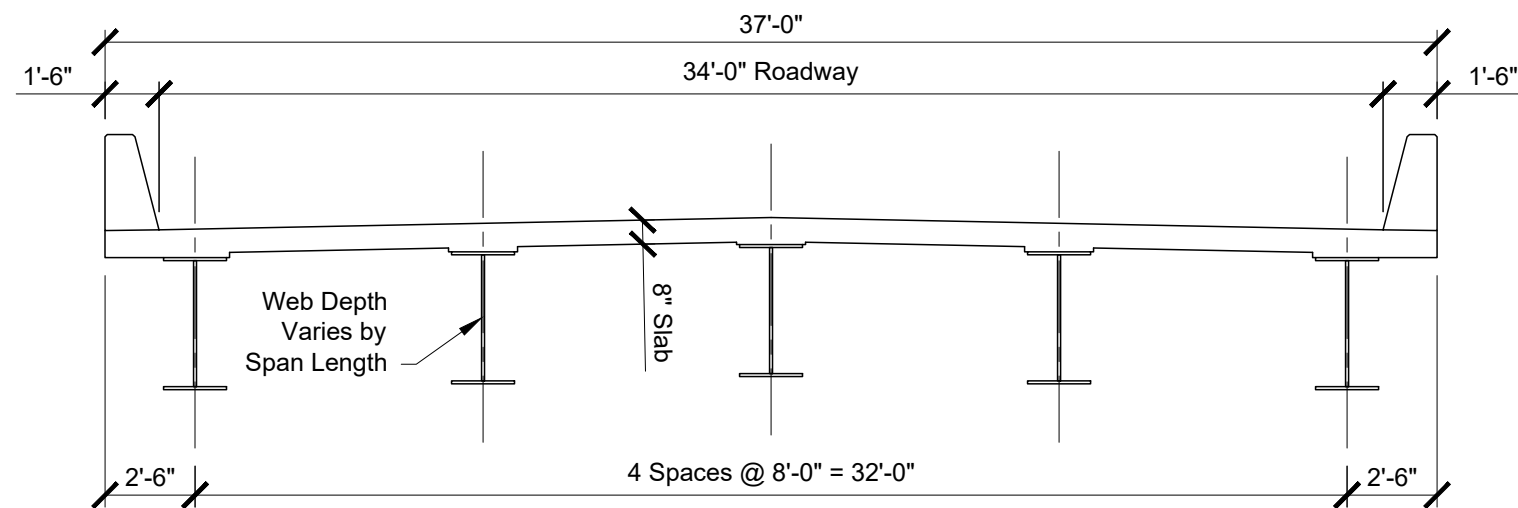


DECK POURING NOTES

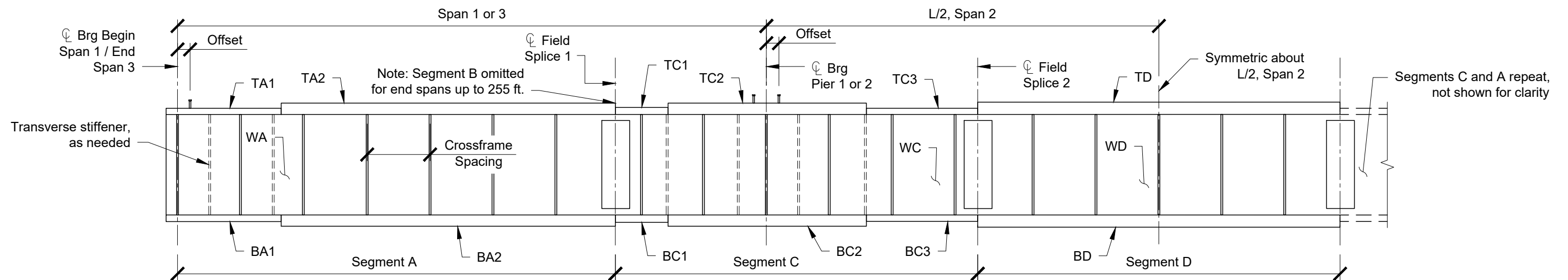
1. The deck pouring sequence shown is the basis of design.
2. The beams are designed for local and lateral-torsional buckling limits for the specified pour sequence and additionally for the global stability and cross-frame requirements of AASHTO LRFD 10th edition Article 6.7.4.2.2.
3. For the 3-span unit, the critical checks for deck casting positive and negative bending in noncomposite sections occur during Pour 2 and 5.
4. The provisions of AASHTO LRFD 6.7.4.2.2 do not account for the stiffening influence of any previously cast and composite deck sections and are conservative for other than Pour 1.
5. Uplift is prevented in all cases.

Note: An alternate pouring sequence with the deck cast continuously end-to-end is also permitted. All girder designs in these standards satisfy stress, strength, uplift, and stability requirements for the alternate pouring sequence.

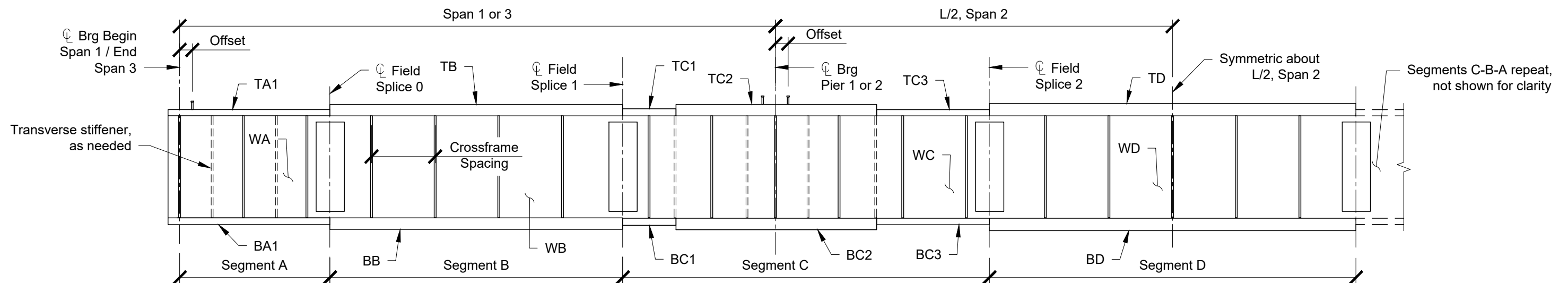




TYPICAL SECTION



GIRDER ELEVATION INTERIOR SPANS 150-255 FT



GIRDER ELEVATION INTERIOR SPANS 270-300 FT



**THREE SPAN 150-300 FT
8 FT SPACING**

Issued January 2025
Revision 0

Sheet 6 of 32

Span, ft. End-Int.-End	SEGMENT A					SEGMENT B (as needed)		
	WA (in. x in. x ft.)	TA1 (in. x in. x ft.)	TA2 (in. x in. x ft.)	BA1 (in. x in. x ft.)	BA2 (in. x in. x ft.)	WB (in. x in. x ft.)	TB (in. x in. x ft.)	BB (in. x in. x ft.)
117-150-117	54 x 0.5 x 79	---	16 x 1 x 79	---	16 x 1.25 x 79	---	---	---
129-165-129	60 x 0.5 x 89	---	16 x 1 x 89	---	16 x 1.25 x 89	---	---	---
141-180-141	66 x 0.5 x 98	---	16 x 1 x 98	---	16 x 1.25 x 98	---	---	---
153-195-153	72 x 0.625 x 106	---	18 x 1 x 106	---	18 x 1 x 106	---	---	---
164-210-164	76 x 0.625 x 113	---	18 x 1 x 113	---	18 x 1 x 113	---	---	---
176-225-176	82 x 0.625 x 122	---	18 x 1 x 122	---	18 x 1 x 122	---	---	---
188-240-188	88 x 0.625 x 130	---	20 x 1 x 130	---	20 x 1 x 130	---	---	---
199-255-199	92 x 0.625 x 138	---	20 x 1 x 138	---	20 x 1 x 138	---	---	---
211-270-211	96 x 0.75 x 51	20 x 1 x 51	---	20 x 1 x 51	---	96 x 0.75 x 100	20 x 1 x 100	20 x 1 x 100
223-285-223	102 x 0.75 x 51	22 x 1 x 51	---	22 x 1 x 51	---	102 x 0.75 x 110	22 x 1 x 110	22 x 1 x 110
234-300-234	108 x 0.75 x 54	22 x 1 x 54	---	22 x 1 x 54	---	108 x 0.75 x 120	24 x 1 x 120	24 x 1 x 120

Span, ft. End-Int.-End	SEGMENT C							SEGMENT D			Additional Footnotes
	WC (in. x in. x ft.)	TC1 (in. x in. x ft.)	TC2 (in. x in. x ft.)	TC3 (in. x in. x ft.)	BC1 (in. x in. x ft.)	BC2 (in. x in. x ft.)	BC3 (in. x in. x ft.)	WD (in. x in. x ft.)	TD (in. x in. x ft.)	BD (in. x in. x ft.)	
117-150-117	54 x 0.5 x 76	---	22 x 1.25 x 76	---	22 x 1 x 19	22 x 1.5 x 38	22 x 1 x 19	54 x 0.5 x 74	16 x 1 x 74	16 x 1 x 74	---
129-165-129	60 x 0.5 x 80	22 x 1 x 20	22 x 1.5 x 40	22 x 1 x 20	22 x 1 x 20	22 x 1.75 x 40	22 x 1 x 20	60 x 0.5 x 85	16 x 1 x 85	16 x 1 x 85	---
141-180-141	66 x 0.5 x 86	22 x 1 x 26	22 x 1.5 x 34	22 x 1 x 26	22 x 1 x 26	22 x 1.75 x 34	22 x 1 x 26	66 x 0.5 x 94	16 x 1 x 94	16 x 1 x 94	---
153-195-153	72 x 0.625 x 94	24 x 1 x 23	24 x 1.5 x 48	24 x 1 x 23	24 x 1 x 23	24 x 1.75 x 48	24 x 1 x 23	72 x 0.625 x 101	18 x 1 x 101	18 x 1 x 101	---
164-210-164	76 x 0.625 x 102	25 x 1.25 x 35	25 x 1.5 x 32	25 x 1.25 x 35	25 x 1.25 x 35	25 x 1.75 x 32	25 x 1.25 x 35	76 x 0.625 x 108	18 x 1 x 108	18 x 1 x 108	---
176-225-176	82 x 0.625 x 108	24 x 1 x 27	24 x 1.75 x 54	24 x 1 x 27	24 x 1 x 27	24 x 2 x 54	24 x 1 x 27	82 x 0.625 x 117	18 x 1 x 117	18 x 1 x 117	---
188-240-188	88 x 0.625 x 116	28 x 1.25 x 38	28 x 1.5 x 40	28 x 1.25 x 38	28 x 1.25 x 38	28 x 1.75 x 40	28 x 1.25 x 38	88 x 0.625 x 124	20 x 1 x 124	20 x 1 x 124	---
199-255-199	92 x 0.625 x 122	28 x 1.25 x 41	28 x 1.75 x 40	28 x 1.25 x 41	28 x 1.25 x 41	28 x 2 x 40	28 x 1.25 x 41	92 x 0.625 x 133	20 x 1 x 133	20 x 1 x 133	a
211-270-211	96 x 0.75 x 125	28 x 1.25 x 40	28 x 1.75 x 40	28 x 1.25 x 45	28 x 1.25 x 40	28 x 2 x 40	28 x 1.25 x 45	96 x 0.75 x 140	20 x 1 x 140	20 x 1 x 140	a
223-285-223	102 x 0.75 x 135	28 x 1.25 x 31	28 x 2 x 62	28 x 1.25 x 42	28 x 1.25 x 31	28 x 2 x 62	28 x 1.25 x 42	102 x 0.75 x 139	22 x 1 x 139	22 x 1 x 139	a
234-300-234	108 x 0.75 x 140	28 x 1.25 x 30	28 x 2 x 60	28 x 1.25 x 50	28 x 1.25 x 30	28 x 2 x 60	28 x 1.25 x 50	108 x 0.75 x 140	22 x 1 x 140	22 x 1 x 140	a

Note: All plates are A709 Gr 50W.

Footnotes:

a. AASHTO distribution factor equations were used with girder stiffness and / or span length exceeding AASHTO limits. Check with refined analysis.

TRANSVERSE AND BEARING STIFFENERS								
Span, ft. End-Int.-End	Transverse Stiffener Size and Location, Distance From End support, Each Span				Bearing Stiffeners, End		Bearing Stiffeners, Piers	
	Width in.	Thickness in.	Span 1 Location, ft.	Span 2 Location, ft.	Width in.	Thickness in.	Width in.	Thickness in.
117-150-117	5.5	0.5	90, 103.5	13.5, 27, 123, 136.5	7.25	0.75	10.25	1
129-165-129	5.5	0.5	7.5, 99, 114	15, 30, 135, 150	7.25	0.75	10.25	1
141-180-141	6	0.5	8.25, 24.75, 81.5, 98, 108, 124.5	16.5, 33, 43, 59.5, 120.5, 137, 147, 163.5	7.25	0.75	10.25	1
153-195-153	6	0.5	135	18, 177	8.25	0.75	11.25	1
164-210-164	6.25	0.5	145	19, 191	8.25	0.75	11.75	1.125
176-225-176	6	0.5	135, 155.5	20.5, 41, 184, 204.5	8.25	0.75	11.25	1
188-240-188	7	0.5	144, 166	22, 44, 196, 218	9.25	0.875	13.25	1.25
199-255-199	7	0.5	11.5, 153, 176	23, 46, 209, 232	9.25	0.875	13.25	1.25
211-270-211	7	0.5	187	24, 246	9	0.875	13	1.125
223-285-223	7	0.5	197.5	25.5, 259.5	10	0.875	13	1.125
234-300-234	7	0.5	180, 207	27, 54, 246, 273	10	0.875	13	1.125

SHEAR STUD LAYOUT																					
Span, ft. End-Int.-End	Studs per row	Span 1										Span 2									
		Offset in.	Group 1			Group 2			Group 3			Offset in.	Group 1			Group 2			Group 3		
			Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.		Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.
117-150-117	4	0	18	12	18	53	16	70.67	7	48	28	20	7	48	28	68	16	90.67	7	48	28
129-165-129	4	0	20	12	20	52	18	78	7	48	28	12	8	48	32	99	12	99	8	48	32
141-180-141	4	0	14	12	14	62	18	93	8	48	32	0	9	48	36	75	18	108	9	48	36
153-195-153	4	0	8	12	8	72	18	108	9	48	36	36	9	48	36	78	18	117	9	48	36
164-210-164	4	0	9	12	9	71	18	106.5	12	48	48	24	10	48	40	84	18	126	10	48	40
176-225-176	4	12	82	18	123	4	24	8	11	48	44	48	10	48	40	91	18	136.5	11	48	44
188-240-188	4	0	19	18	28.5	57	24	114	11	48	44	30	11	48	44	73	24	146	11	48	44
199-255-199	4	0	14	18	21	65	24	130	12	48	48	6	12	48	48	79	24	158	12	48	48
211-270-211	4	0	7	18	10.5	74	24	148	13	48	52	24	13	48	52	81	24	162	13	48	52
223-285-223	4	0	18	23	34.5	57	28	133	13	48	52	6	14	48	56	74	28	172.67	13	48	52
234-300-234	4	0	18	24	36	56	30	140	14	48	56	24	14	48	56	73	30	182.5	14	48	56

CROSS-FRAME SPACING			
Span, ft. End-Int.-End	End Span	Interior Span	Type
117-150-117	4 @ 20.5 + 2 @ 17.5 = 117	2 @ 17.5 + 3 @ 26.66 + 2 @ 17.5 = 150	K-Frame
129-165-129	4 @ 23 + 2 @ 18.5 = 129	2 @ 18.5 + 4 @ 22.75 + 2 @ 18.5 = 165	K-Frame
141-180-141	4 @ 25.25 + 2 @ 20 = 141	2 @ 20 + 4 @ 25 + 2 @ 20 = 180	K-Frame
153-195-153	5 @ 22 + 2 @ 21.5 = 153	2 @ 21.5 + 4 @ 27.25 + 2 @ 21.5 = 195	K-Frame
164-210-164	5 @ 23 + 3 @ 16.33 = 164	3 @ 16.25 + 5 @ 22.5 + 3 @ 16.25 = 210	K-Frame
176-225-176	5 @ 25 + 3 @ 17 = 176	3 @ 16.66 + 5 @ 25 + 3 @ 16.66 = 225	X-Frame
188-240-188	5 @ 26.5 + 3 @ 18.5 = 188	3 @ 17.91 + 5 @ 26.5 + 3 @ 17.91 = 240	X-Frame
199-255-199	6 @ 23.5 + 3 @ 19.33 = 199	3 @ 18.75 + 5 @ 28.5 + 3 @ 18.75 = 255	X-Frame
211-270-211	6 @ 24.67 + 3 @ 21 = 211	3 @ 21 + 6 @ 24 + 3 @ 21 = 270	X-Frame
223-285-223	6 @ 26.5 + 3 @ 21.33 = 223	4 @ 17.5 + 6 @ 24.16 + 4 @ 17.5 = 285	X-Frame
234-300-234	8 @ 23.25 + 3 @ 16 = 234	4 @ 19 + 6 @ 24.66 + 4 @ 19 = 300	X-Frame

DEAD AND LIVE LOAD REACTIONS								
Span, ft. End-Int.-End	End Reaction				Pier 1 & 2 Reaction			
	DC kips	DW kips	Truck kips	Lane kips	DC kips	DW kips	Truck kips	Lane kips
117-150-117	60	7	75	30	222	24	130	80
129-165-129	66	7	75	33	247	27	134	88
141-180-141	73	8	76	36	270	29	136	96
153-195-153	81	9	76	38	305	31	138	104
164-210-164	88	9	77	41	331	34	139	112
176-225-176	94	10	77	44	359	37	140	120
188-240-188	103	11	77	47	390	39	141	128
199-255-199	109	11	77	50	418	41	142	136
211-270-211	119	12	77	52	455	43	142	143
223-285-223	128	13	77	55	492	46	142	151
234-300-234	137	13	77	57	522	48	141	157

Note: Truck and lane reactions include distribution factors, skew correction, and impact on the truck loading.

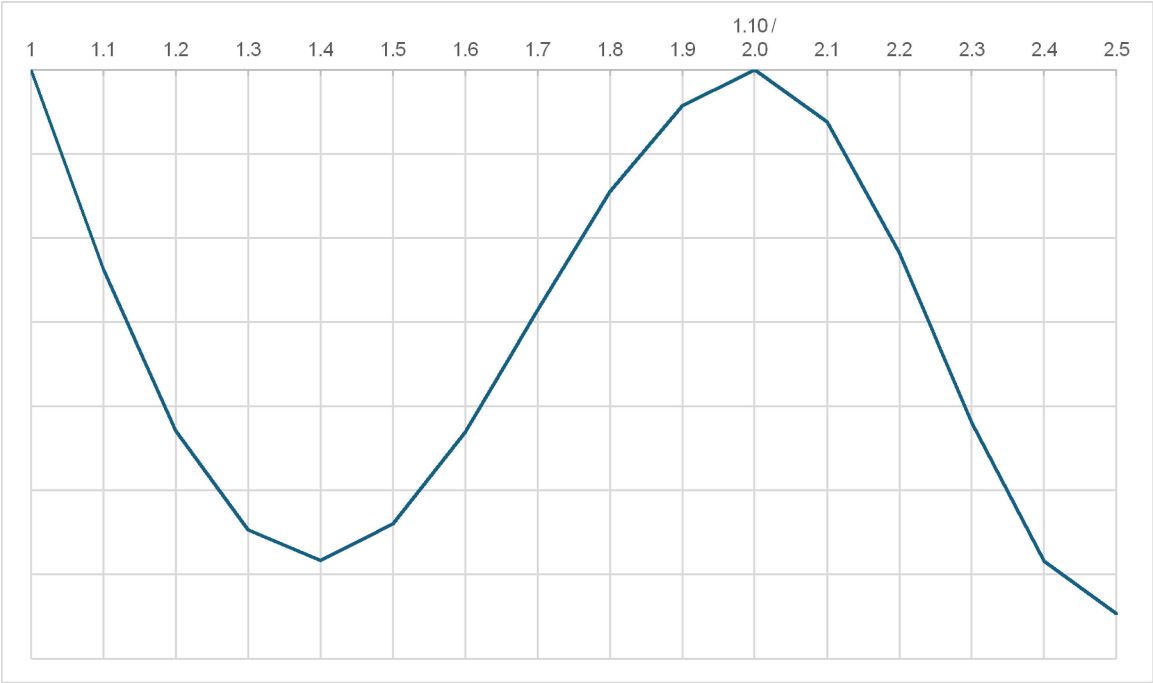
GIRDER WEIGHT					
Span, ft. End-Int.-End	Segment A tons	Segment B tons	Segment C tons	Segment D tons	Total tons
117-150-117	8.47	---	10.60	7.43	45.57
129-165-129	9.99	---	11.94	8.97	52.84
141-180-141	11.50	---	12.86	10.40	59.12
153-195-153	14.61	---	17.32	13.92	77.78
164-210-164	16.05	---	20.11	15.34	87.67
176-225-176	18.11	---	22.10	17.37	97.78
188-240-188	21.01	---	26.10	20.04	114.27
199-255-199	22.89	---	28.85	22.06	125.54
211-270-211	9.72	19.06	32.58	26.68	149.39
223-285-223	10.46	22.55	38.08	28.50	170.67
234-300-234	11.48	26.34	40.25	29.77	185.93

Note: Girder weight is total weight of web and flanges only measured between CL brg at each end. Does not include girder extension at end bearings, stiffeners, shear studs, bracing, or any other allowances.



