



**BEAM ELEVATION**

	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.5 Sp. 3	Pier 3	0.5 Sp. 4	Pier 4	0.6 Sp. 5
$I_s$	4,760	4,760	4,760	4,760	4,760	4,760	4,760	4,760	4,760
$I_c(n)$	13,629	-	13,629	-	13,629	-	13,629	-	13,629
$I_c(3n)$	10,212	-	10,212	-	10,212	-	10,212	-	10,212
$I_c(cr)$	-	6,886	-	6,886	-	6,886	-	6,886	-
$S_s$	345	345	345	345	345	345	345	345	345
$S_c(n)$	517.60	-	517.60	-	517.60	-	517.60	-	517.60
$S_c(3n)$	470.40	-	470.40	-	470.40	-	470.40	-	470.40
$S_c(cr)$	-	406.60	-	406.60	-	406.60	-	406.60	-
DC1	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
MDC1	255	338	110	289	186	2.92	114	328	243
DC2	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
MDC2	140	189	59	161	101	163	61	183	133
DW	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
M <sub>DW</sub>	75	102	32	87	54	88	33	99	72
M <sub>κ + μ</sub>	635	517	521	505	551	505	520	510	621
M <sub>u</sub> (Strength I)	1,719	1,715	1,172	1,577	1,403	1,584	1,177	1,680	1,600
φ <sub>r</sub> M <sub>n</sub>	2,559	1,988	2,674	2,020	2,626	2,015	2,674	1,998	2,588
f <sub>s</sub> DC1	8.87	11.77	1.51	10.06	6.46	10.17	3.95	11.43	8.44
f <sub>s</sub> DC2	3.57	3.59	2.00	3.07	2.57	3.11	1.55	3.49	3.39
f <sub>s</sub> DW	1.92	1.94	0.81	1.66	1.40	1.67	0.84	1.88	1.83
f <sub>s</sub> (κ + μ)	14.40	14.93	11.81	14.60	12.47	14.59	11.78	14.74	14.07
f <sub>s</sub> (Service II)	33.52	40.21	21.86	36.80	27.01	36.98	22.01	39.35	32.37
0.95R <sub>n</sub> F <sub>y</sub>	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
f <sub>s</sub> (Total)(Strength I)	44.20	43.20	29.50	48.50	35.70	48.70	29.70	42.10	42.70
φ <sub>r</sub> F <sub>n</sub>	50	50	50	50	50	50	50	50	50
V <sub>r</sub>	21.37	33.63	21.45	35.83	21.55	34.85	21.45	35.47	21.46

	W. Abut.	Pier 1	Pier 2	Pier 3	Pier 4	E. Abut.
R <sub>DC1</sub>	24.21	62.54	57.37	57.69	61.68	23.66
R <sub>DC2</sub>	12.07	34.54	31.65	31.83	34.07	11.77
R <sub>DW</sub>	6.50	18.60	17.04	17.14	18.34	6.34
R <sub>κ + μ</sub>	74.61	109.80	108.95	108.97	109.19	74.08
R <sub>Total</sub>	117.39	225.47	215.02	215.64	223.28	114.46

**NOTES**

- The W27 beams and the splice plates for the W27 beams shall be AASHTO M270 Grade 50.
- Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.

- $I_s, S_s$ : Non-composite moment of inertia and section modulus of the steel section used for computing  $f_s$  (Total-Strength I, and Service II) due to non-composite dead loads (in<sup>4</sup> and in<sup>3</sup>).
- $I_c(n), S_c(n)$ : Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in<sup>4</sup> and