THREE SPAN 150-300 FT
8 FT SPACING

DEAD LOAD DEFLECTIONS, SPAN 1 AND L/2 SPAN 2 SHOWN, SYMMETRIC																	
Span, ft. End-Int.-End	Span Tenth Points and Deflections, in. Span 1											Span Tenth Points and Deflections, in. Span 2					
	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	2.0	2.1	2.2	2.3	2.4	2.5
117-150-117 ft. span - steel only, in.	0.00	0.13	0.24	0.31	0.33	0.32	0.26	0.18	0.09	0.03	0.00	0.00	0.05	0.16	0.28	0.38	0.41
slab, in.	0.00	0.53	0.96	1.25	1.35	1.26	1.02	0.69	0.34	0.09	0.00	0.00	0.25	0.74	1.30	1.73	1.89
barrier rails, in.	0.00	0.10	0.18	0.23	0.25	0.24	0.19	0.13	0.06	0.01	0.00	0.00	0.05	0.16	0.27	0.35	0.39
117-150-117 ft. span - total, in.	0.00	0.75	1.38	1.79	1.94	1.82	1.47	1.00	0.50	0.13	0.00	0.00	0.35	1.06	1.85	2.46	2.68
129-165-129 ft. span - steel only, in.	0.00	0.15	0.28	0.37	0.40	0.38	0.31	0.21	0.11	0.03	0.00	0.00	0.05	0.16	0.30	0.40	0.44
slab, in.	0.00	0.61	1.11	1.44	1.55	1.45	1.17	0.78	0.39	0.10	0.00	0.00	0.24	0.75	1.35	1.82	1.99
barrier rails, in.	0.00	0.12	0.21	0.28	0.30	0.28	0.23	0.15	0.08	0.02	0.00	0.00	0.06	0.17	0.29	0.39	0.43
129-165-129 ft. span - total, in.	0.00	0.88	1.61	2.08	2.25	2.10	1.70	1.14	0.58	0.16	0.00	0.00	0.34	1.07	1.94	2.61	2.85
141-180-141 ft. span - steel only, in.	0.00	0.19	0.35	0.45	0.49	0.47	0.38	0.26	0.14	0.04	0.00	0.00	0.06	0.21	0.38	0.51	0.56
slab, in.	0.00	0.72	1.32	1.70	1.84	1.72	1.39	0.93	0.46	0.12	0.00	0.00	0.28	0.92	1.66	2.23	2.43
barrier rails, in.	0.00	0.14	0.26	0.33	0.36	0.34	0.27	0.18	0.09	0.02	0.00	0.00	0.07	0.20	0.36	0.48	0.52
141-180-141 ft. span - total, in.	0.00	1.05	1.92	2.49	2.69	2.53	2.05	1.38	0.68	0.18	0.00	0.00	0.40	1.33	2.40	3.21	3.51
153-195-153 ft. span - steel only, in.	0.00	0.23	0.42	0.55	0.59	0.55	0.45	0.31	0.16	0.05	0.00	0.00	0.08	0.26	0.47	0.63	0.69
slab, in.	0.00	0.77	1.41	1.82	1.97	1.84	1.50	1.01	0.52	0.15	0.00	0.00	0.25	0.82	1.50	2.03	2.22
barrier rails, in.	0.00	0.16	0.29	0.38	0.41	0.39	0.31	0.21	0.11	0.03	0.00	0.00	0.06	0.19	0.34	0.46	0.50
153-195-153 ft. span - total, in.	0.00	1.16	2.12	2.74	2.97	2.78	2.26	1.53	0.79	0.23	0.00	0.00	0.39	1.27	2.31	3.11	3.41
164-210-164 ft. span - steel only, in.	0.00	0.28	0.51	0.66	0.71	0.66	0.54	0.36	0.18	0.05	0.00	0.00	0.11	0.35	0.62	0.82	0.90
slab, in.	0.00	0.89	1.63	2.11	2.27	2.13	1.72	1.16	0.58	0.15	0.00	0.00	0.32	1.04	1.87	2.50	2.74
barrier rails, in.	0.00	0.19	0.34	0.44	0.48	0.45	0.36	0.25	0.12	0.03	0.00	0.00	0.08	0.25	0.43	0.57	0.62
164-210-164 ft. span - total, in.	0.00	1.35	2.47	3.20	3.46	3.24	2.62	1.76	0.89	0.22	0.00	0.00	0.52	1.64	2.91	3.89	4.25
176-225-176 ft. span - steel only, in.	0.00	0.32	0.58	0.75	0.80	0.75	0.61	0.41	0.21	0.06	0.00	0.00	0.10	0.33	0.62	0.83	0.91
slab, in.	0.00	0.98	1.79	2.31	2.49	2.32	1.87	1.26	0.64	0.19	0.00	0.00	0.29	0.98	1.83	2.50	2.75
barrier rails, in.	0.00	0.21	0.38	0.49	0.53	0.50	0.40	0.27	0.14	0.04	0.00	0.00	0.08	0.24	0.44	0.59	0.64
176-225-176 ft. span - total, in.	0.00	1.50	2.74	3.55	3.82	3.57	2.89	1.94	0.99	0.29	0.00	0.00	0.46	1.56	2.88	3.92	4.30
188-240-188 ft. span - steel only, in.	0.00	0.36	0.66	0.86	0.93	0.87	0.71	0.48	0.25	0.07	0.00	0.00	0.13	0.43	0.76	1.02	1.12
slab, in.	0.00	1.02	1.87	2.43	2.62	2.46	1.99	1.35	0.70	0.20	0.00	0.00	0.33	1.12	2.03	2.73	3.00
barrier rails, in.	0.00	0.22	0.41	0.53	0.57	0.54	0.44	0.30	0.15	0.04	0.00	0.00	0.09	0.27	0.49	0.65	0.71
188-240-188 ft. span - total, in.	0.00	1.61	2.94	3.81	4.12	3.87	3.14	2.13	1.10	0.31	0.00	0.00	0.55	1.82	3.28	4.40	4.82
199-255-199 ft. span - steel only, in.	0.00	0.41	0.75	0.97	1.05	0.98	0.79	0.53	0.27	0.08	0.00	0.00	0.14	0.46	0.84	1.13	1.24
slab, in.	0.00	1.14	2.08	2.68	2.89	2.70	2.18	1.46	0.74	0.21	0.00	0.00	0.34	1.18	2.19	2.97	3.26
barrier rails, in.	0.00	0.25	0.46	0.59	0.64	0.60	0.49	0.33	0.17	0.05	0.00	0.00	0.09	0.30	0.54	0.72	0.79
199-255-199 ft. span - total, in.	0.00	1.80	3.29	4.25	4.58	4.28	3.45	2.32	1.18	0.33	0.00	0.00	0.56	1.95	3.57	4.83	5.29
211-270-211 ft. span - steel only, in.	0.00	0.51	0.93	1.20	1.29	1.21	0.97	0.65	0.32	0.07	0.00	0.00	0.20	0.63	1.12	1.50	1.64
slab, in.	0.00	1.24	2.26	2.93	3.16	2.95	2.38	1.59	0.79	0.20	0.00	0.00	0.42	1.39	2.52	3.39	3.72
barrier rails, in.	0.00	0.28	0.51	0.66	0.71	0.67	0.54	0.36	0.18	0.04	0.00	0.00	0.11	0.35	0.62	0.82	0.90
211-270-211 ft. span - total, in.	0.00	2.02	3.70	4.78	5.16	4.82	3.89	2.60	1.29	0.31	0.00	0.00	0.73	2.38	4.26	5.71	6.25
223-285-223 ft. span - steel only, in.	0.00	0.55	1.00	1.29	1.39	1.29	1.04	0.69	0.33	0.08	0.00	0.00	0.22	0.67	1.19	1.59	1.74
slab, in.	0.00	1.25	2.29	2.96	3.18	2.97	2.39	1.60	0.80	0.21	0.00	0.00	0.41	1.34	2.43	3.29	3.61
barrier rails, in.	0.00	0.29	0.53	0.68	0.74	0.69	0.56	0.38	0.19	0.05	0.00	0.00	0.11	0.35	0.62	0.83	0.90
223-285-223 ft. span - total, in.	0.00	2.09	3.81	4.93	5.31	4.95	3.98	2.66	1.32	0.34	0.00	0.00	0.74	2.35	4.24	5.71	6.25
234-300-234 ft. span - steel only, in.	0.00	0.60	1.10	1.41	1.52	1.41	1.14	0.75	0.37	0.09	0.00	0.00	0.24	0.77	1.37	1.82	1.99
slab, in.	0.00	1.28	2.34	3.01	3.23	3.01	2.42	1.61	0.79	0.20	0.00	0.00	0.48	1.53	2.77	3.73	4.09
barrier rails, in.	0.00	0.30	0.55	0.71	0.76	0.71	0.58	0.39	0.19	0.05	0.00	0.00	0.13	0.40	0.70	0.93	1.02
234-300-234 ft. span - total, in.	0.00	2.18	3.98	5.12	5.51	5.14	4.13	2.75	1.35	0.34	0.00	0.00	0.85	2.70	4.84	6.49	7.10



DEFLECTION VERSUS SPAN TENTH POINT, SYMMETRIC ABOUT L/2 SPAN 2

Exterior and First Interior Girder

Deflection Assumptions

"Steel Only" = self weight of girders

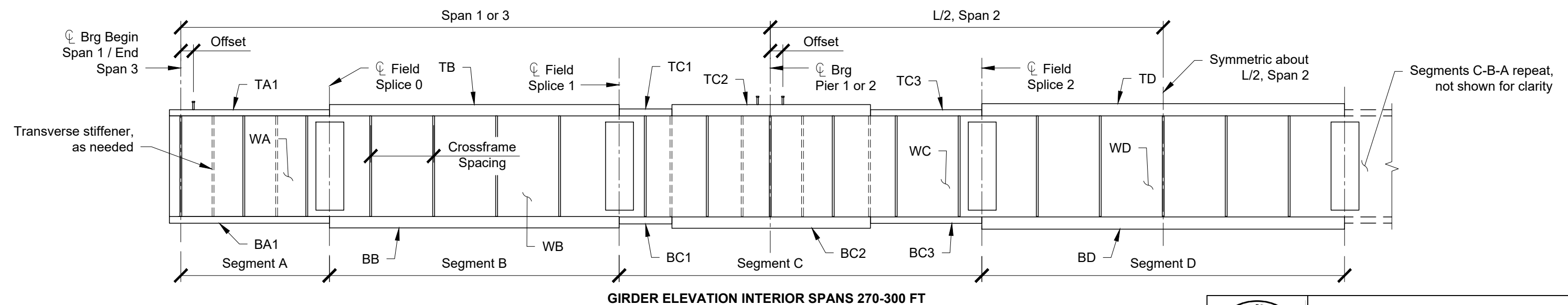
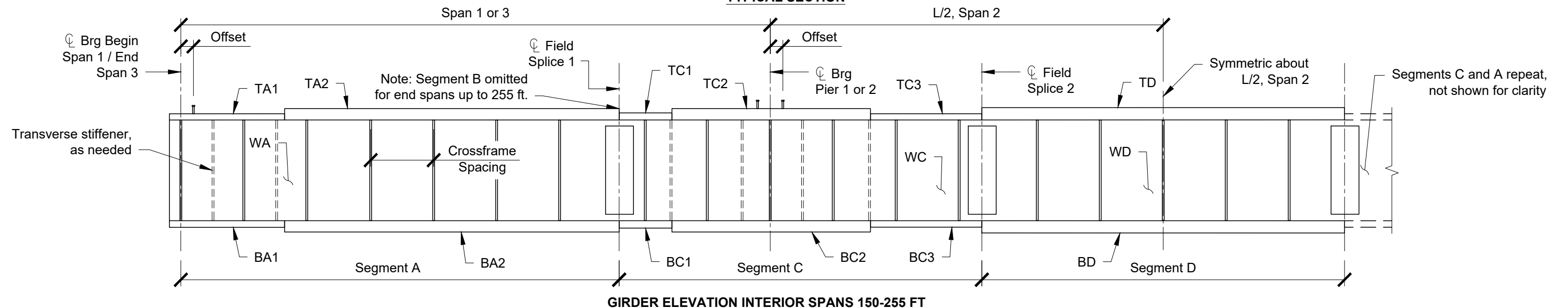
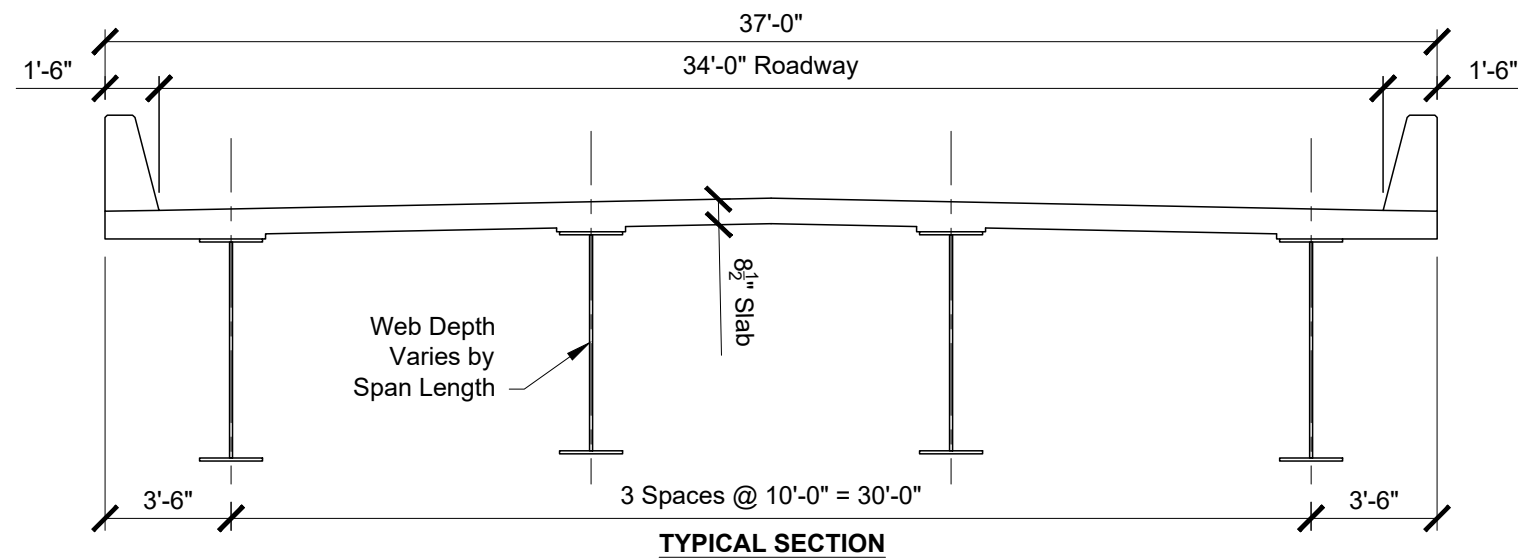
"Slab" = deflection due to user-input non composite uniform dead load (slab, haunch, allowance for bracing)

"Barrier Rails" = deflection due to barrier rail loading distributed evenly to exterior and first interior girder.



THREE SPAN 150-300 FT
8 FT SPACING

Issued January 2025
Revision 0



THREE SPAN 150-300 FT 10 FT SPACING

Issued January 2025
Revision 0

Sheet 10 of 32

Span, ft. End-Int.-End	SEGMENT A					SEGMENT B (as needed)		
	WA (in. x in. x ft.)	TA1 (in. x in. x ft.)	TA2 (in. x in. x ft.)	BA1 (in. x in. x ft.)	BA2 (in. x in. x ft.)	WB (in. x in. x ft.)	TB (in. x in. x ft.)	BB (in. x in. x ft.)
117-150-117	55 x 0.5 x 79	---	16 x 1 x 79	---	18 x 1.75 x 79	---	---	---
129-165-129	60 x 0.5 x 89	---	16 x 1 x 89	---	18 x 1.75 x 89	---	---	---
141-180-141	66 x 0.625 x 98	---	16 x 1 x 98	20 x 1.25 x 49	20 x 1.5 x 49	---	---	---
153-195-153	72 x 0.625 x 106	---	18 x 1 x 106	18 x 1.25 x 53	18 x 1.75 x 53	---	---	---
164-210-164	76 x 0.625 x 113	---	18 x 1 x 113	20 x 1 x 57	20 x 1.5 x 56	---	---	---
176-225-176	84 x 0.625 x 122	---	18 x 1 x 122	20 x 1 x 61	20 x 1.5 x 61	---	---	---
188-240-188	88 x 0.625 x 130	---	20 x 1 x 130	20 x 1 x 65	20 x 1.5 x 65	---	---	---
199-255-199	92 x 0.75 x 138	---	20 x 1 x 138	20 x 1.25 x 69	20 x 1.5 x 69	---	---	---
211-270-211	96 x 0.75 x 51	20 x 1 x 51	---	22 x 1 x 51	---	96 x 0.75 x 100	20 x 1 x 100	22 x 1.25 x 100
223-285-223	102 x 0.75 x 51	22 x 1 x 51	---	22 x 1 x 51	---	102 x 0.75 x 110	22 x 1.25 x 110	22 x 1.25 x 110
234-300-234	108 x 0.75 x 54	24 x 1 x 54	---	24 x 1 x 54	---	108 x 0.75 x 120	24 x 1 x 120	24 x 1.25 x 120

Span, ft. End-Int.-End	SEGMENT C							SEGMENT D			Additional Footnotes
	WC (in. x in. x ft.)	TC1 (in. x in. x ft.)	TC2 (in. x in. x ft.)	TC3 (in. x in. x ft.)	BC1 (in. x in. x ft.)	BC2 (in. x in. x ft.)	BC3 (in. x in. x ft.)	WD (in. x in. x ft.)	TD (in. x in. x ft.)	BD (in. x in. x ft.)	
117-150-117	55 x 0.5 x 76	22 x 1 x 19	22 x 1.5 x 38	22 x 1 x 19	22 x 1.25 x 19	22 x 1.75 x 38	22 x 1 x 19	55 x 0.5 x 74	16 x 1 x 74	18 x 1.5 x 74	---
129-165-129	60 x 0.5 x 80	22 x 1 x 25	22 x 1.75 x 30	22 x 1 x 25	22 x 1.25 x 25	22 x 2 x 30	22 x 1 x 25	60 x 0.5 x 85	16 x 1 x 85	18 x 1.5 x 85	---
141-180-141	66 x 0.625 x 86	22 x 1 x 21	22 x 1.75 x 44	22 x 1 x 21	22 x 1 x 21	22 x 2 x 44	22 x 1 x 21	66 x 0.625 x 94	16 x 1 x 94	20 x 1.25 x 94	---
153-195-153	72 x 0.625 x 94	24 x 1 x 23	24 x 1.75 x 48	24 x 1 x 23	24 x 1 x 23	24 x 2 x 48	24 x 1 x 23	72 x 0.625 x 101	18 x 1 x 101	18 x 1.5 x 101	---
164-210-164	76 x 0.625 x 102	24 x 1 x 25	24 x 2 x 52	24 x 1 x 25	24 x 1.25 x 25	24 x 2.25 x 52	24 x 1.25 x 25	76 x 0.625 x 108	18 x 1 x 108	20 x 1.25 x 108	---
176-225-176	84 x 0.625 x 108	24 x 1 x 32	24 x 2 x 44	24 x 1 x 32	24 x 1.25 x 32	24 x 2.5 x 44	24 x 1.25 x 32	84 x 0.625 x 117	18 x 1 x 117	22 x 1.25 x 117	---
188-240-188	88 x 0.625 x 116	26 x 1.25 x 34	26 x 2 x 48	26 x 1.25 x 34	26 x 1.25 x 34	26 x 2.25 x 48	26 x 1.25 x 34	88 x 0.625 x 124	20 x 1 x 124	20 x 1.25 x 124	---
199-255-199	92 x 0.75 x 122	26 x 1.25 x 30	26 x 2.25 x 62	26 x 1.25 x 30	26 x 1.25 x 30	26 x 2.5 x 62	26 x 1.25 x 30	92 x 0.75 x 133	20 x 1 x 133	20 x 1 x 133	a
211-270-211	96 x 0.75 x 125	26 x 1.25 x 30	26 x 2.5 x 60	26 x 1.25 x 35	26 x 1.5 x 30	26 x 2.5 x 60	26 x 1.25 x 35	96 x 0.75 x 140	20 x 1 x 140	20 x 1.25 x 140	a
223-285-223	102 x 0.75 x 135	28 x 1.25 x 36	28 x 2.5 x 52	28 x 1.25 x 47	28 x 1.5 x 36	28 x 2.75 x 52	28 x 1.5 x 47	102 x 0.75 x 139	22 x 1 x 139	22 x 1 x 139	a
234-300-234	108 x 0.75 x 140	28 x 1.25 x 30	28 x 2.5 x 60	28 x 1.25 x 50	28 x 1.5 x 30	28 x 2.75 x 60	28 x 1.5 x 50	108 x 0.75 x 140	22 x 1 x 140	22 x 1 x 140	a

Note: All plates are A709 Gr 50W.

Footnotes:

a. AASHTO distribution factor equations were used with girder stiffness and / or span length exceeding AASHTO limits. Check with refined analysis.

TRANSVERSE AND BEARING STIFFENERS							
Span, ft. End-Int.-End	Transverse Stiffener Size and Location, Distance From End support, Each Span				Bearing Stiffeners, End		Bearing Stiffeners, Piers
	Width in.	Thickness in.	Span 1 Location, ft.	Span 2 Location, ft.	Width in.	Thickness in.	Width in. Thickness in.
117-150-117	5.5	0.5	6.75, 89.5, 103.25	13.75, 27.5, 122.5, 136.25	7.25	0.75	10.25 1
129-165-129	6	0.5	7.5, 22.5, 74, 89, 99.75, 114.75	13.75, 28.75, 40, 55, 110, 125, 136.25, 151.25	7.25	0.75	10.25 1
141-180-141	5.5	0.5	124.5	16.5, 163.5	7.25	0.75	10.25 1
153-195-153	6	0.5	117, 135	18, 36, 159, 177	8.25	0.75	11.25 1
164-210-164	6	0.5	126, 145	19, 38, 172, 191	8.25	0.75	11.25 1
176-225-176	7	0.5	10.5, 134, 155	21, 42, 183, 204	8.25	0.75	11.25 1
188-240-188	8	0.5	11, 33, 108, 130, 144, 166	22, 44, 58, 80, 160, 182, 196, 218	9.25	0.875	12.25 1.125
199-255-199	6.5	0.5	176	23, 232	9	0.875	12 1.125
211-270-211	6.5	0.5	163, 187	24, 48, 222, 246	9	0.875	12 1.125
223-285-223	7	0.5	172, 197.5	25.5, 51, 243, 259.5	10	0.875	13 1.125
234-300-234	8	0.625	180, 207	27, 54, 246, 276	11	1	13 1.125

DEAD AND LIVE LOAD REACTIONS								
Span, ft. End-Int.-End	End Reaction				Pier 1 & 2 Reaction			
	DC kips	DW kips	Truck kips	Lane kips	DC kips	DW kips	Truck kips	Lane kips
117-150-117	74	9	88	35	269	30	151	93
129-165-129	82	9	88	38	298	33	155	102
141-180-141	90	10	89	42	333	36	158	112
153-195-153	99	11	89	45	366	39	160	121
164-210-164	105	12	90	48	399	42	162	131
176-225-176	114	13	90	52	430	45	163	139
188-240-188	123	13	90	55	466	48	165	149
199-255-199	133	14	90	58	511	51	165	158
211-270-211	141	15	90	62	546	54	166	168
223-285-223	152	16	91	65	585	57	167	177
234-300-234	160	16	91	68	621	60	167	186

Note: Truck and lane reactions include distribution factors, skew correction, and impact on the truck loading.

SHEAR STUD LAYOUT																					
Span, ft. End-Int.-End	Studs per row	Span 1										Span 2									
		Offset in.	Group 1			Group 2			Group 3			Offset in.	Group 1			Group 2			Group 3		
			Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.		Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.
117-150-117	4	0	12	10	10	80	12	80	8	40	26.67	6	10	36	30	89	12	89	10	36	30
129-165-129	4	0	97	12	97	6	42	21	2	48	8	6	13	30	32.5	99	12	99	13	30	32.5
141-180-141	4	0	106	12	106	8	48	32	---	---	---	12	10	42	35	108	12	108	10	42	35
153-195-153	4	0	23	12	23	69	16	92	9	48	36	24	9	48	36	89	16	118.67	9	48	36
164-210-164	4	0	25	12	25	74	16	98.67	10	48	40	20	10	48	40	95	16	126.67	40	48	40
176-225-176	4	0	27	12	27	70	18	105	11	48	44	48	10	48	40	91	18	136.5	11	48	44
188-240-188	4	0	29	12	29	76	18	114	11	48	44	0	12	48	48	96	18	144	12	48	48
199-255-199	4	0	20	12	20	87	18	130.5	12	48	48	0	12	48	48	102	18	153	12	48	48
211-270-211	4	0	11	12	11	99	18	148.5	12	48	48	6	13	48	52	109	18	163.5	13	48	52
223-285-223	4	0	15	18	22.5	89	20	148.33	13	48	52	12	14	48	56	114	18	171	14	48	56
234-300-234	4	0	9	16	12	99	20	165	14	48	56	3	14	48	56	125	18	187.5	14	48	56

GIRDER WEIGHT					
Span, ft. End-Int.-End	Segment A tons	Segment B tons	Segment C tons	Segment D tons	Total tons
117-150-117	10.08	---	11.20	8.88	51.44
129-165-129	11.74	---	12.27	10.56	58.57
141-180-141	14.13	---	15.36	13.15	72.13
153-195-153	16.23	---	18.30	15.47	84.54
164-210-164	17.39	---	21.86	16.63	95.13
176-225-176	19.82	---	23.61	19.51	106.38
188-240-188	22.12	---	27.40	21.10	120.13
199-255-199	27.35	---	33.99	24.67	147.34
211-270-211	9.89	20.33	36.10	27.87	160.52
223-285-223	10.46	24.61	41.45	28.50	181.53
234-300-234	11.85	27.56	44.78	29.77	198.16

Note: Girder weight is total weight of web and flanges only measured between CL brg at each end. Does not include girder extension at end bearings, stiffeners, shear studs, bracing, or any other allowances.

CROSS-FRAME SPACING			
Span, ft. End-Int.-End	End Span	Interior Span	Type
117-150-117	4 @ 20.5 + 2 @ 17.5 = 117	2 @ 17.5 + 3 @ 26.66 + 2 @ 17.5 = 150	K-Frame
129-165-129	4 @ 23 + 2 @ 18.5 = 129	2 @ 18.5 + 4 @ 22.75 + 2 @ 18.5 = 165	K-Frame
141-180-141	4 @ 25.25 + 2 @ 20 = 141	2 @ 20 + 4 @ 25 + 2 @ 20 = 180	K-Frame
153-195-153	5 @ 22 + 2 @ 21.5 = 153	2 @ 21.5 + 4 @ 27.25 + 2 @ 21.5 = 195	K-Frame
164-210-164	5 @ 23 + 3 @ 16.33 = 164	3 @ 16.25 + 5 @ 22.5 + 3 @ 16.25 = 210	K-Frame
176-225-176	5 @ 25 + 3 @ 17 = 176	3 @ 16.66 + 5 @ 25 + 3 @ 16.66 = 225	K-Frame
188-240-188	5 @ 26.5 + 3 @ 18.5 = 188	3 @ 17.91 + 5 @ 26.5 + 3 @ 17.91 = 240	K-Frame
199-255-199	6 @ 23.5 + 3 @ 19.33 = 199	3 @ 18.75 + 5 @ 28.5 + 3 @ 18.75 = 255	K-Frame
211-270-211	6 @ 24.67 + 3 @ 21 = 211	3 @ 21 + 6 @ 24 + 3 @ 21 = 270	X-Frame
223-285-223	6 @ 26.5 + 3 @ 21.33 = 223	4 @ 17.5 + 6 @ 24.16 + 4 @ 17.5 = 285	X-Frame
234-300-234	8 @ 23.25 + 3 @ 16 = 234	4 @ 19 + 6 @ 24.66 + 4 @ 19 = 300	X-Frame

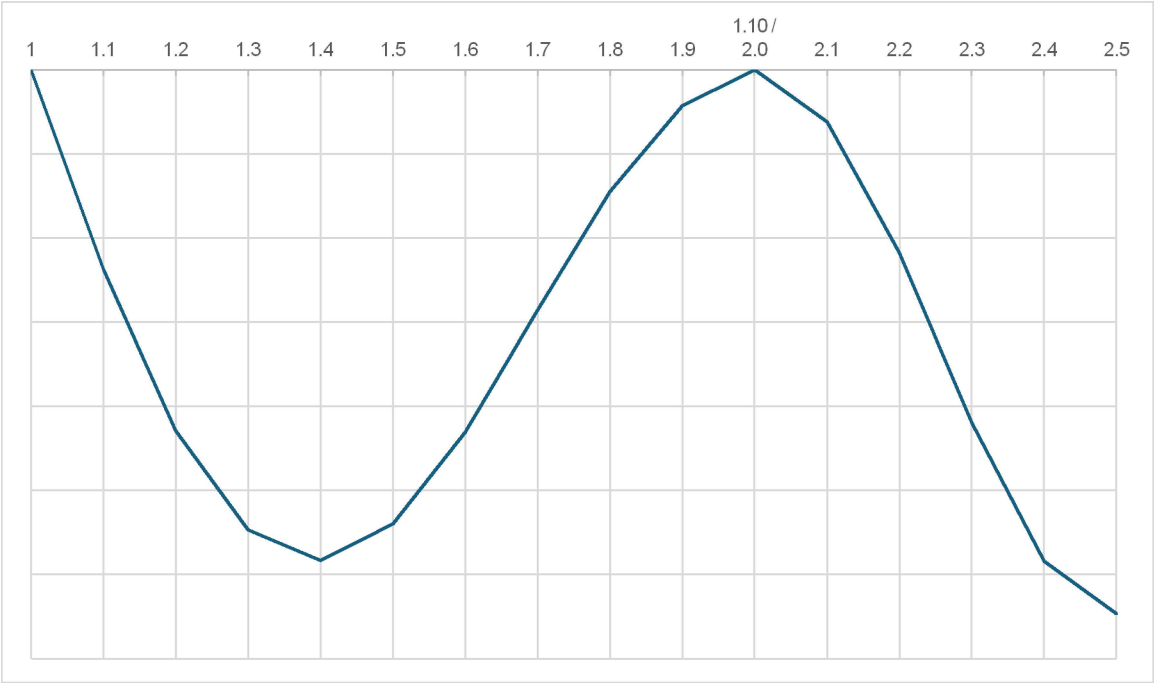


THREE SPAN 150-300 FT 10 FT SPACING

Issued January 2025
Revision 0

Sheet 12 of 32

DEAD LOAD DEFLECTIONS, SPAN 1 AND L/2 SPAN 2 SHOWN, SYMMETRIC																	
Span, ft. End-Int.-End	Span Tenth Points and Deflections, in. Span 1											Span Tenth Points and Deflections, in. Span 2					
	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	2.0	2.1	2.2	2.3	2.4	2.5
117-150-117 ft. span - steel only, in.	0.00	0.12	0.23	0.30	0.32	0.31	0.26	0.18	0.10	0.03	0.00	0.00	0.04	0.14	0.25	0.34	0.37
slab, in.	0.00	0.56	1.03	1.33	1.44	1.35	1.10	0.74	0.37	0.09	0.00	0.00	0.26	0.79	1.40	1.85	2.02
barrier rails, in.	0.00	0.07	0.13	0.17	0.18	0.17	0.14	0.10	0.05	0.01	0.00	0.00	0.04	0.12	0.21	0.27	0.29
117-150-117 ft. span - total, in.	0.00	0.76	1.39	1.80	1.95	1.83	1.49	1.01	0.51	0.13	0.00	0.00	0.34	1.05	1.85	2.46	2.68
129-165-129 ft. span - steel only, in.	0.00	0.16	0.29	0.38	0.41	0.39	0.32	0.23	0.12	0.04	0.00	0.00	0.04	0.16	0.30	0.41	0.45
slab, in.	0.00	0.69	1.27	1.64	1.78	1.67	1.35	0.91	0.45	0.12	0.00	0.00	0.26	0.91	1.65	2.20	2.41
barrier rails, in.	0.00	0.09	0.16	0.21	0.23	0.22	0.18	0.12	0.06	0.01	0.00	0.00	0.05	0.14	0.25	0.32	0.35
129-165-129 ft. span - total, in.	0.00	0.94	1.72	2.23	2.42	2.28	1.85	1.25	0.63	0.17	0.00	0.00	0.35	1.21	2.19	2.93	3.21
141-180-141 ft. span - steel only, in.	0.00	0.19	0.35	0.46	0.50	0.47	0.38	0.26	0.14	0.04	0.00	0.00	0.06	0.20	0.38	0.51	0.56
slab, in.	0.00	0.80	1.45	1.87	2.00	1.87	1.51	1.01	0.51	0.14	0.00	0.00	0.29	0.94	1.71	2.30	2.51
barrier rails, in.	0.00	0.11	0.20	0.25	0.27	0.26	0.21	0.14	0.07	0.02	0.00	0.00	0.05	0.16	0.27	0.36	0.39
141-180-141 ft. span - total, in.	0.00	1.10	2.00	2.58	2.77	2.59	2.10	1.41	0.71	0.19	0.00	0.00	0.41	1.30	2.36	3.16	3.46
153-195-153 ft. span - steel only, in.	0.00	0.23	0.41	0.53	0.57	0.53	0.44	0.30	0.15	0.05	0.00	0.00	0.07	0.24	0.45	0.60	0.66
slab, in.	0.00	0.88	1.61	2.06	2.20	2.05	1.66	1.12	0.56	0.16	0.00	0.00	0.30	0.98	1.78	2.39	2.62
barrier rails, in.	0.00	0.13	0.23	0.30	0.32	0.30	0.24	0.16	0.08	0.02	0.00	0.00	0.05	0.17	0.29	0.39	0.42
153-195-153 ft. span - total, in.	0.00	1.24	2.25	2.89	3.09	2.88	2.33	1.57	0.80	0.22	0.00	0.00	0.43	1.38	2.52	3.38	3.70
164-210-164 ft. span - steel only, in.	0.00	0.27	0.49	0.63	0.67	0.62	0.50	0.34	0.18	0.05	0.00	0.00	0.08	0.27	0.51	0.69	0.75
slab, in.	0.00	1.04	1.88	2.40	2.55	2.36	1.89	1.26	0.64	0.18	0.00	0.00	0.32	1.06	1.97	2.67	2.94
barrier rails, in.	0.00	0.15	0.27	0.35	0.37	0.35	0.28	0.19	0.09	0.02	0.00	0.00	0.06	0.19	0.34	0.45	0.49
164-210-164 ft. span - total, in.	0.00	1.45	2.64	3.38	3.59	3.33	2.67	1.79	0.90	0.26	0.00	0.00	0.46	1.52	2.81	3.81	4.18
176-225-176 ft. span - steel only, in.	0.00	0.30	0.55	0.70	0.75	0.70	0.56	0.38	0.19	0.05	0.00	0.00	0.09	0.34	0.62	0.83	0.91
slab, in.	0.00	1.12	2.04	2.61	2.78	2.58	2.08	1.39	0.69	0.19	0.00	0.00	0.31	1.17	2.17	2.94	3.23
barrier rails, in.	0.00	0.17	0.30	0.38	0.41	0.38	0.31	0.21	0.10	0.03	0.00	0.00	0.06	0.20	0.36	0.48	0.52
176-225-176 ft. span - total, in.	0.00	1.59	2.89	3.70	3.94	3.66	2.95	1.97	0.98	0.27	0.00	0.00	0.47	1.70	3.15	4.25	4.66
188-240-188 ft. span - steel only, in.	0.00	0.36	0.65	0.83	0.89	0.83	0.67	0.45	0.23	0.06	0.00	0.00	0.11	0.37	0.68	0.93	1.01
slab, in.	0.00	1.25	2.27	2.90	3.08	2.85	2.29	1.53	0.76	0.20	0.00	0.00	0.38	1.29	2.39	3.23	3.55
barrier rails, in.	0.00	0.19	0.35	0.44	0.47	0.44	0.36	0.24	0.12	0.03	0.00	0.00	0.07	0.24	0.42	0.56	0.61
188-240-188 ft. span - total, in.	0.00	1.80	3.26	4.18	4.44	4.12	3.32	2.22	1.11	0.30	0.00	0.00	0.56	1.90	3.49	4.71	5.17
199-255-199 ft. span - steel only, in.	0.00	0.43	0.78	1.01	1.09	1.02	0.83	0.57	0.30	0.10	0.00	0.00	0.10	0.37	0.72	0.99	1.09
slab, in.	0.00	1.24	2.25	2.88	3.08	2.85	2.27	1.50	0.75	0.20	0.00	0.00	0.41	1.35	2.51	3.43	3.77
barrier rails, in.	0.00	0.19	0.35	0.45	0.48	0.45	0.36	0.24	0.12	0.03	0.00	0.00	0.09	0.26	0.46	0.62	0.67
199-255-199 ft. span - total, in.	0.00	1.86	3.38	4.34	4.64	4.31	3.46	2.31	1.16	0.33	0.00	0.00	0.60	1.98	3.68	5.03	5.54
211-270-211 ft. span - steel only, in.	0.00	0.49	0.89	1.15	1.24	1.15	0.93	0.62	0.31	0.09	0.00	0.00	0.14	0.48	0.90	1.23	1.35
slab, in.	0.00	1.46	2.65	3.39	3.63	3.37	2.69	1.78	0.87	0.23	0.00	0.00	0.44	1.45	2.70	3.69	4.07
barrier rails, in.	0.00	0.23	0.42	0.54	0.58	0.54	0.44	0.29	0.14	0.04	0.00	0.00	0.09	0.28	0.50	0.67	0.73
211-270-211 ft. span - total, in.	0.00	2.18	3.96	5.08	5.44	5.06	4.05	2.69	1.32	0.35	0.00	0.00	0.67	2.21	4.10	5.59	6.15
223-285-223 ft. span - steel only, in.	0.00	0.55	0.99	1.27	1.37	1.29	1.04	0.71	0.36	0.11	0.00	0.00	0.13	0.52	0.99	1.36	1.50
slab, in.	0.00	1.46	2.65	3.37	3.60	3.34	2.67	1.76	0.86	0.23	0.00	0.00	0.44	1.59	2.98	4.08	4.48
barrier rails, in.	0.00	0.24	0.44	0.57	0.61	0.57	0.46	0.31	0.15	0.04	0.00	0.00	0.09	0.30	0.54	0.72	0.79
223-285-223 ft. span - total, in.	0.00	2.26	4.08	5.21	5.58	5.19	4.17	2.77	1.37	0.37	0.00	0.00	0.66	2.40	4.51	6.16	6.77
234-300-234 ft. span - steel only, in.	0.00	0.58	1.06	1.36	1.46	1.36	1.10	0.73	0.36	0.10	0.00	0.00	0.18	0.61	1.14	1.55	1.71
slab, in.	0.00	1.52	2.76	3.54	3.78	3.50	2.78	1.82	0.87	0.21	0.00	0.00	0.51	1.71	3.18	4.34	4.77
barrier rails, in.	0.00	0.25	0.46	0.59	0.63	0.59	0.47	0.31	0.15	0.03	0.00	0.00	0.10	0.33	0.59	0.79	0.87
234-300-234 ft. span - total, in.	0.00	2.36	4.28	5.48	5.87	5.44	4.34	2.85	1.37	0.34	0.00	0.00	0.79	2.65	4.91	6.68	7.35



DEFLECTION VERSUS SPAN TENTH POINT, SYMMETRIC ABOUT L/2 SPAN 2

All Girders

Deflection Assumptions

"Steel Only" = self weight of girders

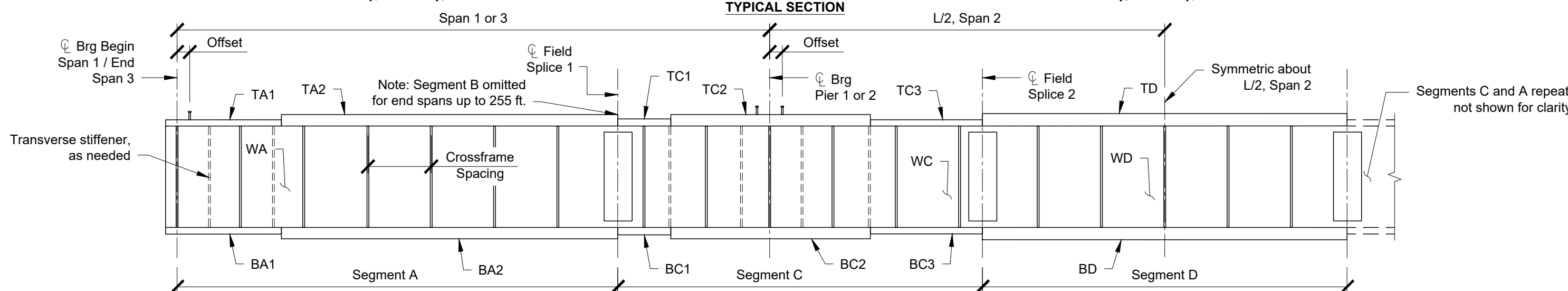
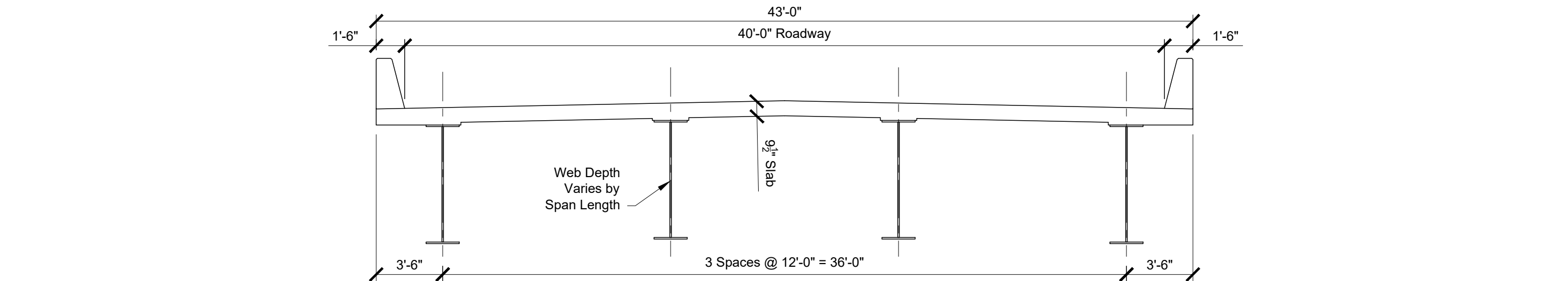
"Slab" = deflection due to user-input non composite uniform dead load (slab, haunch, allowance for bracing)

"Barrier Rails" = deflection due to barrier rail loading distributed evenly to exterior and first interior girder.

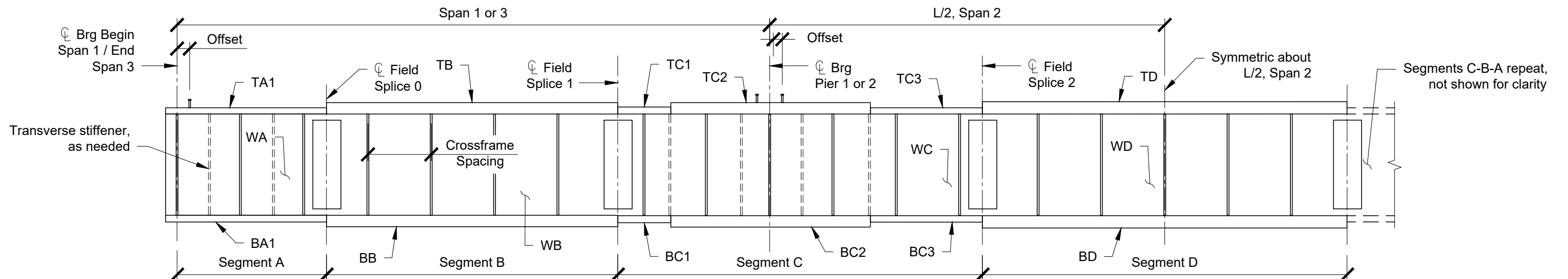


THREE SPAN 150-300 FT
10 FT SPACING

Issued January 2025
Revision 0



GIRDER ELEVATION INTERIOR SPANS 150-255 FT



GIRDER ELEVATION INTERIOR SPANS 270-300 FT

Span, ft. End-Int.-End	SEGMENT A					SEGMENT B (as needed)		
	WA (in. x in. x ft.)	TA1 (in. x in. x ft.)	TA2 (in. x in. x ft.)	BA1 (in. x in. x ft.)	BA2 (in. x in. x ft.)	WB (in. x in. x ft.)	TB (in. x in. x ft.)	BB (in. x in. x ft.)
117-150-117	54 x 0.625 x 79	---	16 x 1 x 79	---	22 x 1.5 x 79	---	---	---
129-165-129	62 x 0.625 x 89	---	16 x 1 x 89	---	22 x 1.5 x 89	---	---	---
141-180-141	66 x 0.625 x 98	---	18 x 1 x 98	22 x 1.25 x 49	22 x 1.5 x 49	---	---	---
153-195-153	74 x 0.625 x 106	---	18 x 1 x 106	24 x 1 x 65	24 x 1.25 x 41	---	---	---
164-210-164	78 x 0.625 x 113	---	18 x 1 x 113	24 x 1 x 57	24 x 1.25 x 56	---	---	---
176-225-176	82 x 0.75 x 122	18 x 1 x 61	18 x 1.25 x 61	22 x 1 x 61	22 x 1.5 x 61	---	---	---
188-240-188	88 x 0.75 x 130	---	20 x 1 x 130	24 x 1 x 70	24 x 1.25 x 60	---	---	---
199-255-199	94 x 0.75 x 138	---	20 x 1 x 138	24 x 1 x 84	24 x 1.25 x 54	---	---	---
211-270-211	98 x 0.75 x 51	20 x 1 x 51	---	24 x 1 x 51	---	98 x 0.75 x 100	20 x 1.25 x 100	24 x 1.25 x 100
223-285-223	102 x 0.75 x 51	22 x 1 x 51	---	24 x 1 x 51	---	102 x 0.75 x 110	22 x 1.25 x 110	24 x 1.25 x 110
234-300-234	108 x 0.75 x 54	24 x 1 x 54	---	24 x 1.25 x 54	---	108 x 0.75 x 120	24 x 1.25 x 120	24 x 1.25 x 120

Span, ft. End-Int.-End	SEGMENT C							SEGMENT D			Additional Footnotes
	WC (in. x in. x ft.)	TC1 (in. x in. x ft.)	TC2 (in. x in. x ft.)	TC3 (in. x in. x ft.)	BC1 (in. x in. x ft.)	BC2 (in. x in. x ft.)	BC3 (in. x in. x ft.)	WD (in. x in. x ft.)	TD (in. x in. x ft.)	BD (in. x in. x ft.)	
117-150-117	54 x 0.625 x 76	22 x 1 x 24	22 x 1.75 x 28	22 x 1 x 24	22 x 1.25 x 24	22 x 2.25 x 28	22 x 1.25 x 24	54 x 0.625 x 74	16 x 1 x 74	22 x 1.25 x 74	---
129-165-129	62 x 0.625 x 80	22 x 1 x 25	22 x 2 x 30	22 x 1 x 25	22 x 1.25 x 25	22 x 2.25 x 30	22 x 1.25 x 25	62 x 0.625 x 85	16 x 1 x 85	22 x 1.25 x 85	---
141-180-141	66 x 0.625 x 86	22 x 1 x 27	22 x 2 x 32	22 x 1 x 27	24 x 1.25 x 27	24 x 2.25 x 32	24 x 1.25 x 27	66 x 0.625 x 94	16 x 1 x 94	22 x 1.25 x 94	---
153-195-153	74 x 0.625 x 94	24 x 1 x 28	24 x 2 x 38	24 x 1 x 28	24 x 1.25 x 28	24 x 2.5 x 38	24 x 1.25 x 28	74 x 0.625 x 101	18 x 1 x 101	24 x 1 x 101	---
164-210-164	78 x 0.625 x 102	24 x 1.25 x 25	24 x 2.5 x 47	24 x 1.25 x 30	24 x 1.25 x 25	24 x 2.5 x 47	24 x 1.25 x 30	78 x 0.625 x 108	18 x 1 x 108	22 x 1.25 x 108	---
176-225-176	82 x 0.75 x 108	24 x 1.25 x 32	24 x 2.5 x 44	24 x 1.25 x 32	24 x 1.5 x 32	24 x 2.75 x 44	24 x 1.5 x 32	82 x 0.75 x 117	18 x 1 x 117	22 x 1.25 x 117	---
188-240-188	88 x 0.75 x 116	26 x 1.25 x 34	26 x 2.5 x 53	26 x 1.25 x 29	26 x 1.5 x 34	26 x 2.75 x 53	26 x 1.5 x 29	88 x 0.75 x 124	20 x 1 x 124	20 x 1.25 x 124	---
199-255-199	94 x 0.75 x 122	26 x 1.5 x 35	26 x 2.75 x 52	26 x 1.5 x 35	26 x 1.5 x 35	26 x 2.75 x 52	26 x 1.5 x 35	94 x 0.75 x 133	20 x 1 x 133	24 x 1 x 133	a
211-270-211	98 x 0.75 x 125	26 x 1.5 x 30	26 x 3 x 60	26 x 1.5 x 35	26 x 1.75 x 30	26 x 3 x 60	26 x 1.75 x 35	98 x 0.75 x 140	20 x 1 x 140	24 x 1 x 140	a
223-285-223	102 x 0.75 x 135	30 x 1.25 x 31	30 x 2.5 x 57	30 x 1.25 x 47	30 x 1.5 x 31	30 x 2.75 x 57	30 x 1.5 x 47	102 x 0.75 x 139	22 x 1 x 139	22 x 1.25 x 139	a
234-300-234	108 x 0.75 x 140	28 x 1.5 x 25	28 x 3 x 65	28 x 1.5 x 50	30 x 1.5 x 25	30 x 3 x 65	30 x 1.5 x 50	108 x 0.75 x 140	22 x 1 x 140	24 x 1 x 140	a

Note: All plates are A709 Gr 50W.

Footnotes:

a. AASHTO distribution factor equations were used with girder stiffness and / or span length exceeding AASHTO limits. Check with refined analysis.



THREE SPAN 150-300 FT
12 FT SPACING

Issued January 2025
Revision 0

Sheet 15 of 32

TRANSVERSE AND BEARING STIFFENERS							
Span, ft. End-Int.-End	Transverse Stiffener Size and Location, Distance From End support, Each Span				Bearing Stiffeners, End		Bearing Stiffeners, Piers
	Width in.	Thickness in.	Span 1 Location, ft.	Span 2 Location, ft.	Width in.	Thickness in.	Width in. Thickness in.
117-150-117	---	---	---	---	7.25	0.75	10.25 1
129-165-129	5.5	0.5	113.5	15.5, 149.5	7.25	0.75	10.25 1
141-180-141	6	0.5	108, 124.5	16.5, 33, 147, 163.5	8.25	0.75	10.25 1
153-195-153	6	0.5	116, 134.5	18.5, 37, 158, 176.5	8.25	0.75	11.25 1
164-210-164	7	0.5	9.75, 125, 144.5	19.5, 39, 171, 190.5	8.25	0.75	11.25 1
176-225-176	6	0.5	155.5	20.5, 204.5	8	0.75	11 1
188-240-188	6.5	0.5	166	22, 218	9	0.875	12 1.125
199-255-199	6.5	0.5	152, 175.5	23.5, 47, 208, 231.5	9	0.875	12 1.125
211-270-211	7.25	0.5	162, 186.5	24.5, 49, 221, 245.5	9	0.875	12 1.125
223-285-223	8	0.625	12.75, 172, 197.5	25.5, 51, 234, 259.5	10	0.875	14 1.25
234-300-234	9	0.625	13.5, 147, 174, 180, 207	27, 54, 246, 273	11	1	13 1.125

SHEAR STUD LAYOUT																					
Span, ft. End-Int.-End	Studs per row	Span 1										Span 2									
		Offset in.	Group 1			Group 2			Group 3			Offset in.	Group 1			Group 2			Group 3		
			Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.		Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.
117-150-117	4	0	27	8	18	90	12	90	3	36	9	0	15	24	30	90	12	90	15	24	30
129-165-129	4	0	13	6	6.5	91	12	91	10	36	30	0	13	30	32.5	100	12	100	13	30	32.5
141-180-141	4	0	14	6	7	99	12	99	11	36	33	0	14	30	35	110	12	110	14	30	35
153-195-153	4	0	115	12	115	7	42	24.5	3	48	12	0	13	36	39	117	12	117	13	36	39
164-210-164	4	0	123	12	123	10	48	40	---	---	---	0	12	42	42	126	12	126	12	42	42
176-225-176	4	0	132	12	132	10	48	40	---	---	---	6	11	48	44	136	12	136	11	48	44
188-240-188	4	0	19	12	19	92	16	122.67	11	48	44	0	12	48	48	144	12	144	12	48	48
199-255-199	4	0	30	12	30	80	18	120	12	48	48	30	12	48	48	154	12	154	12	48	48
211-270-211	4	0	32	12	32	85	18	127.5	12	48	48	6	13	48	52	109	18	163.5	13	48	52
223-285-223	4	0	23	12	23	97	18	145.5	13	48	52	12	14	48	56	114	18	171	14	48	56
234-300-234	4	0	12	12	12	102	18	153	17	48	68	36	14	48	56	121	18	181.5	14	48	56

CROSS-FRAME SPACING			
Span, ft. End-Int.-End	End Span	Interior Span	Type
117-150-117	4 @ 20.5 + 2 @ 17.5 = 117	2 @ 17.5 + 3 @ 26.66 + 2 @ 17.5 = 150	K-Frame
129-165-129	4 @ 23 + 2 @ 18.5 = 129	2 @ 18.5 + 4 @ 22.75 + 2 @ 18.5 = 165	K-Frame
141-180-141	4 @ 25.25 + 2 @ 20 = 141	2 @ 20 + 4 @ 25 + 2 @ 20 = 180	K-Frame
153-195-153	5 @ 22 + 2 @ 21.5 = 153	2 @ 21.5 + 4 @ 27.25 + 2 @ 21.5 = 195	K-Frame
164-210-164	5 @ 23 + 3 @ 16.33 = 164	3 @ 16.25 + 5 @ 22.5 + 3 @ 16.25 = 210	K-Frame
176-225-176	5 @ 25 + 3 @ 17 = 176	3 @ 16.66 + 5 @ 25 + 3 @ 16.66 = 225	K-Frame
188-240-188	5 @ 26.5 + 3 @ 18.5 = 188	3 @ 17.91 + 5 @ 26.5 + 3 @ 17.91 = 240	K-Frame
199-255-199	6 @ 23.5 + 3 @ 19.33 = 199	3 @ 18.75 + 5 @ 28.5 + 3 @ 18.75 = 255	K-Frame
211-270-211	6 @ 24.67 + 3 @ 21 = 211	3 @ 21 + 6 @ 24 + 3 @ 21 = 270	K-Frame
223-285-223	6 @ 26.5 + 3 @ 21.33 = 223	4 @ 17.5 + 6 @ 24.16 + 4 @ 17.5 = 285	K-Frame
234-300-234	8 @ 23.25 + 3 @ 16 = 234	4 @ 19 + 6 @ 24.66 + 4 @ 19 = 300	K-Frame

DEAD AND LIVE LOAD REACTIONS								
Span, ft. End-Int.-End	End Reaction				Pier 1 & 2 Reaction			
	DC kips	DW kips	Truck kips	Lane kips	DC kips	DW kips	Truck kips	Lane kips
117-150-117	88	10	100	40	322	36	173	106
129-165-129	98	11	101	44	358	40	177	117
141-180-141	107	12	101	48	393	43	181	128
153-195-153	116	13	102	52	432	47	184	139
164-210-164	123	14	102	55	472	51	186	149
176-225-176	136	15	103	59	517	54	187	159
188-240-188	145	16	103	63	561	58	188	171
199-255-199	154	17	103	66	601	62	189	181
211-270-211	165	18	103	70	646	65	190	192
223-285-223	178	19	104	74	684	69	190	202
234-300-234	187	20	104	78	731	73	191	213

Note: Truck and lane reactions include distribution factors, skew correction, and impact on the truck loading.

GIRDER WEIGHT					
Span, ft. End-Int.-End	Segment A tons	Segment B tons	Segment C tons	Segment D tons	Total tons
117-150-117	11.12	---	12.60	9.73	57.17
129-165-129	13.29	---	14.26	11.89	66.98
141-180-141	14.92	---	16.15	13.55	75.70
153-195-153	16.33	---	19.52	15.16	86.88
164-210-164	18.02	---	23.67	17.32	100.70
176-225-176	22.68	---	27.92	21.30	122.49
188-240-188	24.94	---	33.00	23.42	139.30
199-255-199	27.43	---	36.57	25.91	153.93
211-270-211	10.20	21.86	40.90	27.99	173.91
223-285-223	10.63	25.08	43.79	29.80	188.80
234-300-234	12.40	28.79	49.64	30.25	211.91

Note: Girder weight is total weight of web and flanges only measured between CL brg at each end. Does not include girder extension at end bearings, stiffeners, shear studs, bracing, or any other allowances.

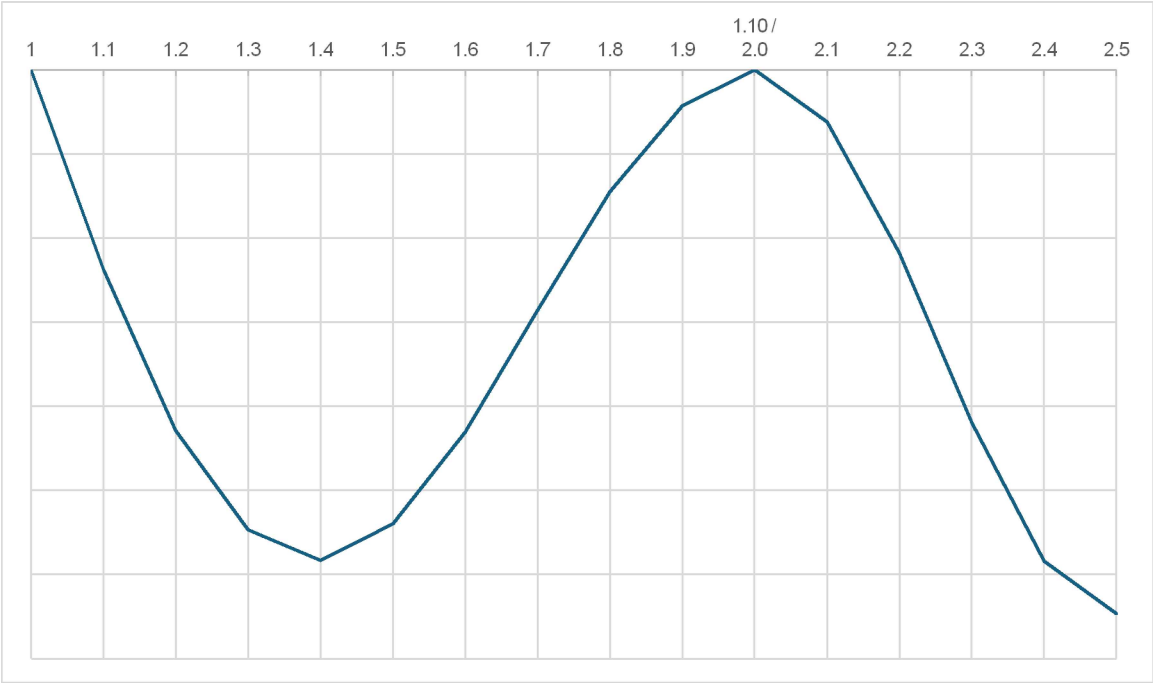


THREE SPAN 150-300 FT
12 FT SPACING

Issued January 2025
Revision 0

Sheet 16 of 32

DEAD LOAD DEFLECTIONS, SPAN 1 AND L/2 SPAN 2 SHOWN, SYMMETRIC																	
Span, ft. End-Int.-End	Span Tenth Points and Deflections, in. Span 1											Span Tenth Points and Deflections, in. Span 2					
	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	2.0	2.1	2.2	2.3	2.4	2.5
117-150-117 ft. span - steel only, in.	0.00	0.13	0.24	0.31	0.34	0.32	0.26	0.18	0.09	0.03	0.00	0.00	0.04	0.14	0.27	0.36	0.39
slab, in.	0.00	0.69	1.26	1.63	1.76	1.65	1.33	0.88	0.42	0.10	0.00	0.00	0.28	0.93	1.67	2.23	2.44
barrier rails, in.	0.00	0.06	0.12	0.15	0.16	0.15	0.13	0.08	0.04	0.01	0.00	0.00	0.03	0.11	0.18	0.24	0.26
117-150-117 ft. span - total, in.	0.00	0.88	1.62	2.10	2.27	2.12	1.72	1.15	0.56	0.14	0.00	0.00	0.35	1.17	2.12	2.83	3.09
129-165-129 ft. span - steel only, in.	0.00	0.15	0.28	0.36	0.39	0.37	0.31	0.21	0.11	0.03	0.00	0.00	0.04	0.16	0.30	0.40	0.44
slab, in.	0.00	0.75	1.37	1.78	1.92	1.80	1.45	0.96	0.46	0.12	0.00	0.00	0.28	0.96	1.75	2.35	2.57
barrier rails, in.	0.00	0.07	0.13	0.17	0.19	0.18	0.14	0.10	0.05	0.01	0.00	0.00	0.04	0.12	0.20	0.26	0.29
129-165-129 ft. span - total, in.	0.00	0.98	1.79	2.31	2.50	2.34	1.90	1.27	0.62	0.16	0.00	0.00	0.36	1.23	2.24	3.01	3.29
141-180-141 ft. span - steel only, in.	0.00	0.19	0.35	0.46	0.49	0.46	0.38	0.26	0.13	0.04	0.00	0.00	0.05	0.20	0.37	0.50	0.55
slab, in.	0.00	0.93	1.69	2.18	2.33	2.18	1.75	1.16	0.56	0.14	0.00	0.00	0.34	1.16	2.11	2.84	3.11
barrier rails, in.	0.00	0.09	0.17	0.22	0.24	0.22	0.18	0.12	0.06	0.01	0.00	0.00	0.04	0.14	0.24	0.32	0.34
141-180-141 ft. span - total, in.	0.00	1.21	2.21	2.85	3.07	2.86	2.31	1.54	0.76	0.19	0.00	0.00	0.43	1.49	2.72	3.66	4.00
153-195-153 ft. span - steel only, in.	0.00	0.22	0.40	0.51	0.55	0.52	0.42	0.29	0.15	0.04	0.00	0.00	0.05	0.21	0.40	0.54	0.60
slab, in.	0.00	1.05	1.92	2.48	2.66	2.47	1.98	1.32	0.65	0.18	0.00	0.00	0.29	1.10	2.07	2.81	3.09
barrier rails, in.	0.00	0.11	0.20	0.26	0.28	0.26	0.21	0.14	0.07	0.02	0.00	0.00	0.04	0.14	0.25	0.34	0.37
153-195-153 ft. span - total, in.	0.00	1.38	2.52	3.25	3.49	3.25	2.62	1.75	0.87	0.24	0.00	0.00	0.39	1.45	2.72	3.69	4.05
164-210-164 ft. span - steel only, in.	0.00	0.25	0.46	0.59	0.64	0.60	0.49	0.33	0.18	0.06	0.00	0.00	0.05	0.22	0.43	0.59	0.65
slab, in.	0.00	1.18	2.15	2.75	2.94	2.73	2.20	1.48	0.76	0.24	0.00	0.00	0.27	1.05	2.05	2.83	3.13
barrier rails, in.	0.00	0.13	0.23	0.30	0.32	0.30	0.24	0.16	0.08	0.02	0.00	0.00	0.05	0.15	0.28	0.37	0.40
164-210-164 ft. span - total, in.	0.00	1.56	2.84	3.64	3.90	3.63	2.92	1.97	1.02	0.32	0.00	0.00	0.37	1.42	2.75	3.79	4.18
176-225-176 ft. span - steel only, in.	0.00	0.33	0.59	0.76	0.81	0.75	0.61	0.42	0.21	0.06	0.00	0.00	0.08	0.31	0.59	0.81	0.89
slab, in.	0.00	1.30	2.35	2.99	3.15	2.90	2.31	1.53	0.75	0.20	0.00	0.00	0.38	1.37	2.56	3.48	3.82
barrier rails, in.	0.00	0.15	0.27	0.34	0.36	0.34	0.27	0.18	0.09	0.02	0.00	0.00	0.06	0.18	0.33	0.44	0.48
176-225-176 ft. span - total, in.	0.00	1.77	3.21	4.08	4.31	3.99	3.20	2.13	1.05	0.29	0.00	0.00	0.52	1.87	3.48	4.72	5.19
188-240-188 ft. span - steel only, in.	0.00	0.36	0.65	0.83	0.89	0.83	0.66	0.44	0.22	0.06	0.00	0.00	0.11	0.35	0.64	0.88	0.96
slab, in.	0.00	1.41	2.56	3.28	3.50	3.23	2.57	1.69	0.83	0.22	0.00	0.00	0.39	1.31	2.46	3.38	3.73
barrier rails, in.	0.00	0.16	0.29	0.38	0.41	0.38	0.30	0.20	0.10	0.02	0.00	0.00	0.06	0.19	0.34	0.46	0.50
188-240-188 ft. span - total, in.	0.00	1.92	3.50	4.49	4.79	4.43	3.53	2.33	1.14	0.30	0.00	0.00	0.56	1.85	3.45	4.72	5.19
199-255-199 ft. span - steel only, in.	0.00	0.40	0.73	0.94	1.01	0.93	0.75	0.50	0.25	0.07	0.00	0.00	0.11	0.37	0.69	0.95	1.04
slab, in.	0.00	1.50	2.73	3.51	3.74	3.44	2.73	1.79	0.87	0.23	0.00	0.00	0.42	1.41	2.64	3.64	4.02
barrier rails, in.	0.00	0.18	0.32	0.41	0.44	0.41	0.33	0.22	0.11	0.03	0.00	0.00	0.07	0.21	0.38	0.51	0.56
199-255-199 ft. span - total, in.	0.00	2.08	3.78	4.86	5.18	4.78	3.80	2.51	1.23	0.33	0.00	0.00	0.60	1.99	3.71	5.10	5.62
211-270-211 ft. span - steel only, in.	0.00	0.46	0.83	1.07	1.15	1.07	0.87	0.58	0.30	0.09	0.00	0.00	0.11	0.40	0.75	1.04	1.15
slab, in.	0.00	1.57	2.84	3.61	3.83	3.53	2.79	1.81	0.86	0.21	0.00	0.00	0.50	1.60	2.99	4.11	4.53
barrier rails, in.	0.00	0.19	0.35	0.45	0.48	0.44	0.36	0.23	0.11	0.03	0.00	0.00	0.08	0.24	0.42	0.57	0.62
211-270-211 ft. span - total, in.	0.00	2.23	4.02	5.12	5.46	5.04	4.01	2.63	1.27	0.33	0.00	0.00	0.69	2.24	4.17	5.72	6.31
223-285-223 ft. span - steel only, in.	0.00	0.54	0.98	1.25	1.35	1.26	1.02	0.69	0.36	0.11	0.00	0.00	0.13	0.51	0.97	1.33	1.47
slab, in.	0.00	1.80	3.25	4.14	4.42	4.10	3.28	2.18	1.07	0.30	0.00	0.00	0.49	1.83	3.46	4.74	5.21
barrier rails, in.	0.00	0.22	0.41	0.52	0.56	0.52	0.42	0.28	0.14	0.04	0.00	0.00	0.08	0.26	0.47	0.64	0.70
223-285-223 ft. span - total, in.	0.00	2.56	4.63	5.91	6.33	5.89	4.73	3.15	1.57	0.44	0.00	0.00	0.70	2.60	4.90	6.70	7.38
234-300-234 ft. span - steel only, in.	0.00	0.57	1.04	1.33	1.44	1.34	1.08	0.73	0.37	0.11	0.00	0.00	0.13	0.51	0.99	1.37	1.52
slab, in.	0.00	1.75	3.17	4.05	4.32	3.98	3.14	2.04	0.96	0.23	0.00	0.00	0.57	1.93	3.63	4.98	5.49
barrier rails, in.	0.00	0.22	0.41	0.53	0.57	0.53	0.42	0.28	0.13	0.03	0.00	0.00	0.09	0.28	0.51	0.69	0.75
234-300-234 ft. span - total, in.	0.00	2.54	4.61	5.91	6.32	5.85	4.65	3.04	1.46	0.37	0.00	0.00	0.79	2.72	5.13	7.04	7.76



DEFLECTION VERSUS SPAN TENTH POINT, SYMMETRIC ABOUT L/2 SPAN 2

All Girders

Deflection Assumptions

"Steel Only" = self weight of girders

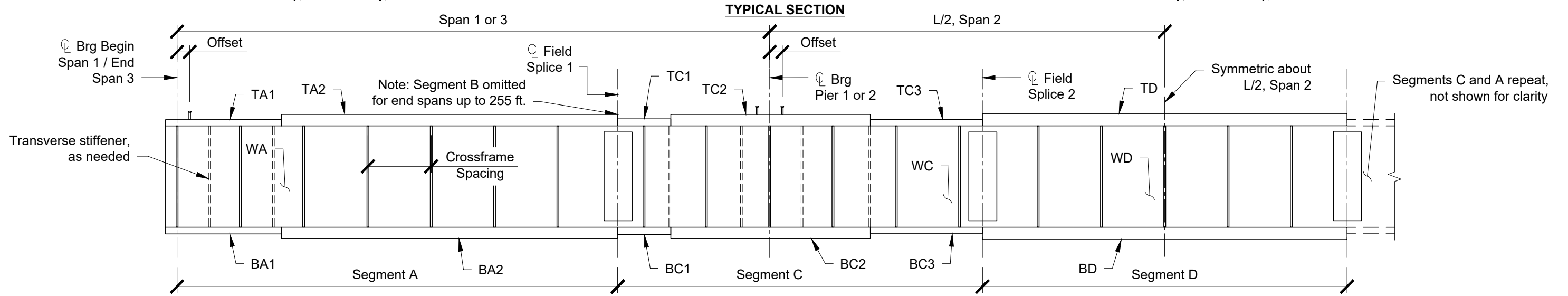
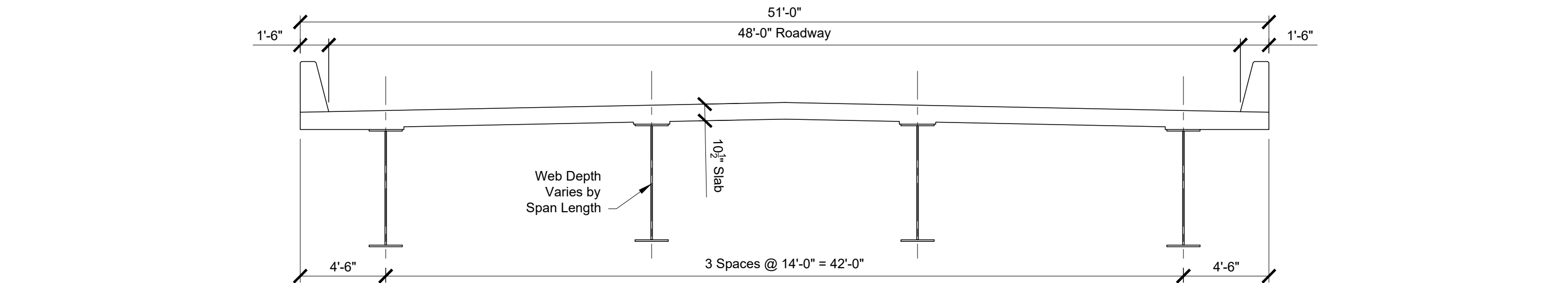
"Slab" = deflection due to user-input non composite uniform dead load (slab, haunch, allowance for bracing)

"Barrier Rails" = deflection due to barrier rail loading distributed evenly to exterior and first interior girder.

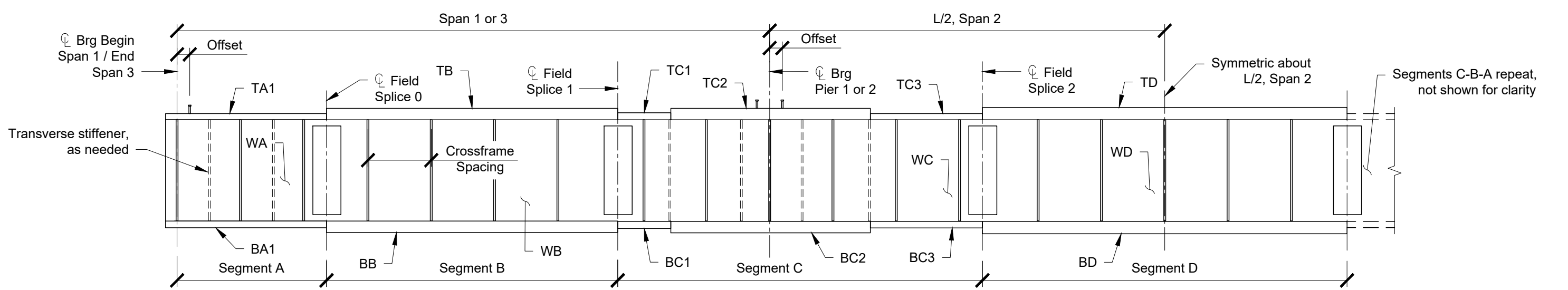


THREE SPAN 150-300 FT
12 FT SPACING

Issued January 2025
Revision 0



GIRDER ELEVATION INTERIOR SPANS 150-255 FT



GIRDER ELEVATION INTERIOR SPANS 270-300 FT



**THREE SPAN 150-300 FT
14 FT SPACING**

Issued January 2025
Revision 0

Sheet 18 of 32

Span, ft. End-Int.-End	SEGMENT A					SEGMENT B (as needed)		
	WA (in. x in. x ft.)	TA1 (in. x in. x ft.)	TA2 (in. x in. x ft.)	BA1 (in. x in. x ft.)	BA2 (in. x in. x ft.)	WB (in. x in. x ft.)	TB (in. x in. x ft.)	BB (in. x in. x ft.)
117-150-117	55 x 0.625 x 79	---	18 x 1 x 79	---	22 x 1.75 x 79	---	---	---
129-165-129	60 x 0.625 x 89	---	22 x 1 x 89	---	22 x 1.75 x 89	---	---	---
141-180-141	66 x 0.625 x 98	---	22 x 1 x 98	22 x 1.5 x 49	22 x 1.75 x 49	---	---	---
153-195-153	72 x 0.625 x 106	---	22 x 1 x 106	24 x 1.25 x 53	24 x 1.5 x 53	---	---	---
164-210-164	76 x 0.625 x 113	---	22 x 1 x 113	24 x 1.25 x 57	24 x 1.75 x 56	---	---	---
176-225-176	84 x 0.625 x 122	---	22 x 1 x 122	24 x 1 x 61	24 x 1.5 x 61	---	---	---
188-240-188	88 x 0.75 x 130	---	24 x 1 x 130	24 x 1 x 65	24 x 1.5 x 65	---	---	---
199-255-199	92 x 0.75 x 138	---	24 x 1 x 138	24 x 1.25 x 69	24 x 1.5 x 69	---	---	---
211-270-211	98 x 0.75 x 51	20 x 1 x 51	---	24 x 1.5 x 51	---	98 x 0.75 x 100	24 x 1.25 x 100	24 x 1.5 x 100
223-285-223	102 x 0.75 x 51	22 x 1 x 51	---	24 x 1.5 x 51	---	102 x 0.75 x 110	24 x 1.25 x 110	24 x 1.5 x 110
234-300-234	110 x 0.75 x 54	24 x 1 x 54	---	26 x 1.25 x 54	---	110 x 0.875 x 120	24 x 1.25 x 120	26 x 1.25 x 120

Span, ft. End-Int.-End	SEGMENT C							SEGMENT D			Additional Footnotes
	WC (in. x in. x ft.)	TC1 (in. x in. x ft.)	TC2 (in. x in. x ft.)	TC3 (in. x in. x ft.)	BC1 (in. x in. x ft.)	BC2 (in. x in. x ft.)	BC3 (in. x in. x ft.)	WD (in. x in. x ft.)	TD (in. x in. x ft.)	BD (in. x in. x ft.)	
117-150-117	55 x 0.625 x 76	22 x 1.25 x 24	22 x 2 x 28	22 x 1.25 x 24	22 x 1.5 x 24	22 x 2.75 x 28	22 x 1.5 x 24	55 x 0.625 x 74	18 x 1 x 74	20 x 1.5 x 74	---
129-165-129	60 x 0.625 x 80	22 x 1.25 x 25	22 x 2.25 x 30	22 x 1.25 x 25	22 x 1.5 x 25	22 x 2.75 x 30	22 x 1.5 x 25	60 x 0.625 x 85	16 x 1 x 85	22 x 1.5 x 85	---
141-180-141	66 x 0.625 x 86	22 x 1.25 x 21	22 x 2.5 x 44	22 x 1.25 x 21	22 x 1.5 x 21	22 x 3 x 44	22 x 1.5 x 21	66 x 0.625 x 94	16 x 1 x 94	22 x 1.5 x 94	---
153-195-153	72 x 0.625 x 94	24 x 1.25 x 23	24 x 2.5 x 48	24 x 1.25 x 23	28 x 1.25 x 23	28 x 2.5 x 48	28 x 1.25 x 23	72 x 0.625 x 101	18 x 1 x 101	24 x 1.25 x 101	---
164-210-164	76 x 0.625 x 102	24 x 1.5 x 30	24 x 2.75 x 42	24 x 1.5 x 30	28 x 1.5 x 30	28 x 2.75 x 42	28 x 1.5 x 30	76 x 0.625 x 108	18 x 1 x 108	26 x 1.25 x 108	---
176-225-176	84 x 0.625 x 108	24 x 1.5 x 32	24 x 3 x 44	24 x 1.5 x 32	28 x 1.5 x 32	28 x 2.75 x 44	28 x 1.5 x 32	84 x 0.625 x 117	18 x 1 x 117	26 x 1.25 x 117	---
188-240-188	88 x 0.75 x 116	28 x 1.5 x 29	28 x 2.75 x 58	28 x 1.5 x 29	28 x 1.5 x 29	28 x 3 x 58	28 x 1.5 x 29	88 x 0.75 x 124	20 x 1 x 124	26 x 1.25 x 124	---
199-255-199	92 x 0.75 x 122	30 x 1.5 x 30	30 x 2.75 x 62	30 x 1.5 x 30	30 x 1.5 x 30	30 x 3 x 62	30 x 1.5 x 30	92 x 0.75 x 133	20 x 1 x 133	26 x 1.25 x 133	a
211-270-211	98 x 0.75 x 125	30 x 1.5 x 25	30 x 3 x 70	30 x 1.5 x 30	32 x 1.5 x 25	32 x 3 x 70	32 x 1.5 x 30	98 x 0.75 x 140	20 x 1 x 140	26 x 1.25 x 140	a
223-285-223	102 x 0.875 x 135	30 x 1.25 x 31	30 x 2 x 62 ▲	30 x 1.25 x 42	34 x 1.5 x 31	34 x 2 x 62 ▲	34 x 1.5 x 42	102 x 0.75 x 139	20 x 1 x 139	26 x 1.25 x 139	a
234-300-234	110 x 0.875 x 140	30 x 1.5 x 30 ▲	30 x 2 x 60 ▲	30 x 1.5 x 50 ▲	36 x 1.5 x 30 ▲	36 x 2 x 60 ▲	36 x 1.5 x 50 ▲	110 x 0.75 x 140	20 x 1 x 140	26 x 1.25 x 140	a

Note: All plates are A709 Gr 50W except those noted with a ▲ are Gr HPS 70W.

Footnotes:

a. AASHTO distribution factor equations were used with girder stiffness and / or span length exceeding AASHTO limits. Check with refined analysis.



THREE SPAN 150-300 FT
14 FT SPACING

Issued January 2025
Revision 0

Sheet 19 of 32

TRANSVERSE AND BEARING STIFFENERS							
Span, ft. End-Int.-End	Transverse Stiffener Size and Location, Distance From End support, Each Span				Bearing Stiffeners, End		Bearing Stiffeners, Piers
	Width in.	Thickness in.	Span 1 Location, ft.	Span 2 Location, ft.	Width in.	Thickness in.	Width in. Thickness in.
117-150-117	5.5	0.5	103.25	13.75, 136.25	7.25	0.75	10.25 1
129-165-129	5.5	0.5	99, 114	15, 30, 135, 150	10.25	1	10.25 1.125
141-180-141	6	0.5	108, 124.5	16.5, 33, 147, 163.5	10.25	1	10.25 1.25
153-195-153	7	0.5	9, 118, 136	17, 35, 160, 178	10.25	1	11.25 1.125
164-210-164	7.5	0.5	9.5, 28.5, 94, 113, 129.25, 148.25	15.75, 34.75, 51, 70, 140, 159, 175.25, 194.25	10.25	1	11.25 1.25
176-225-176	9	0.625	10.5, 31.5, 101, 122, 138.75, 159.75	16.25, 37.25, 54, 75, 150, 171, 187.75, 208.75	10.25	1	11.25 1.25
188-240-188	7	0.5	144, 166	22, 44, 196, 218	11	1	13 1.125
199-255-199	8	0.625	153, 176	23, 46, 209, 232	11	1	14 1.25
211-270-211	8.75	0.625	12, 127, 151, 163, 187	24, 49, 221, 245	9	0.875	14 1.25
223-285-223	8.5	0.625	12.75, 38.25, 135.5, 161, 197.5	25.5, 73, 98.5, 186.5, 212, 259.5	10	0.875	14 1.25
234-300-234	9	0.625	13.75, 41.25, 179, 206.5	27.5, 55, 80, 107.5, 192.5, 220, 245, 272.5	11	1	14 1.25

SHEAR STUD LAYOUT																					
Span, ft. End-Int.-End	Studs per row	Span 1										Span 2									
		Offset in.	Group 1			Group 2			Group 3			Offset in.	Group 1			Group 2			Group 3		
			Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.		Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.	Spaces	Pitch in.	Length ft.
117-150-117	4	0	176	6	88	14	24	28	---	---	---	0	20	18	30	180	6	90	20	18	30
129-165-129	4	0	12	8	8	90	12	90	13	28	30.33	12	16	24	32	120	10	100	16	24	32
141-180-141	4	0	43	6	21.5	85	12	85	13	30		12	22	24	44	90	12	90	22	24	44
153-195-153	4	0	31	6	15.5	100	12	100	12	36	36	6	15	30	37.5	119	12	199	15	30	37.5
164-210-164	4	0	25	8	16.67	107	12	107	12	40	40	12	12	36	36	136	12	136	12	36	36
176-225-176	4	0	18	6	9	123	12	123	12	42	42	0	15	36	45	135	12	135	15	36	45
188-240-188	4	0	141	12	141	11	48	44	---	---	---	12	11	48	44	150	12	150	1	48	44
199-255-199	4	0	150	12	150	12	48	48	---	---	---	36	12	48	48	153	12	153	12	48	48
211-270-211	4	0	159	12	159	13	48	52	---	---	---	24	13	48	52	162	12	162	13	48	52
223-285-223	4	0	23	12	23	109	16	145.33	13	48	52	6	14	48	56	172	12	172	14	48	56
234-300-234	4	0	35	12	35	94	18	141	14	48	56	---	15	48	60	180	12	180	15	48	60

CROSS-FRAME SPACING			
Span, ft. End-Int.-End	End Span	Interior Span	Type
117-150-117	4 @ 20.5 + 2 @ 17.5 = 117	2 @ 17.5 + 3 @ 26.66 + 2 @ 17.5 = 150	Diaphragm
129-165-129	4 @ 23 + 2 @ 18.5 = 129	2 @ 18.5 + 4 @ 22.75 + 2 @ 18.5 = 165	Diaphragm
141-180-141	4 @ 25.25 + 2 @ 20 = 141	2 @ 20 + 4 @ 25 + 2 @ 20 = 180	K-Frame
153-195-153	5 @ 22 + 2 @ 21.5 = 153	2 @ 21.5 + 4 @ 27.25 + 2 @ 21.5 = 195	K-Frame
164-210-164	5 @ 23 + 3 @ 16.33 = 164	3 @ 16.25 + 5 @ 22.5 + 3 @ 16.25 = 210	K-Frame
176-225-176	5 @ 25 + 3 @ 17 = 176	3 @ 16.66 + 5 @ 25 + 3 @ 16.66 = 225	K-Frame
188-240-188	5 @ 26.5 + 3 @ 18.5 = 188	3 @ 17.91 + 5 @ 26.5 + 3 @ 17.91 = 240	K-Frame
199-255-199	6 @ 23.5 + 3 @ 19.33 = 199	3 @ 18.75 + 5 @ 28.5 + 3 @ 18.75 = 255	K-Frame
211-270-211	6 @ 24.67 + 3 @ 21 = 211	3 @ 21 + 6 @ 24 + 3 @ 21 = 270	K-Frame
223-285-223	6 @ 26.5 + 3 @ 21.33 = 223	4 @ 17.5 + 6 @ 24.16 + 4 @ 17.5 = 285	K-Frame
234-300-234	8 @ 23.25 + 3 @ 16 = 234	4 @ 19 + 6 @ 24.66 + 4 @ 19 = 300	K-Frame

DEAD AND LIVE LOAD REACTIONS								
Span, ft. End-Int.-End	End Reaction				Pier 1 & 2 Reaction			
	DC kips	DW kips	Truck kips	Lane kips	DC kips	DW kips	Truck kips	Lane kips
117-150-117	108	12	112	44	397	42	194	119
129-165-129	121	13	113	49	440	46	199	131
141-180-141	130	14	113	53	487	51	203	144
153-195-153	141	15	114	57	533	55	206	156
164-210-164	152	16	114	62	578	59	208	167
176-225-176	162	18	115	66	624	63	209	179
188-240-188	176	19	115	70	685	68	211	191
199-255-199	187	20	115	74	734	72	212	203
211-270-211	201	21	116	78	788	76	213	215
223-285-223	217	22	116	83	820	80	212	225
234-300-234	230	23	116	87	875	84	213	237

Note: Truck and lane reactions include distribution factors, skew correction, and impact on the truck loading.

GIRDER WEIGHT					
Span, ft. End-Int.-End	Segment A tons	Segment B tons	Segment C tons	Segment D tons	Total tons
117-150-117	12.21	---	14.36	10.37	63.53
129-165-129	14.84	---	15.87	12.51	73.92
141-180-141	16.51	---	19.42	14.43	86.28
153-195-153	18.03	---	22.90	15.98	97.85
164-210-164	20.27	---	26.42	18.01	111.40
176-225-176	21.69	---	29.29	20.50	122.47
188-240-188	26.54	---	37.20	25.00	152.49
199-255-199	29.58	---	41.71	27.49	170.07
211-270-211	11.24	23.73	46.49	30.01	192.93
223-285-223	11.67	26.67	44.99	30.51	197.17
234-300-234	12.77	32.41	49.88	32.16	222.27

Note: Girder weight is total weight of web and flanges only measured between CL brg at each end. Does not include girder extension at end bearings, stiffeners, shear studs, bracing, or any other allowances.

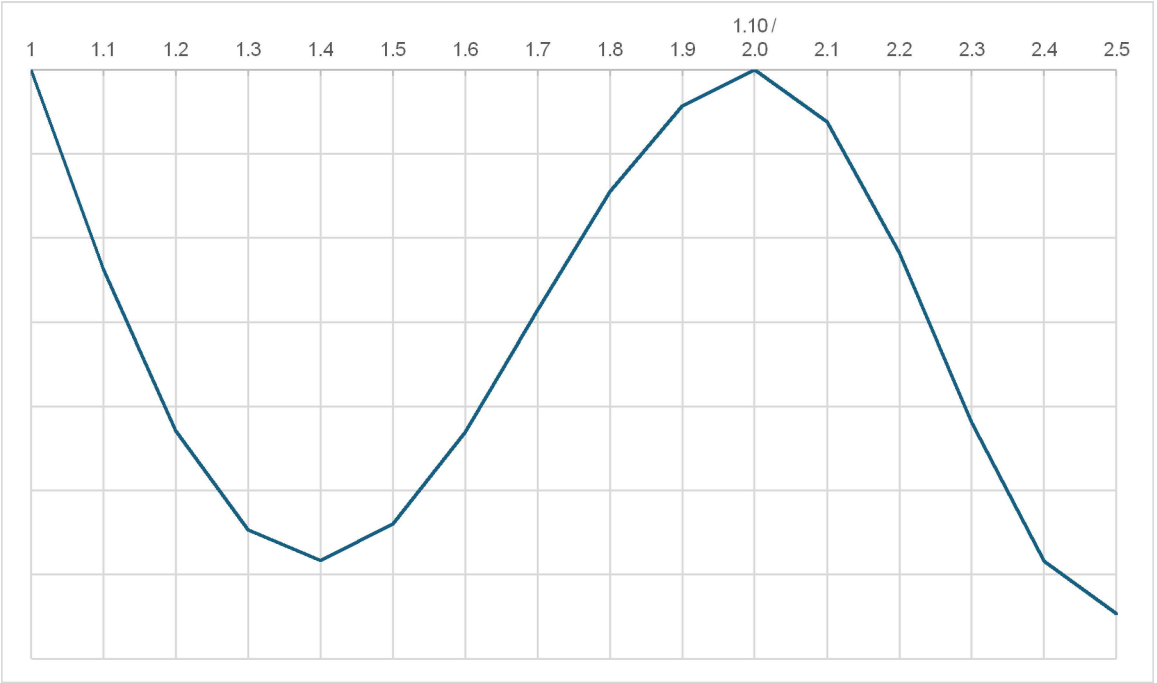


THREE SPAN 150-300 FT 14 FT SPACING

Issued January 2025
Revision 0

Sheet 20 of 32

DEAD LOAD DEFLECTIONS, SPAN 1 AND L/2 SPAN 2 SHOWN, SYMMETRIC																	
Span, ft. End-Int.-End	Span Tenth Points and Deflections, in. Span 1											Span Tenth Points and Deflections, in. Span 2					
	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	2.0	2.1	2.2	2.3	2.4	2.5
117-150-117 ft. span - steel only, in.	0.00	0.13	0.23	0.30	0.33	0.31	0.25	0.17	0.09	0.03	0.00	0.00	0.03	0.12	0.23	0.31	0.35
slab, in.	0.00	0.76	1.39	1.79	1.93	1.81	1.45	0.96	0.46	0.11	0.00	0.00	0.30	1.00	1.81	2.43	2.66
barrier rails, in.	0.00	0.05	0.09	0.12	0.13	0.12	0.10	0.07	0.03	0.01	0.00	0.00	0.03	0.08	0.14	0.19	0.21
117-150-117 ft. span - total, in.	0.00	0.93	1.71	2.21	2.39	2.23	1.80	1.20	0.59	0.15	0.00	0.00	0.36	1.20	2.19	2.94	3.21
129-165-129 ft. span - steel only, in.	0.00	0.15	0.28	0.37	0.40	0.38	0.32	0.22	0.12	0.04	0.00	0.00	0.04	0.15	0.28	0.39	0.43
slab, in.	0.00	0.85	1.56	2.01	2.17	2.02	1.62	1.06	0.49	0.11	0.00	0.00	0.38	1.24	2.23	2.99	3.27
barrier rails, in.	0.00	0.06	0.11	0.15	0.16	0.15	0.12	0.08	0.04	0.01	0.00	0.00	0.03	0.10	0.17	0.23	0.25
129-165-129 ft. span - total, in.	0.00	1.07	1.96	2.53	2.73	2.55	2.06	1.36	0.65	0.15	0.00	0.00	0.45	1.48	2.69	3.60	3.94
141-180-141 ft. span - steel only, in.	0.00	0.18	0.33	0.43	0.47	0.44	0.36	0.25	0.13	0.05	0.00	0.00	0.04	0.15	0.29	0.40	0.45
slab, in.	0.00	1.00	1.82	2.33	2.49	2.31	1.84	1.21	0.59	0.16	0.00	0.00	0.36	1.16	2.15	2.94	3.23
barrier rails, in.	0.00	0.08	0.14	0.18	0.19	0.18	0.15	0.10	0.05	0.01	0.00	0.00	0.03	0.10	0.18	0.24	0.27
141-180-141 ft. span - total, in.	0.00	1.26	2.29	2.94	3.15	2.93	2.35	1.56	0.78	0.21	0.00	0.00	0.43	1.41	2.63	3.58	3.94
153-195-153 ft. span - steel only, in.	0.00	0.21	0.39	0.51	0.55	0.52	0.42	0.29	0.16	0.05	0.00	0.00	0.04	0.16	0.33	0.46	0.51
slab, in.	0.00	1.18	2.15	2.76	2.94	2.72	2.18	1.44	0.72	0.21	0.00	0.00	0.35	1.20	2.26	3.11	3.43
barrier rails, in.	0.00	0.09	0.17	0.22	0.23	0.22	0.18	0.12	0.06	0.02	0.00	0.00	0.04	0.12	0.21	0.28	0.30
153-195-153 ft. span - total, in.	0.00	1.49	2.71	3.48	3.72	3.46	2.78	1.85	0.94	0.27	0.00	0.00	0.43	1.48	2.80	3.85	4.24
164-210-164 ft. span - steel only, in.	0.00	0.26	0.47	0.61	0.65	0.61	0.50	0.34	0.18	0.06	0.00	0.00	0.05	0.22	0.42	0.58	0.64
slab, in.	0.00	1.34	2.42	3.09	3.27	3.01	2.39	1.56	0.74	0.18	0.00	0.00	0.44	1.48	2.74	3.75	4.12
barrier rails, in.	0.00	0.11	0.19	0.24	0.26	0.24	0.19	0.13	0.06	0.01	0.00	0.00	0.05	0.14	0.25	0.34	0.37
164-210-164 ft. span - total, in.	0.00	1.70	3.08	3.94	4.18	3.86	3.08	2.02	0.98	0.25	0.00	0.00	0.54	1.83	3.41	4.66	5.13
176-225-176 ft. span - steel only, in.	0.00	0.28	0.52	0.66	0.71	0.66	0.54	0.36	0.19	0.06	0.00	0.00	0.06	0.26	0.49	0.68	0.75
slab, in.	0.00	1.54	2.80	3.56	3.77	3.48	2.78	1.84	0.91	0.26	0.00	0.00	0.38	1.46	2.79	3.84	4.23
barrier rails, in.	0.00	0.13	0.23	0.29	0.31	0.29	0.23	0.16	0.08	0.02	0.00	0.00	0.04	0.15	0.26	0.35	0.38
176-225-176 ft. span - total, in.	0.00	1.95	3.54	4.52	4.79	4.43	3.55	2.36	1.18	0.33	0.00	0.00	0.48	1.86	3.54	4.87	5.37
188-240-188 ft. span - steel only, in.	0.00	0.35	0.63	0.81	0.86	0.80	0.65	0.44	0.23	0.08	0.00	0.00	0.08	0.28	0.54	0.76	0.84
slab, in.	0.00	1.64	2.97	3.78	4.00	3.69	2.95	1.97	1.01	0.31	0.00	0.00	0.37	1.35	2.62	3.65	4.04
barrier rails, in.	0.00	0.14	0.25	0.32	0.34	0.32	0.26	0.17	0.09	0.03	0.00	0.00	0.05	0.15	0.27	0.36	0.40
188-240-188 ft. span - total, in.	0.00	2.12	3.85	4.91	5.21	4.81	3.85	2.58	1.33	0.41	0.00	0.00	0.49	1.77	3.43	4.77	5.28
199-255-199 ft. span - steel only, in.	0.00	0.39	0.72	0.92	0.99	0.92	0.75	0.51	0.27	0.09	0.00	0.00	0.08	0.31	0.62	0.86	0.95
slab, in.	0.00	1.75	3.17	4.06	4.32	3.99	3.18	2.11	1.07	0.32	0.00	0.00	0.42	1.53	2.96	4.13	4.57
barrier rails, in.	0.00	0.15	0.27	0.35	0.37	0.35	0.28	0.19	0.09	0.03	0.00	0.00	0.05	0.17	0.31	0.42	0.46
199-255-199 ft. span - total, in.	0.00	2.29	4.16	5.33	5.68	5.26	4.20	2.80	1.43	0.44	0.00	0.00	0.56	2.01	3.88	5.41	5.98
211-270-211 ft. span - steel only, in.	0.00	0.44	0.80	1.03	1.11	1.04	0.84	0.58	0.31	0.10	0.00	0.00	0.08	0.32	0.64	0.91	1.01
slab, in.	0.00	1.78	3.20	4.07	4.33	3.99	3.17	2.08	1.04	0.30	0.00	0.00	0.48	1.67	3.22	4.48	4.96
barrier rails, in.	0.00	0.16	0.29	0.37	0.40	0.37	0.30	0.20	0.10	0.03	0.00	0.00	0.06	0.18	0.33	0.45	0.49
211-270-211 ft. span - total, in.	0.00	2.37	4.29	5.47	5.83	5.40	4.31	2.86	1.45	0.43	0.00	0.00	0.62	2.18	4.19	5.84	6.46
223-285-223 ft. span - steel only, in.	0.00	0.53	0.96	1.24	1.34	1.26	1.02	0.70	0.35	0.10	0.00	0.00	0.20	0.62	1.10	1.48	1.62
slab, in.	0.00	2.11	3.82	4.89	5.23	4.86	3.89	2.57	1.23	0.28	0.00	0.00	0.93	2.79	4.95	6.64	7.26
barrier rails, in.	0.00	0.19	0.34	0.44	0.48	0.45	0.37	0.25	0.12	0.03	0.00	0.00	0.09	0.27	0.46	0.61	0.67
223-285-223 ft. span - total, in.	0.00	2.82	5.12	6.57	7.05	6.57	5.28	3.51	1.71	0.40	0.00	0.00	1.21	3.67	6.52	8.73	9.55
234-300-234 ft. span - steel only, in.	0.00	0.59	1.08	1.39	1.50	1.42	1.16	0.80	0.42	0.12	0.00	0.00	0.19	0.64	1.16	1.57	1.72
slab, in.	0.00	2.13	3.85	4.92	5.27	4.89	3.92	2.59	1.26	0.29	0.00	0.00	0.93	2.86	5.08	6.81	7.45
barrier rails, in.	0.00	0.20	0.36	0.46	0.49	0.46	0.38	0.25	0.13	0.03	0.00	0.00	0.09	0.27	0.48	0.63	0.69
234-300-234 ft. span - total, in.	0.00	2.91	5.29	6.77	7.27	6.77	5.45	3.64	1.80	0.44	0.00	0.00	1.22	3.77	6.72	9.01	9.87



DEFLECTION VERSUS SPAN TENTH POINT, SYMMETRIC ABOUT L/2 SPAN 2

All Girders

Deflection Assumptions

"Steel Only" = self weight of girders

"Slab" = deflection due to user-input non composite uniform dead load (slab, haunch, allowance for bracing)

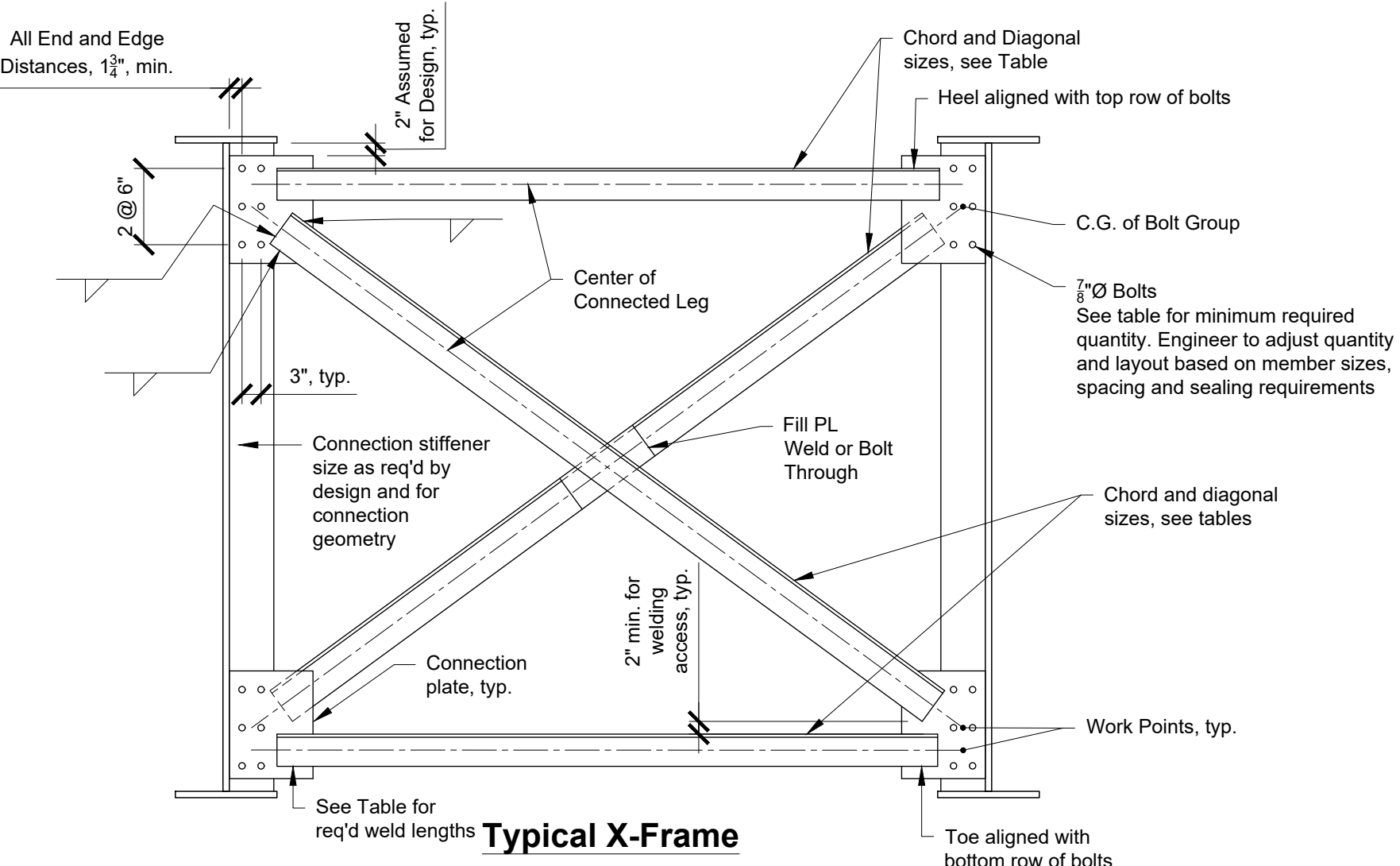
"Barrier Rails" = deflection due to barrier rail loading distributed evenly to exterior and first interior girder.



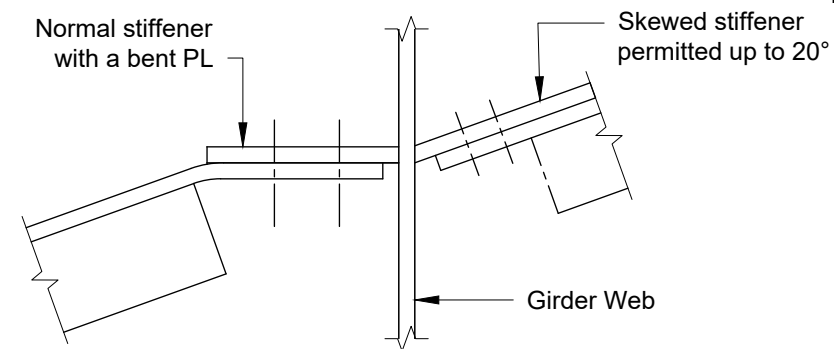
THREE SPAN 150-300 FT
14 FT SPACING

Issued January 2025
Revision 0

Sheet 21 of 32



Typical X-Frame



Connection Options

Not to Scale

- Notes:
1. All bolts for bent plate diaphragms 7/8 in. diameter ASTM F3125 Grade A325 bolts assumed in single shear with threads in the shear plane.
 2. All bolts for K and X cross-frames 7/8 in. diameter ASTM F3125 Grade A325 bolts assumed in single shear with threads in the shear plane.
 3. All welds 5/16 in. fillet welds. The minimum heel and toe dimensions provided meet load and eccentricity requirements. The toe may be lengthened to equal the heel dimension provided in the tables; the resulting eccentricity was considered in design. Other weld geometries may be needed for dimensional or sealing requirements and are to be designed.
 4. Member and connection designs based on stability, construction, and wind forces.
 5. General layout and details follow industry preferences. Provide details in accordance with owner preferences and modify these details accordingly.
 6. Determine cross-frame forces for specific designs and proportion members and connections accordingly. Bolt connection layout, quantity and spacing provided on this sheet are approximate based on member loads and several representative geometries. Deck cross-slope was not considered in developing the details. Given a wide range of beam depths and spacing, the geometry of each connection was not fully studied. A scale drawing of the connection including chosen work points should be used for layout of the members, final bolt patterns, and determination of connection plate sizes. The selection of work points, member axes and orientation shown represent one acceptable approach. Engineers may choose alternate work point locations and overall connection geometries that consider the effects of eccentricity on the welded and bolted connections.

CROSS-FRAME DETAILS				
Beam Spacing, ft.	Span, ft. End-Int.-End	Type	Chord	Diagonal
8	117-150-117 through 164-210-164	K-Frame	L5X5X3/8	L5X5X3/8
	176-225-176 through 234-300-234	X-Frame	L5X5X3/8	L6x6x3/8
10	117-150-117 through 199-255-199	K-Frame	L5X5X3/8	L5X5X3/8
	211-270-211 through 234-300-234	X-Frame	L5X5X3/8	L6X6X3/8
12	All spans	K-Frame	L6X6X3/8	L5X5X3/8
14	141-180-141 through 234-300-234	K-Frame	L8X6X1/2	L5X5X3/8

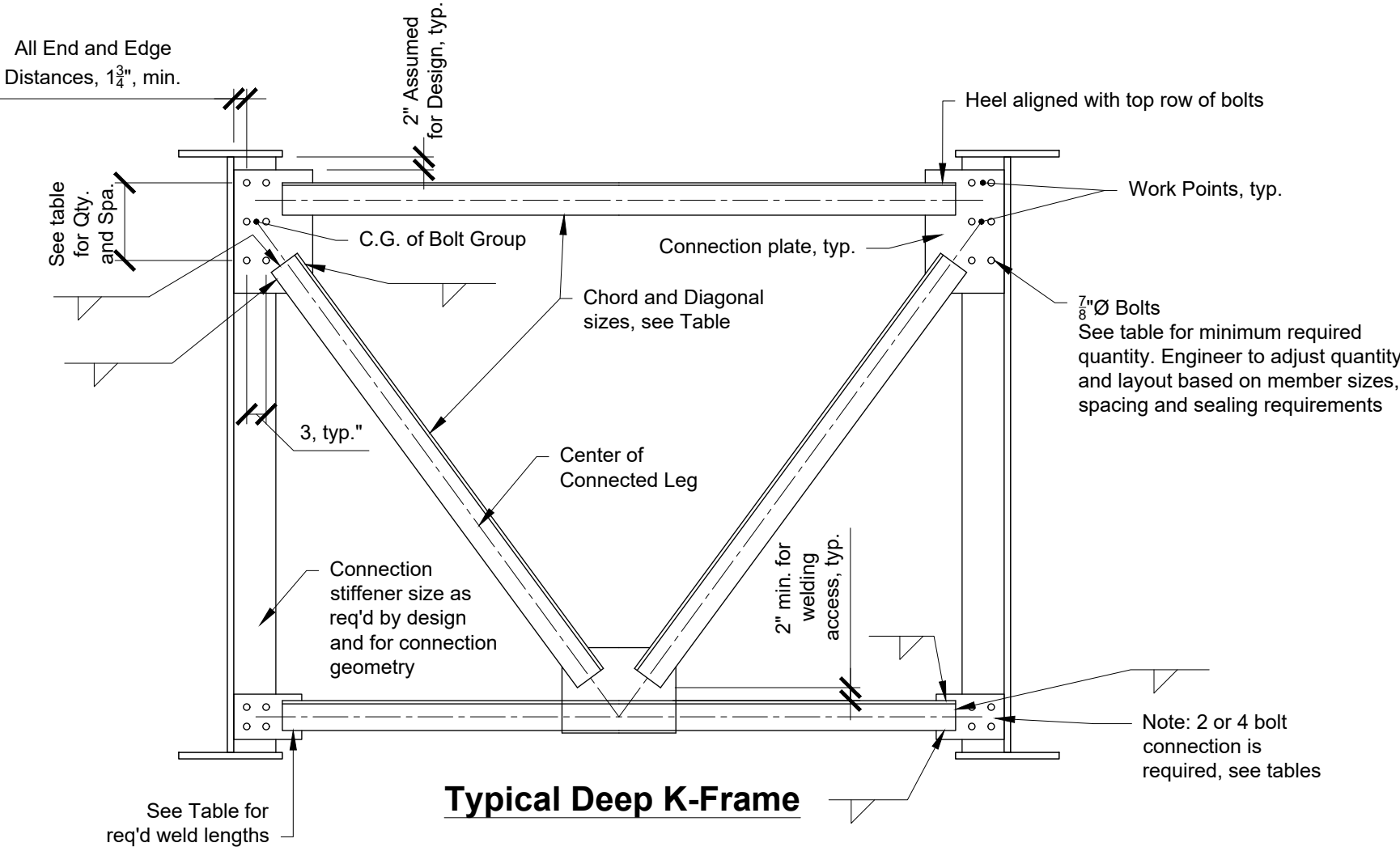
CROSS-FRAME WELD DETAILS		
Angle Size	Toe Length	Heel Length
L5x5x3/8	2 in. min. See notes regarding toe weld length	4 in.
L6x6x3/8		4 in.
L8x6x1/2		4

CROSS-FRAME BOLTED CONNECTION DETAILS					
Beam Spacing, ft.	Type	Top Connection		Bottom Connection	
		Total Num Bolts	Vertical Spacing	Total Num Bolts	Vertical Spacing
8	K-Frame	6	6 in.	2	3 in.
	X-Frame	6	6 in.	6	6 in.
10	K-Frame	6	6 in.	2	3 in.
	X-Frame	6	6 in.	6	6 in.
12	K-Frame	6	6 in.	2	3 in.
14	K-Frame	8	4.75	4	4.75

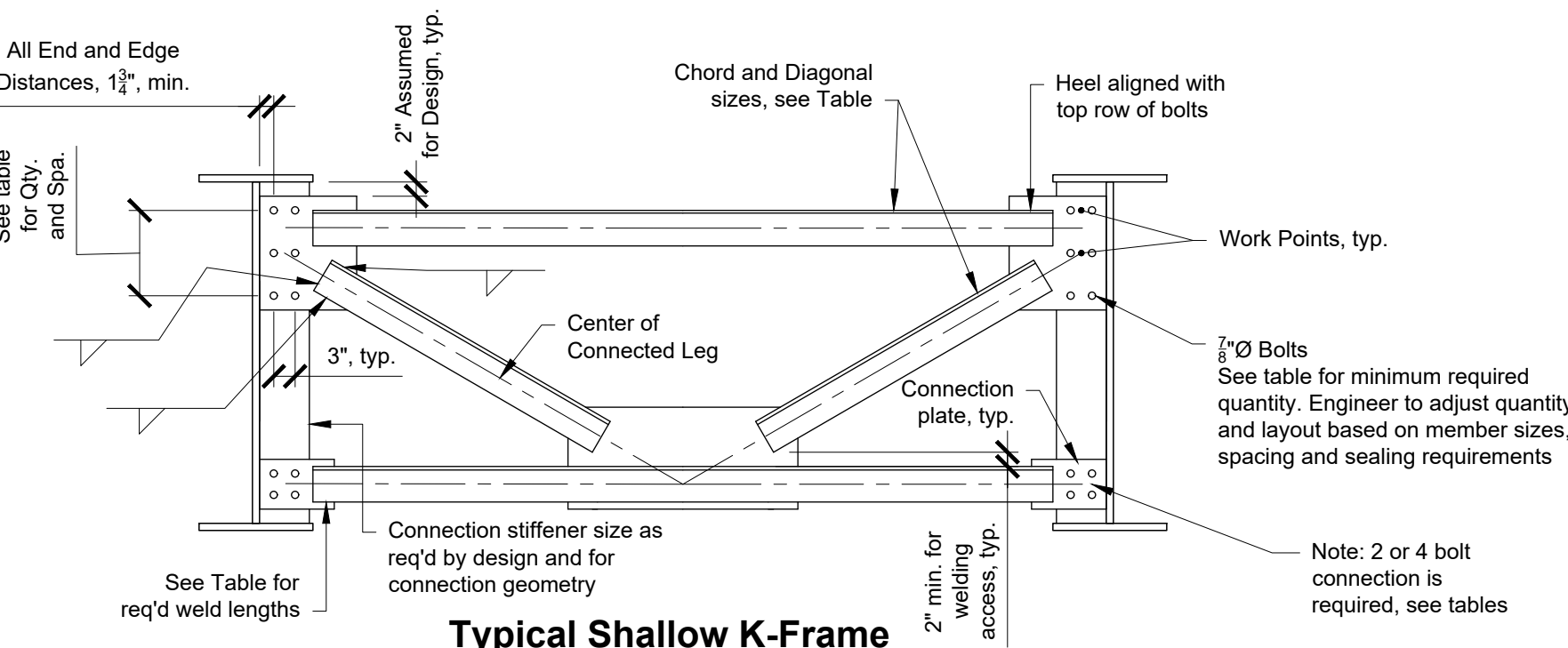
CROSS-FRAME & DIAPHRAGM DETAILS 1

Issued January 2025
Revision 0

Sheet 22 of 32



Typical Deep K-Frame



Typical Shallow K-Frame

CROSS-FRAME DETAILS				
Beam Spacing, ft.	Span, ft. End-Int.-End	Type	Chord	Diagonal
8	117-150-117 through 164-210-164	K-Frame	L5X5X3/8	L5X5X3/8
	176-225-176 through 234-300-234	X-Frame	L5X5X3/8	L6x6x3/8
10	117-150-117 through 199-255-199	K-Frame	L5X5X3/8	L5X5X3/8
	211-270-211 through 234-300-234	X-Frame	L5X5X3/8	L6X6X3/8
12	All spans	K-Frame	L6X6X3/8	L5X5X3/8
14	141-180-141 through 234-300-234	K-Frame	L8X6X1/2	L5X5X3/8

CROSS-FRAME WELD DETAILS		
Angle Size	Toe Length	Heel Length
L5x5x3/8	2 in. min. See notes regarding toe weld length	4 in.
L6x6x3/8		4 in.
L8x6x1/2		4

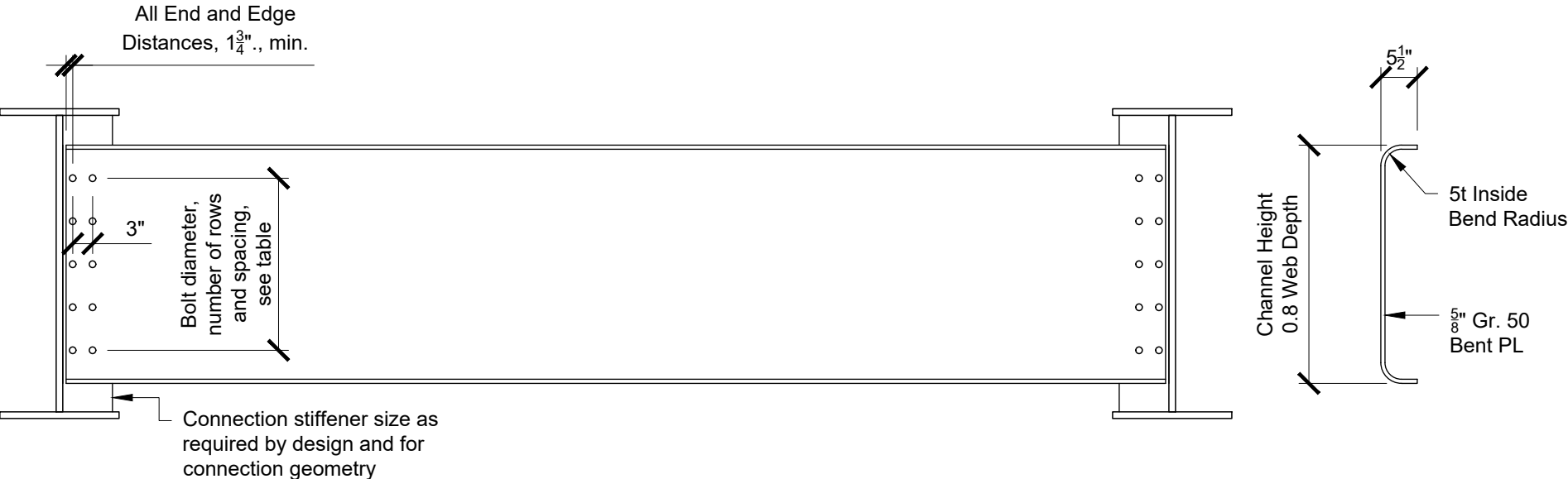
CROSS-FRAME BOLTED CONNECTION DETAILS					
Beam Spacing, ft.	Type	Top Connection		Bottom Connection	
		Total Num Bolts	Vertical Spacing	Total Num Bolts	Vertical Spacing
8	K-Frame	6	6 in.	2	3 in.
	X-Frame	6	6 in.	6	6 in.
10	K-Frame	6	6 in.	2	3 in.
	X-Frame	6	6 in.	6	6 in.
12	K-Frame	6	6 in.	2	3 in.
14	K-Frame	8	4.75	4	4.75

Notes:
1. For general notes, see **Cross-Frame & Diaphragm Details 1**.



CROSS-FRAME & DIAPHRAGM DETAILS 2

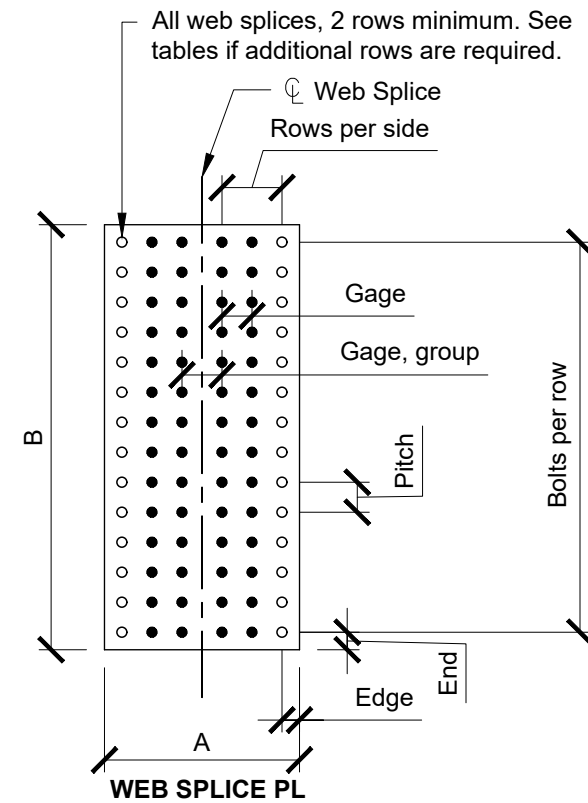
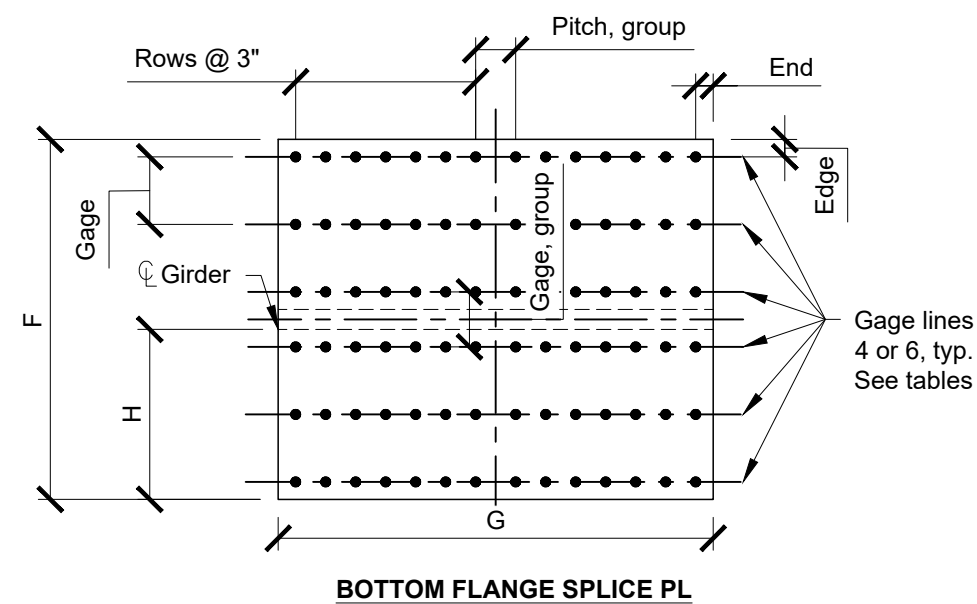
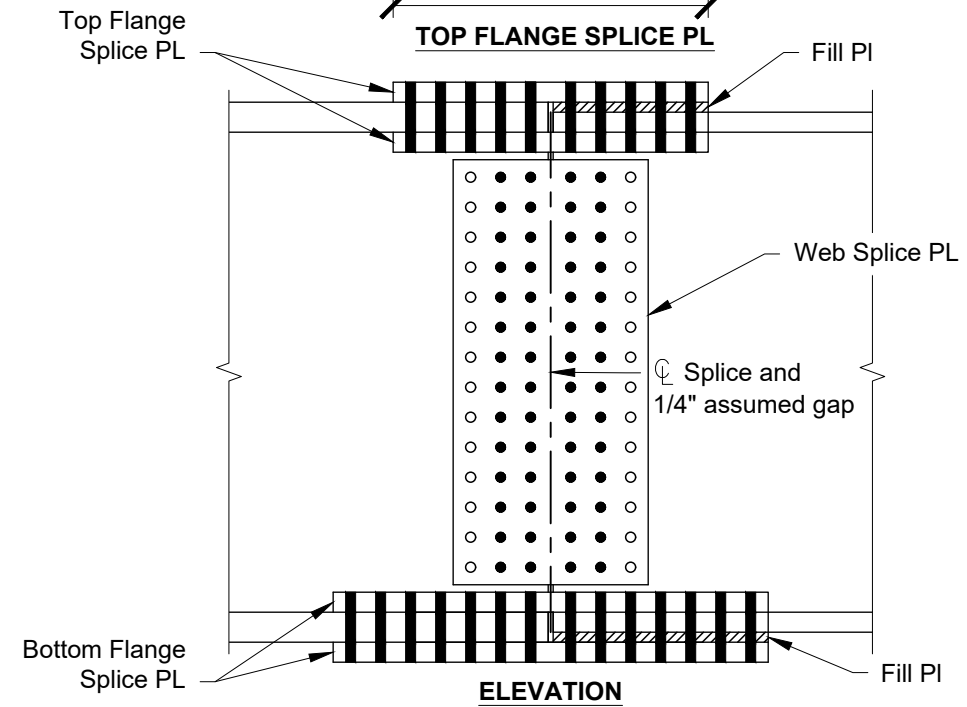
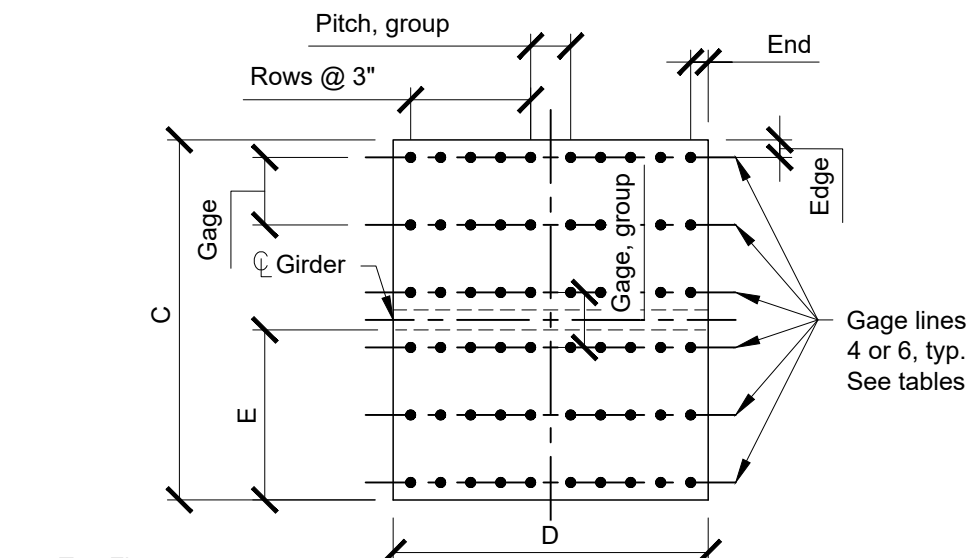
Issued January 2025
Revision 0



Bent Plate Diaphragm Typical Details

SOLID DIAPHRAGM DETAILS					
Beam Spacing, ft.	Span, ft. End-Int.-End	Web Depth, in.	Channel Height, in.	Rows and Spacing	Bolt Diameter, in
14	117-150-117	55	44	6 @ 6.5 in.	7/8
	129-165-129	60	48	7 @ 6.25 in.	

Notes:
1. For general notes, see **Cross-Frame & Diaphragm Details 1.**



NOTES:

All bolted field splices designed using NSBA Splice Version 03_15. Design assumptions listed below. For bolt quantity and plate dimensions, see Sheets **Bolted Field Splice Dimensions 1 - 4**.

1. Bolts F3125 Grade A325, Type 3 weathering, 1 in. diameter in 1.125 in. diameter holes. All plates A709 Grade 50W.
2. Threads excluded from flange shear planes. Threads included in web shear planes.
3. Class B surface condition for slip resistance.
4. For continuous spans in which "Splice 0" is used to control the field section lengths, a large moment must be carried by the web (AASHTO LRFD 6.13.6.1.3c). If the combined tension due to the bottom flange force plus the web force, H_w , exceeds the compression capacity of the slab, these splices are designed as noncomposite and noted in the design tables.
5. Top and bottom flange bolt group dimension, "Gage, Group" exceeds the 7 in. maximum spacing for sealing for some splices (AASHTO LRFD 6.13.2.6.2). This is due to girder tension flange net section requirements at the splice, the choice of 1 in. diameter bolts, and enforced symmetry requirements for the inner flange splice plates. The engineer may choose to accept the proposed designs, or redesign the splice. Solutions could include using asymmetric inner plates, staggered bolts, or smaller diameter fasteners. If additional and smaller diameter bolts are used to decrease the "Gage, Group" dimension, check the net section. See AASHTO LRFD 6.10.1.8.



BOLTED FIELD SPLICE LAYOUT

Issued January 2025
Revision 0

Sheet 25 of 32

Spacing-Span	Web Splice Plates				Top Flange Plates, Outer				Top Flange Plates, Inner, 2 req'd.			Bottom Flange Plates, Outer				Bottom Flange Plates, Inner, 2 req'd.			Web Bolts					Top Flange Bolts					Bottom Flange Bolts					Composite Note
	Width, A	Length, B	Thk.	Edge / End Distance	Width, C	Length, D	Thk.	Edge / End Distance	Width, E	Length, D	Thk.	Width, F	Length, G	Thk.	Edge / End Distance	Width, H	Length, G	Thk.	Bolts per Row	Rows per Side	Pitch	Gage	Gage, group	Num Rows Ea Side	Pitch, group	Gage Lines	Gage	Gage, group	Num Rows Ea Side	Pitch, group	Gage Lines	Gage	Gage, group	
8-117-150 Splice 1	12.25	49	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	16	24.25	0.75	1.5 / 1.5	7	24.25	0.75	9	2	5.75	3	3.25	3	3.25	4	4	5	4	3.25	4	4	5	Composite
8-117-150 Splice 2	12.25	49	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	16	18.25	0.75	1.5 / 1.5	7	18.25	0.75	9	2	5.75	3	3.25	3	3.25	4	4	5	3	3.25	4	4	5	Composite
8-129-165 Splice 1	12.25	54.75	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	16	24.25	0.75	1.5 / 1.5	7	24.25	0.75	10	2	5.75	3	3.25	3	3.25	4	4	5	4	3.25	4	4	5	Composite
8-129-165 Splice 2	12.25	54.75	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	16	18.25	0.75	1.5 / 1.5	7	18.25	0.75	10	2	5.75	3	3.25	3	3.25	4	4	5	3	3.25	4	4	5	Composite
8-141-180 Splice 1	12.25	60.5	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	16	24.25	0.75	1.5 / 1.5	7	24.25	0.75	11	2	5.75	3	3.25	3	3.25	4	4	5	4	3.25	4	4	5	Composite
8-141-180 Splice 2	12.25	60.5	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	16	18.25	0.75	1.5 / 1.5	7	18.25	0.75	11	2	5.75	3	3.25	3	3.25	4	4	5	3	3.25	4	4	5	Composite
8-153-195 Splice 1	12.25	66.25	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	18	18.25	0.75	1.5 / 1.5	8	18.25	0.75	12	2	5.75	3	3.25	3	3.25	4	5	5	3	3.25	4	5	5	Composite
8-153-195 Splice 2	12.25	66.25	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	18	18.25	0.75	1.5 / 1.5	8	18.25	0.75	12	2	5.75	3	3.25	3	3.25	4	5	5	3	3.25	4	5	5	Composite
8-164-210 Splice 1	12.25	70.5	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	18	18.25	0.75	1.5 / 1.5	8	18.25	0.75	13	2	5.625	3	3.25	3	3.25	4	5	5	3	3.25	4	5	5	Composite
8-164-210 Splice 2	12.25	70.5	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	18	18.25	0.75	1.5 / 1.5	8	18.25	0.75	13	2	5.625	3	3.25	3	3.25	4	5	5	3	3.25	4	5	5	Composite
8-176-225 Splice 1	12.25	76.125	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	18	18.25	0.75	1.5 / 1.5	8	18.25	0.75	14	2	5.625	3	3.25	3	3.25	4	5	5	3	3.25	4	5	5	Composite
8-176-225 Splice 2	12.25	76.125	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	18	18.25	0.75	1.5 / 1.5	8	18.25	0.75	14	2	5.625	3	3.25	3	3.25	4	5	5	3	3.25	4	5	5	Composite
8-188-240 Splice 1	12.25	81.75	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	15	2	5.625	3	3.25	4	3.25	4	6	5	4	3.25	4	6	5	Composite
8-188-240 Splice 2	12.25	81.75	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	15	2	5.625	3	3.25	4	3.25	4	6	5	4	3.25	4	6	5	Composite
8-199-255 Splice 1	12.25	85.5	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	16	2	5.5	3	3.25	4	3.25	4	6	5	4	3.25	4	6	5	Composite
8-199-255 Splice 2	12.25	85.5	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	16	2	5.5	3	3.25	4	3.25	4	6	5	4	3.25	4	6	5	Composite
8-211-270 Splice 0	12.25	91.125	0.5	1.5 / 1.5	20	18.25	0.625	1.5 / 1.5	9	18.25	0.625	20	18.25	0.75	1.5 / 1.5	9	18.25	0.75	16	2	5.875	3	3.25	3	3.25	4	6	5	3	3.25	4	6	5	Composite
8-211-270 Splice 1	12.25	91.125	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	16	2	5.875	3	3.25	4	3.25	4	6	5	4	3.25	4	6	5	Composite
8-211-270 Splice 2	12.25	91.125	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	16	2	5.875	3	3.25	4	3.25	4	6	5	4	3.25	4	6	5	Composite
8-223-285 Splice 0	12.25	97	0.5	1.5 / 1.5	22	24.25	0.625	1.5 / 1.5	9.5	24.25	0.625	22	24.25	0.75	1.5 / 1.5	9.5	24.25	0.75	17	2	5.875	3	3.25	4	3.25	4	6.5	6	4	3.25	4	6.5	6	Composite
8-223-285 Splice 1	12.25	97	0.5	1.5 / 1.5	22	24.25	0.625	1.5 / 1.5	9.5	24.25	0.625	22	24.25	0.75	1.5 / 1.5	9.5	24.25	0.75	17	2	5.875	3	3.25	4	3.25	4	6.5	6	4	3.25	4	6.5	6	Composite
8-223-285 Splice 2	12.25	97	0.5	1.5 / 1.5	22	24.25	0.625	1.5 / 1.5	9.5	24.25	0.625	22	24.25	0.75	1.5 / 1.5	9.5	24.25	0.75	17	2	5.875	3	3.25	4	3.25	4	6.5	6	4	3.25	4	6.5	6	Composite
8-234-300 Splice 0	12.25	102.875	0.5	1.5 / 1.5	22	24.25	0.625	1.5 / 1.5	9.5	24.25	0.625	22	24.25	0.75	1.5 / 1.5	9.5	24.25	0.75	18	2	5.875	3	3.25	4	3.25	4	6.5	6	4	3.25	4	6.5	6	Composite
8-234-300 Splice 1	12.25	102.875	0.5	1.5 / 1.5	24	18.25	0.625	1.5 / 1.5	11	18.25	0.625	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	18	2	5.875	3	3.25	3	3.25	6	4	5	3	3.25	6	4	5	Composite
8-234-300 Splice 2	12.25	102.875	0.5	1.5 / 1.5	22	18.25	0.625	1.5 / 1.5	10	18.25	0.625	22	18.25	0.75	1.5 / 1.5	10	18.25	0.75	18	2	5.875	3	3.25	3	3.25	6	3.5	5	3	3.25	6	3.5	5	Composite

8 FT SPACING - 3 SPAN

NOTES:

1. All dimensions / spacing shown in tables in inch units.



BOLTED FIELD SPLICE DIMENSIONS 1

Issued January 2025
Revision 0

Spacing-Span	Web Splice Plates				Top Flange Plates, Outer				Top Flange Plates, Inner, 2 req'd.			Bottom Flange Plates, Outer				Bottom Flange Plates, Inner, 2 req'd.			Web Bolts					Top Flange Bolts					Bottom Flange Bolts					Composite Note
	Width, A	Length, B	Thk.	Edge / End Distance	Width, C	Length, D	Thk.	Edge / End Distance	Width, E	Length, D	Thk.	Width, F	Length, G	Thk.	Edge / End Distance	Width, H	Length, G	Thk.	Bolts per Row	Rows per Side	Pitch	Gage	Gage, group	Num Rows Ea Side	Pitch, group	Gage Lines	Gage	Gage, group	Num Rows Ea Side	Pitch, group	Gage Lines	Gage	Gage, group	
10-117-150 Splice 1	12.25	49	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	18	36.25	1	1.5 / 1.5	8	36.25	1	9	2	5.75	3	3.25	3	3.25	4	4	5	6	3.25	4	5	5	Composite
10-117-150 Splice 2	12.25	50	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	18	30.25	0.875	1.5 / 1.5	8	30.25	0.875	9	2	5.875	3	3.25	3	3.25	4	4	5	5	3.25	4	5	5	Composite
10-129-165 Splice 1	12.25	54.75	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	18	36.25	1	1.5 / 1.5	8	36.25	1	10	2	5.75	3	3.25	3	3.25	4	4	5	6	3.25	4	5	5	Composite
10-129-165 Splice 2	12.25	54.75	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	18	30.25	0.875	1.5 / 1.5	8	30.25	0.875	10	2	5.75	3	3.25	3	3.25	4	4	5	5	3.25	4	5	5	Composite
10-141-180 Splice 1	12.25	60.5	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	20	30.25	0.75	1.5 / 1.5	9	30.25	0.75	11	2	5.75	3	3.25	3	3.25	4	4	5	5	3.25	4	6	5	Composite
10-141-180 Splice 2	12.25	60.5	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	11	2	5.75	3	3.25	3	3.25	4	4	5	4	3.25	4	6	5	Composite
10-153-195 Splice 1	12.25	66.25	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	18	30.25	0.875	1.5 / 1.5	8	30.25	0.875	12	2	5.75	3	3.25	3	3.25	4	5	5	5	3.25	4	5	5	Composite
10-153-195 Splice 2	12.25	66.25	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	18	30.25	0.875	1.5 / 1.5	8	30.25	0.875	12	2	5.75	3	3.25	3	3.25	4	5	5	5	3.25	4	5	5	Composite
10-164-210 Splice 1	12.25	70.5	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	20	30.25	0.875	1.5 / 1.5	9	30.25	0.875	13	2	5.625	3	3.25	3	3.25	4	5	5	5	3.25	4	6	5	Composite
10-164-210 Splice 2	12.25	70.5	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	13	2	5.625	3	3.25	3	3.25	4	5	5	4	3.25	4	6	5	Composite
10-176-225 Splice 1	12.25	77.75	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	20	30.25	0.875	1.5 / 1.5	9	30.25	0.875	14	2	5.75	3	3.25	3	3.25	4	5	5	5	3.25	4	6	5	Composite
10-176-225 Splice 2	12.25	77.75	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	22	24.25	0.75	1.5 / 1.5	10	24.25	0.75	14	2	5.75	3	3.25	3	3.25	4	5	5	4	3.25	4	7	5	Composite
10-188-240 Splice 1	12.25	81.75	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	30.25	0.875	1.5 / 1.5	9	30.25	0.875	15	2	5.625	3	3.25	4	3.25	4	6	5	5	3.25	4	6	5	Composite
10-188-240 Splice 2	12.25	81.75	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	15	2	5.625	3	3.25	4	3.25	4	6	5	4	3.25	4	6	5	Composite
10-199-255 Splice 1	12.25	87	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	30.25	0.875	1.5 / 1.5	9	30.25	0.875	15	2	6	3	3.25	4	3.25	4	6	5	5	3.25	4	6	5	Composite
10-199-255 Splice 2	12.25	87.375	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	16	2	5.625	3	3.25	4	3.25	4	6	5	4	3.25	4	6	5	Composite
10-211-270 Splice 0	12.25	91.125	0.5	1.5 / 1.5	20	18.25	0.625	1.5 / 1.5	9	18.25	0.625	22	24.25	0.75	1.5 / 1.5	10	24.25	0.75	16	2	5.875	3	3.25	3	3.25	4	6	5	4	3.25	4	7	5	Composite
10-211-270 Splice 1	12.25	91.125	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	22	30.25	0.75	1.5 / 1.5	10	30.25	0.75	16	2	5.875	3	3.25	4	3.25	4	6	5	5	3.25	4	7	5	Composite
10-211-270 Splice 2	12.25	91.125	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	16	2	5.875	3	3.25	4	3.25	4	6	5	4	3.25	4	6	5	Composite
10-223-285 Splice 0	12.25	97	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	8.5	24.25	0.625	22	24.25	0.625	1.5 / 1.5	9.5	24.25	0.625	17	2	5.875	3	3.25	4	3.25	4	5.5	6	4	3.25	4	6.5	6	Composite
10-223-285 Splice 1	12.25	97	0.5	1.5 / 1.5	22	24.25	0.75	1.5 / 1.5	10	24.25	0.75	22	30.25	0.75	1.5 / 1.5	10	30.25	0.75	17	2	5.875	3	3.25	4	3.25	4	7	5	5	3.25	4	7	5	Composite
10-223-285 Splice 2	12.25	97	0.5	1.5 / 1.5	22	24.25	0.75	1.5 / 1.5	10	24.25	0.75	22	30.25	0.75	1.5 / 1.5	10	30.25	0.75	17	2	5.875	3	3.25	4	3.25	4	7	5	5	3.25	4	7	5	Composite
10-234-300 Splice 0	12.25	102	0.5	1.5 / 1.5	24	24.25	0.75	1.5 / 1.5	10	24.25	0.75	24	30.25	0.75	1.5 / 1.5	10	30.25	0.75	19	2	5.5	3	3.25	4	3.25	4	7	7	5	3.25	4	7	7	Composite
10-234-300 Splice 1	12.25	102.875	0.5	1.5 / 1.5	24	18.25	0.625	1.5 / 1.5	11	18.25	0.625	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	18	2	5.875	3	3.25	3	3.25	6	4	5	3	3.25	6	4	5	Composite
10-234-300 Splice 2	12.25	102.875	0.5	1.5 / 1.5	22	18.25	0.625	1.5 / 1.5	10	18.25	0.625	22	18.25	0.75	1.5 / 1.5	10	18.25	0.75	18	2	5.875	3	3.25	3	3.25	6	3.5	5	3	3.25	6	3.5	5	Composite

10 FT SPACING - 3 SPAN

NOTES:

1. All dimensions / spacing shown in tables in inch units.



BOLTED FIELD SPLICE DIMENSIONS 2


Issued January 2025
Revision 0

Spacing-Span	Web Splice Plates				Top Flange Plates, Outer				Top Flange Plates, Inner, 2 req'd.			Bottom Flange Plates, Outer				Bottom Flange Plates, Inner, 2 req'd.			Web Bolts					Top Flange Bolts					Bottom Flange Bolts					Composite Note
	Width, A	Length, B	Thk.	Edge / End Distance	Width, C	Length, D	Thk.	Edge / End Distance	Width, E	Length, D	Thk.	Width, F	Length, G	Thk.	Edge / End Distance	Width, H	Length, G	Thk.	Bolts per Row	Rows per Side	Pitch	Gage	Gage, group	Num Rows Ea Side	Pitch, group	Gage Lines	Gage	Gage, group	Num Rows Ea Side	Pitch, group	Gage Lines	Gage	Gage, group	
12-117-150 Splice 1	12.25	49	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	22	30.25	0.75	1.5 / 1.5	10	30.25	0.75	9	2	5.75	3	3.25	3	3.25	4	4	5	5	3.25	4	7	5	Composite
12-117-150 Splice 2	12.25	49	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	22	30.25	0.75	1.5 / 1.5	10	30.25	0.75	9	2	5.75	3	3.25	3	3.25	4	4	5	5	3.25	4	7	5	Composite
12-129-165 Splice 1	12.25	56.75	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	22	30.25	0.75	1.5 / 1.5	10	30.25	0.75	11	2	5.375	3	3.25	3	3.25	4	4	5	5	3.25	4	7	5	Composite
12-129-165 Splice 2	12.25	56.75	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	22	24.25	0.75	1.5 / 1.5	10	24.25	0.75	11	2	5.375	3	3.25	3	3.25	4	4	5	4	3.25	4	7	5	Composite
12-141-180 Splice 1	12.25	60.5	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	22	30.25	0.875	1.5 / 1.5	10	30.25	0.875	11	2	5.75	3	3.25	3	3.25	4	5	5	5	3.25	4	7	5	Composite
12-141-180 Splice 2	12.25	60.5	0.5	1.5 / 1.5	16	18.25	0.625	1.5 / 1.5	7	18.25	0.625	22	24.25	0.875	1.5 / 1.5	10	24.25	0.875	11	2	5.75	3	3.25	3	3.25	4	4	5	4	3.25	4	7	5	Composite
12-153-195 Splice 1	12.25	69	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	13	2	5.5	3	3.25	3	3.25	4	5	5	3	3.25	6	4	5	Composite
12-153-195 Splice 2	12.25	69	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	13	2	5.5	3	3.25	3	3.25	4	5	5	3	3.25	6	4	5	Composite
12-164-210 Splice 1	12.25	72	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	13	2	5.75	3	3.25	3	3.25	4	5	5	3	3.25	6	4	5	Composite
12-164-210 Splice 2	12.25	72	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	22	18.25	0.875	1.5 / 1.5	10	18.25	0.875	13	2	5.75	3	3.25	3	3.25	4	5	5	3	3.25	6	3.5	5	Composite
12-176-225 Splice 1	12.25	76.125	0.5	1.5 / 1.5	18	24.25	0.75	1.5 / 1.5	8	24.25	0.75	22	18.25	1	1.5 / 1.5	10	18.25	1	14	2	5.625	3	3.25	4	3.25	4	5	5	3	3.25	6	3.5	5	Composite
12-176-225 Splice 2	12.25	76.125	0.5	1.5 / 1.5	18	18.25	0.75	1.5 / 1.5	8	18.25	0.75	22	18.25	0.875	1.5 / 1.5	10	18.25	0.875	14	2	5.625	3	3.25	3	3.25	4	5	5	3	3.25	6	3.5	5	Composite
12-188-240 Splice 1	12.25	81.75	0.5	1.5 / 1.5	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	15	2	5.625	3	3.25	4	3.25	4	6	5	3	3.25	6	4	5	Composite
12-188-240 Splice 2	12.25	81.75	0.5	1.5 / 1.5	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	20	18.25	0.75	1.5 / 1.5	9	18.25	0.75	15	2	5.625	3	3.25	4	3.25	4	6	5	3	3.25	6	3	5	Composite
12-199-255 Splice 1	12.25	89.25	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	16	2	5.75	3	3.25	4	3.25	4	6	5	3	3.25	6	4	5	Composite
12-199-255 Splice 2	12.25	89.25	0.5	1.5 / 1.5	20	24.25	0.625	1.5 / 1.5	9	24.25	0.625	24	18.25	0.625	1.5 / 1.5	11	18.25	0.625	16	2	5.75	3	3.25	4	3.25	4	6	5	3	3.25	6	4	5	Composite
12-211-270 Splice 0	12.25	93	0.5	1.5 / 1.5	20	24.25	0.75	1.5 / 1.5	8	24.25	0.75	24	30.25	0.75	1.5 / 1.5	10	30.25	0.75	17	2	5.625	3	3.25	4	3.25	4	5	7	5	3.25	4	7	7	Composite
12-211-270 Splice 1	12.25	93	0.5	1.5 / 1.5	20	30.25	0.75	1.5 / 1.5	9	30.25	0.75	24	24.25	0.75	1.5 / 1.5	11	24.25	0.75	17	2	5.625	3	3.25	5	3.25	4	6	5	4	3.25	6	4	5	Composite
12-211-270 Splice 2	12.25	93	0.5	1.5 / 1.5	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	17	2	5.625	3	3.25	4	3.25	4	6	5	3	3.25	6	4	5	Composite
12-223-285 Splice 0	12.25	95.25	0.5	1.5 / 1.5	22	30.25	0.75	1.5 / 1.5	9	30.25	0.75	24	30.25	0.75	1.5 / 1.5	10	30.25	0.75	19	2	5.125	3	3.25	5	3.25	4	6	7	5	3.25	4	7	7	Composite
12-223-285 Splice 1	12.25	97	0.5	1.5 / 1.5	22	24.25	0.75	1.5 / 1.5	10	24.25	0.75	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	17	2	5.875	3	3.25	4	3.25	4	7	5	3	3.25	6	4	5	Composite
12-223-285 Splice 2	12.25	97	0.5	1.5 / 1.5	22	24.25	0.75	1.5 / 1.5	10	24.25	0.75	22	30.25	0.75	1.5 / 1.5	10	30.25	0.75	17	2	5.875	3	3.25	4	3.25	4	7	5	5	3.25	4	7	5	Composite
12-234-300 Splice 0	12.25	102.875	0.5	1.5 / 1.5	24	30.25	0.75	1.5 / 1.5	10	30.25	0.75	24	30.25	0.875	1.5 / 1.5	10	30.25	0.875	18	2	5.875	3	3.25	5	3.25	4	7	7	5	3.25	4	7	7	Composite
12-234-300 Splice 1	12.25	102.875	0.5	1.5 / 1.5	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	24	18.25	0.875	1.5 / 1.5	11	18.25	0.875	18	2	5.875	3	3.25	3	3.25	6	4	5	3	3.25	6	4	5	Composite
12-234-300 Splice 2	12.25	102.875	0.5	1.5 / 1.5	22	18.25	0.75	1.5 / 1.5	10	18.25	0.75	24	18.25	0.875	1.5 / 1.5	11	18.25	0.875	18	2	5.875	3	3.25	3	3.25	6	3.5	5	3	3.25	6	4	5	Composite

12 FT SPACING - 3 SPAN

NOTES:

1. All dimensions / spacing shown in tables in inch units.



BOLTED FIELD SPLICE
DIMENSIONS 3

Issued January 2025
Revision 0

Sheet 28 of 32

Spacing-Span	Web Splice Plates				Top Flange Plates, Outer				Top Flange Plates, Inner, 2 req'd.			Bottom Flange Plates, Outer				Bottom Flange Plates, Inner, 2 req'd.			Web Bolts					Top Flange Bolts					Bottom Flange Bolts					Composite Note
	Width, A	Length, B	Thk.	Edge / End Distance	Width, C	Length, D	Thk.	Edge / End Distance	Width, E	Length, D	Thk.	Width, F	Length, G	Thk.	Edge / End Distance	Width, H	Length, G	Thk.	Bolts per Row	Rows per Side	Pitch	Gage	Gage, group	Num Rows Ea Side	Pitch, group	Gage Lines	Gage	Gage, group	Num Rows Ea Side	Pitch, group	Gage Lines	Gage	Gage, group	
14-117-150 Splice 1	12.25	49	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	22	36.25	1	1.5 / 1.5	10	36.25	1	9	2	5.75	3	3.25	3	3.25	4	5	5	6	3.25	4	7	5	Composite
14-117-150 Splice 2	12.25	49	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	22	30.25	1	1.5 / 1.5	10	30.25	1	9	2	5.75	3	3.25	3	3.25	4	5	5	5	3.25	4	7	5	Composite
14-129-165 Splice 1	12.25	54.75	0.5	1.5 / 1.5	22	24.25	0.75	1.5 / 1.5	10	24.25	0.75	22	36.25	1	1.5 / 1.5	10	36.25	1	10	2	5.75	3	3.25	4	3.25	4	7	5	6	3.25	4	7	5	Composite
14-129-165 Splice 2	12.25	54.75	0.5	1.5 / 1.5	16	18.25	0.75	1.5 / 1.5	7	18.25	0.75	22	30.25	1	1.5 / 1.5	10	30.25	1	10	2	5.75	3	3.25	3	3.25	4	4	5	5	3.25	4	7	5	Composite
14-141-180 Splice 1	12.25	60.5	0.5	1.5 / 1.5	22	24.25	0.75	1.5 / 1.5	10	24.25	0.75	22	36.25	1	1.5 / 1.5	10	36.25	1	11	2	5.75	3	3.25	4	3.25	4	7	5	6	3.25	4	7	5	Composite
14-141-180 Splice 2	12.25	60.5	0.5	1.5 / 1.5	16	18.25	0.75	1.5 / 1.5	7	18.25	0.75	22	30.25	1	1.5 / 1.5	10	30.25	1	11	2	5.75	3	3.25	3	3.25	4	4	5	5	3.25	4	7	5	Composite
14-153-195 Splice 1	12.25	66.25	0.5	1.5 / 1.5	22	18.25	0.625	1.5 / 1.5	10	18.25	0.625	24	24.25	1	1.5 / 1.5	11	24.25	1	12	2	5.75	3	3.25	3	3.25	6	3.5	5	4	3.25	6	4	5	Composite
14-153-195 Splice 2	12.25	66.25	0.5	1.5 / 1.5	18	18.25	0.625	1.5 / 1.5	8	18.25	0.625	24	18.25	1	1.5 / 1.5	11	18.25	1	12	2	5.75	3	3.25	3	3.25	4	5	5	3	3.25	6	4	5	Composite
14-164-210 Splice 1	12.25	70.5	0.5	1.5 / 1.5	22	18.25	0.625	1.5 / 1.5	10	18.25	0.625	24	24.25	1.125	1.5 / 1.5	11	24.25	1.125	13	2	5.625	3	3.25	3	3.25	6	3.5	5	4	3.25	6	4	5	Composite
14-164-210 Splice 2	12.25	70.5	0.5	1.5 / 1.5	18	24.25	0.625	1.5 / 1.5	8	24.25	0.625	26	24.25	1.125	1.5 / 1.5	12	24.25	1.125	13	2	5.625	3	3.25	4	3.25	4	5	5	4	3.25	6	4.5	5	Composite
14-176-225 Splice 1	12.25	77.75	0.5	1.5 / 1.5	22	18.25	0.625	1.5 / 1.5	10	18.25	0.625	24	24.25	1	1.5 / 1.5	11	24.25	1	14	2	5.75	3	3.25	3	3.25	6	3.5	5	4	3.25	6	4	5	Composite
14-176-225 Splice 2	12.25	77.75	0.5	1.5 / 1.5	18	24.25	0.625	1.5 / 1.5	8	24.25	0.625	26	24.25	1	1.5 / 1.5	12	24.25	1	14	2	5.75	3	3.25	4	3.25	4	5	5	4	3.25	6	4.5	5	Composite
14-188-240 Splice 1	12.25	81.75	0.5	1.5 / 1.5	24	18.25	0.625	1.5 / 1.5	11	18.25	0.625	24	24.25	1	1.5 / 1.5	11	24.25	1	15	2	5.625	3	3.25	3	3.25	6	4	5	4	3.25	6	4	5	Composite
14-188-240 Splice 2	12.25	81.75	0.5	1.5 / 1.5	20	18.25	0.625	1.5 / 1.5	9	18.25	0.625	26	24.25	1	1.5 / 1.5	12	24.25	1	15	2	5.625	3	3.25	3	3.25	6	3	5	4	3.25	6	4.5	5	Composite
14-199-255 Splice 1	12.25	85.25	0.5	1.5 / 1.5	24	18.25	0.625	1.5 / 1.5	11	18.25	0.625	24	24.25	1	1.5 / 1.5	11	24.25	1	15	2	5.875	3	3.25	3	3.25	6	4	5	4	3.25	6	4	5	Composite
14-199-255 Splice 2	12.25	85.25	0.5	1.5 / 1.5	20	18.25	0.625	1.5 / 1.5	9	18.25	0.625	26	24.25	1	1.5 / 1.5	12	24.25	1	15	2	5.875	3	3.25	3	3.25	6	3	5	4	3.25	6	4.5	5	Composite
14-211-270 Splice 0	12.25	90.5	0.5	1.5 / 1.5	20	24.25	0.75	1.5 / 1.5	8	24.25	0.75	24	36.25	1	1.5 / 1.5	10	36.25	1	21	2	4.375	3	3.25	4	3.25	4	5	7	6	3.25	4	7	7	Composite
14-211-270 Splice 1	12.25	89.25	0.5	1.5 / 1.5	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	24	24.25	1	1.5 / 1.5	11	24.25	1	16	2	5.75	3	3.25	3	3.25	6	4	5	4	3.25	6	4	5	Composite
14-211-270 Splice 2	12.25	89.25	0.5	1.5 / 1.5	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	26	24.25	1	1.5 / 1.5	12	24.25	1	16	2	5.75	3	3.25	4	3.25	4	6	5	4	3.25	6	4.5	5	Composite
14-223-285 Splice 0	12.25	95	0.5	1.5 / 1.5	22	30.25	0.75	1.5 / 1.5	9	30.25	0.75	24	36.25	1	1.5 / 1.5	10	36.25	1	17	2	5.75	3	3.25	5	3.25	4	6	7	6	3.25	4	7	7	Composite
14-223-285 Splice 1	12.25	95	0.5	1.5 / 1.5	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	24	24.25	1	1.5 / 1.5	11	24.25	1	17	2	5.75	3	3.25	3	3.25	6	4	5	4	3.25	6	4	5	Composite
14-223-285 Splice 2	12.25	95	0.5	1.5 / 1.5	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	26	24.25	1	1.5 / 1.5	12	24.25	1	17	2	5.75	3	3.25	4	3.25	4	6	5	4	3.25	6	4.5	5	Composite
14-234-300 Splice 0	12.25	102.875	0.5	1.5 / 1.5	24	30.25	0.75	2.5 / 1.5	11	30.25	0.75	26	30.25	1	2.5 / 1.5	12	30.25	1	18	2	5.875	3	3.25	5	3.25	4	6	7	5	3.25	4	7	7	Composite
14-234-300 Splice 1	12.25	102.875	0.5	1.5 / 1.5	24	18.25	0.75	1.5 / 1.5	11	18.25	0.75	26	24.25	1	1.5 / 1.5	12	24.25	1	18	2	5.875	3	3.25	3	3.25	6	4	5	4	3.25	6	4.5	5	Composite
14-234-300 Splice 2	12.25	102.875	0.5	1.5 / 1.5	20	24.25	0.75	1.5 / 1.5	9	24.25	0.75	26	24.25	1	1.5 / 1.5	12	24.25	1	18	2	5.875	3	3.25	4	3.25	4	6	5	4	3.25	6	4.5	5	Composite

14 FT SPACING - 3 SPAN

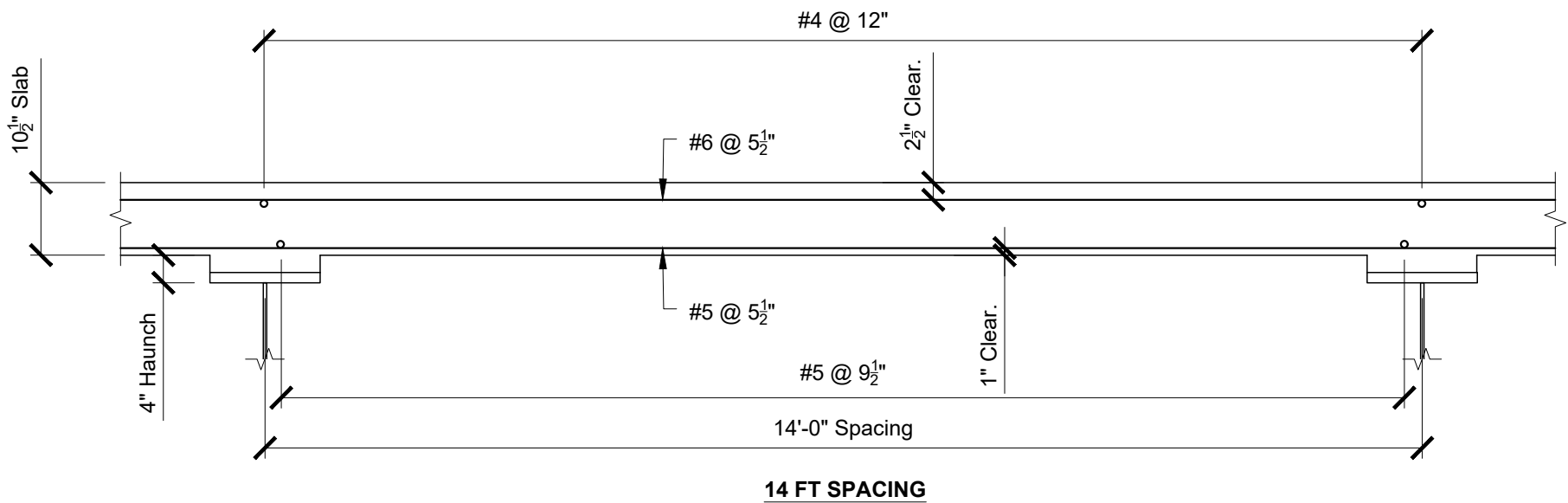
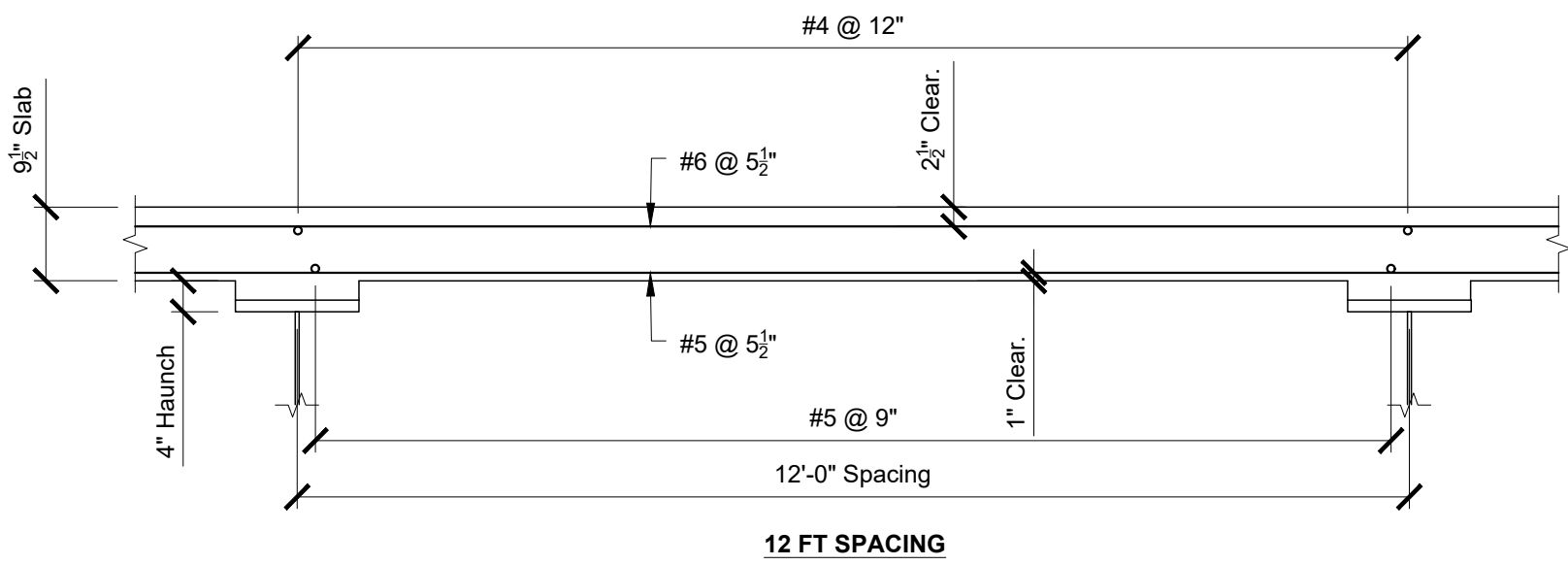
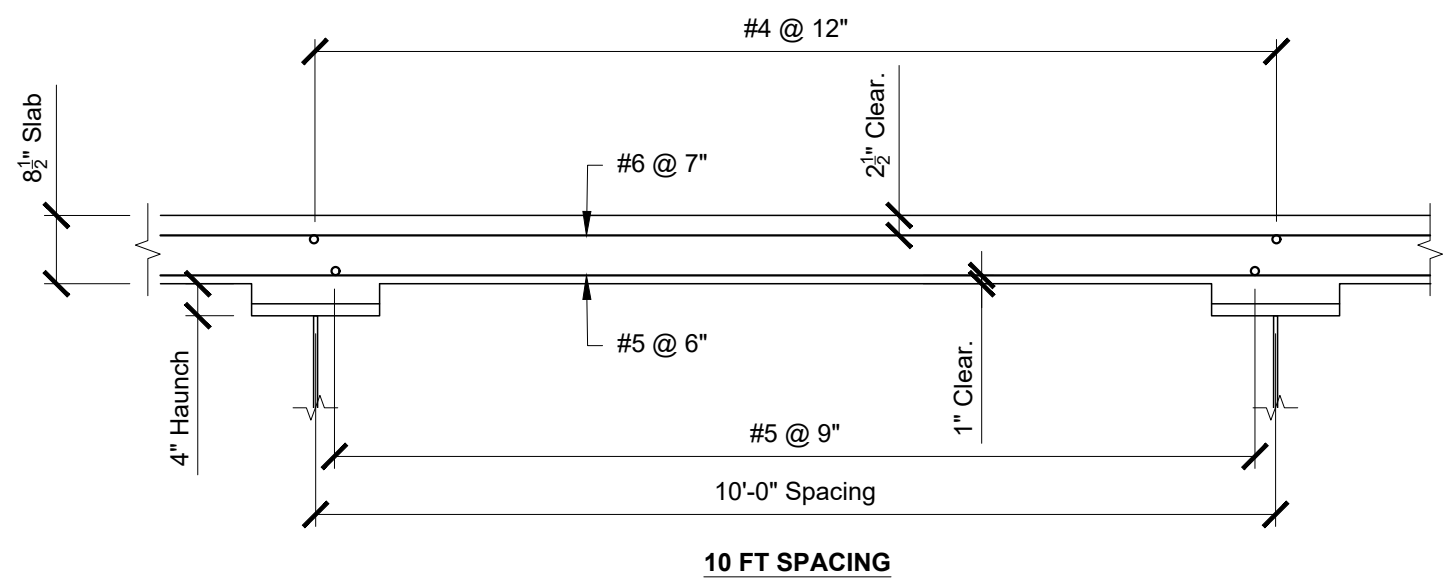
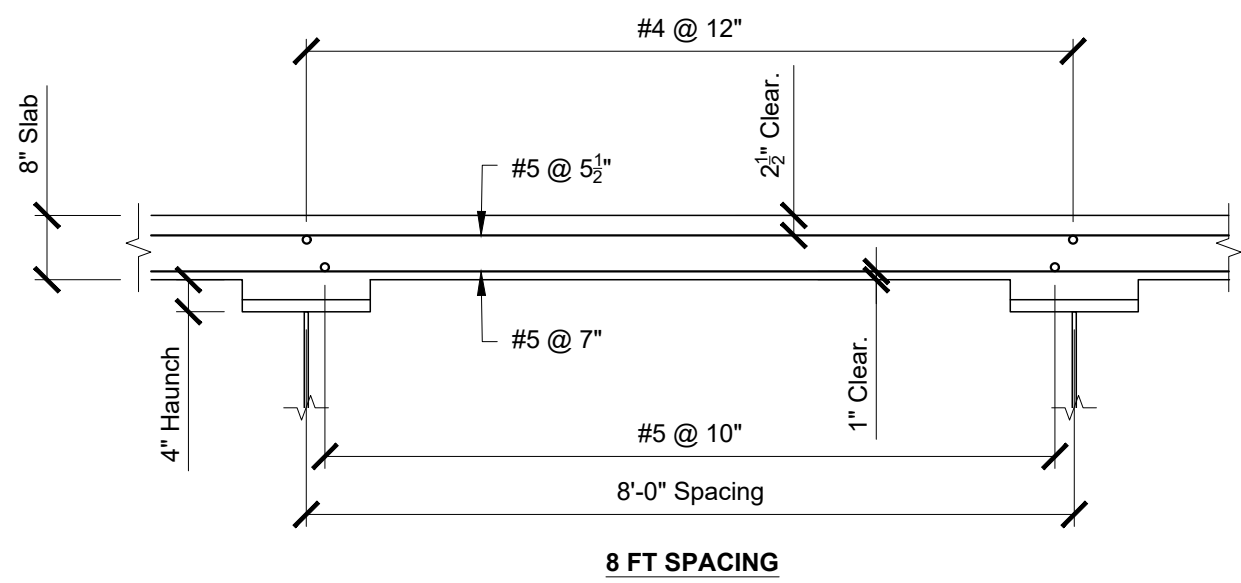
NOTES:

1. All dimensions / spacing shown in tables in inch units.



BOLTED FIELD SPLICE DIMENSIONS 4

Issued January 2025
Revision 0

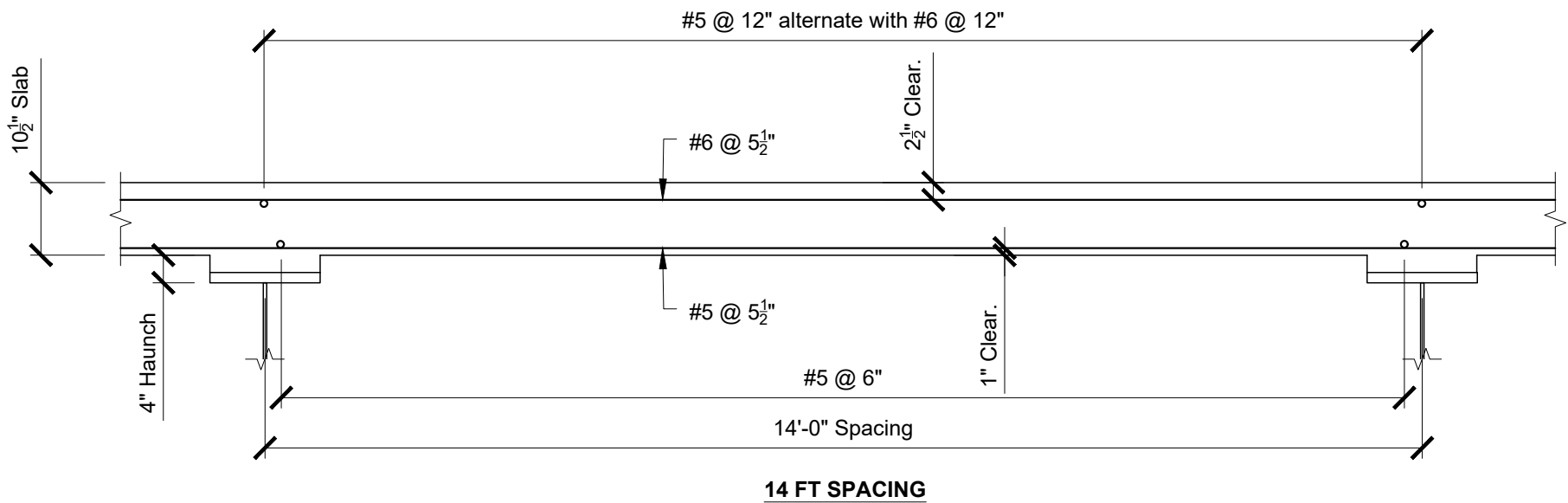
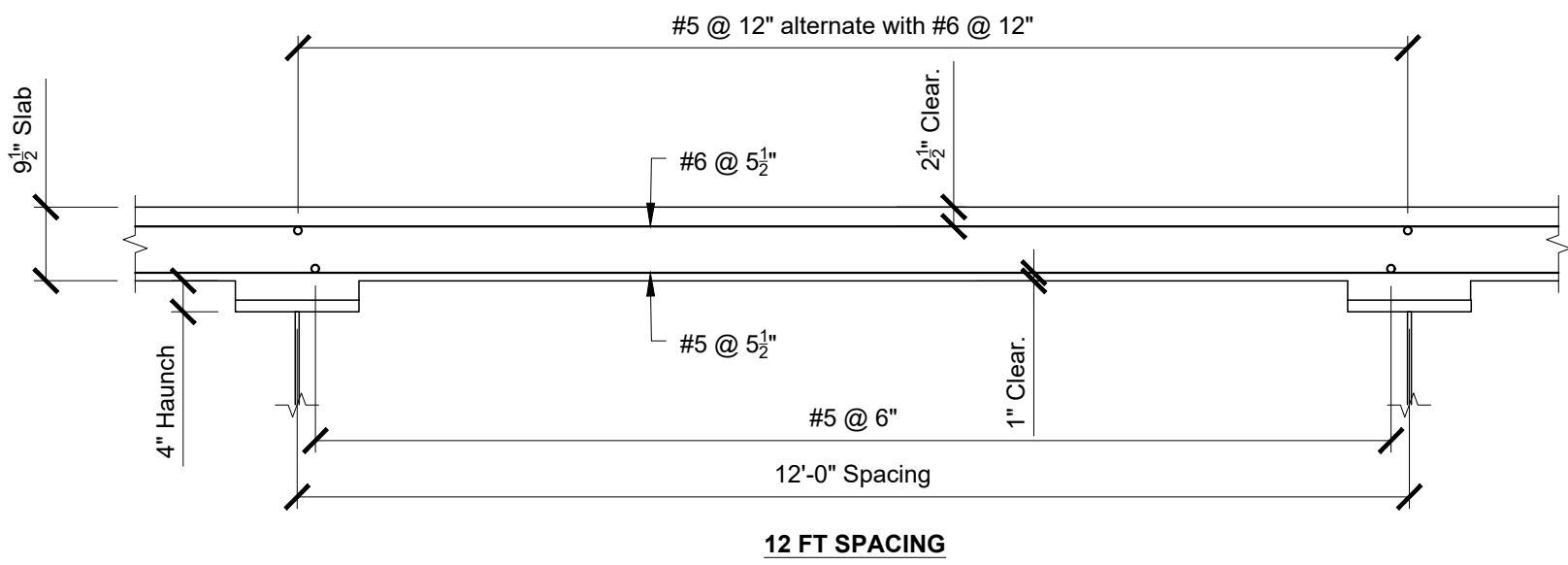
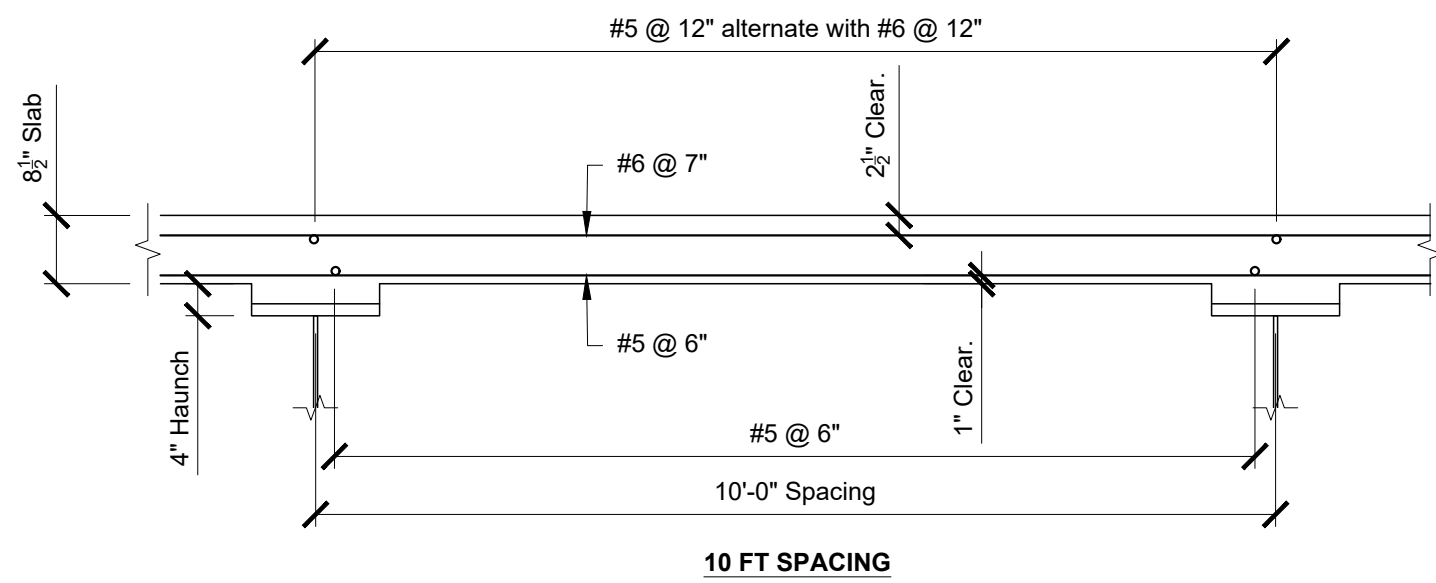
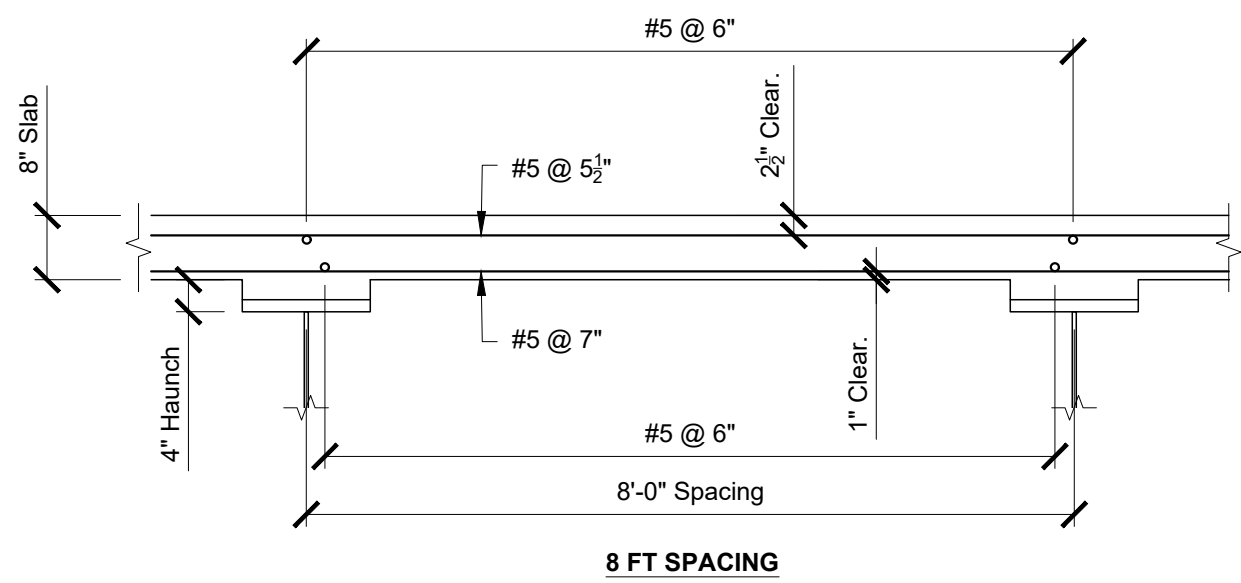


DECK DESIGN NOTES

1. Deck details are representative of slab designs for the beam spacings used in these plans.
2. The gross thickness shown is used for weight calculations. Structural capacity assumes a 1/2 in. loss in deck thickness due to wear.
3. The details on this sheet are for positive moment regions of the span and represent an acceptable transverse and longitudinal reinforcing steel design complying with AASHTO LRFD 9.7.3.
4. The slab thickness, cover, bar sizes and spacing are based on decks designed using the AASHTO equivalent strip method.

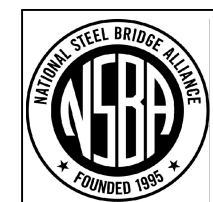


DECK DETAILS		
Simple Spans and Positive Moment Region of Continuous Spans		
Issued January 2025	Sheet 30 of 32	
Revision 0		



DECK DESIGN NOTES

1. Deck details are representative of slab designs for the beam spacings used in these plans.
2. The gross thickness shown is used for weight calculations. Structural capacity assumes a 1/2 in. loss in deck thickness due to wear.
3. The details on this sheet are for negative moment regions of the span and represent an acceptable longitudinal reinforcing steel design complying with AASHTO LRFD 6.10.1.7.
4. The slab thickness, cover, bar sizes and spacing are based on decks designed using the AASHTO equivalent strip method.
5. Because owner policies and preferences for deck detailing vary, the negative moment region longitudinal reinforcing steel used for the beam designs is assumed to be 1%. The specific bar patterns in these plans are not used in design. The bar pattern in these plans was used to estimate the c.g. of the longitudinal reinforcing steel for negative moment region girder design.
6. See Sheet 32 **Deck Details Longitudinal Steel Termination** for cutoff limits.

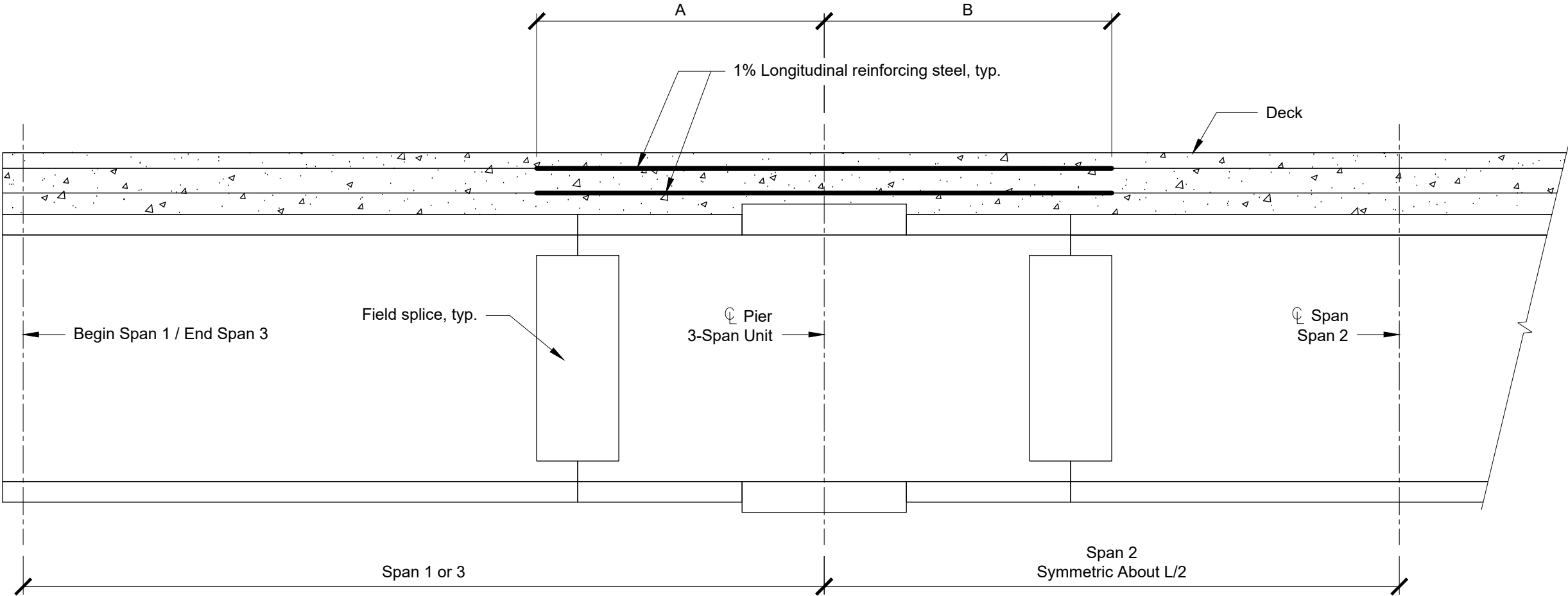


DECK DETAILS

Continuous Spans
Negative Moment Regions

Issued January 2025
Revision 0

Sheet 31 of 32



LONGITUDINAL REINFORCING STEEL TERMINATION LIMITS

Notes:

1. Dimension "A" defines the limit of required one percent longitudinal reinforcing steel extending from Pier 1 or 2 into either Span 1 or 3.
2. Dimension "B" defines the limit of required one percent longitudinal reinforcing steel extending from Pier 1 or 2 into Span 2.
3. Dimension "A" and "B" are at a minimum the distance to each field splice or as required by Note (4) below.
4. Longitudinal reinforcing steel is designed to meet the requirements of Service II Limit State, AASHTO LRFD 6.10.1.7 in the completed bridge only. The cutoff locations are approximate and are to be refined in final design.
5. Designer to determine if the factored deck casting and construction loads require this reinforcing steel to be extended.
6. For beam design, the longitudinal reinforcing steel was assumed to be exactly one percent and meeting the preferred two-thirds top mat placement. Sample reinforcing patterns for the positive and negative moment region longitudinal reinforcing steel are provided in the Deck Details, Sheet 30 and 31.

1% Longitudinal Steel, Distances A and B, ft.				
Versus Beam Spacing, ft.				
Span, ft.	8 ft.	10 ft.	12 ft.	14 ft.
End-Int.-End	Length A, B	Length A, B	Length A, B	Length A, B
117-150-117	43 38	38 38	38 38	38 38
129-165-129	49 42	40 40	40 40	40 40
141-180-141	53 45	47 43	43 43	43 43
153-195-153	58 52	54 47	47 47	47 47
164-210-164	61 56	59 51	59 51	56 51
176-225-176	67 61	61 54	59 54	61 54
188-240-188	71 64	70 62	69 58	67 58
199-255-199	73 69	74 67	73 65	72 61
211-270-211	78 70	81 66	78 72	78 67
223-285-223	82 79	83 77	82 73	73 73
234-300-234	86 80	86 80	86 80	78 80



DECK DETAILS
LONGITUDINAL REINFORCING
STEEL TERMINATION, 3-SPAN UNITS

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Sheet 32 of 32



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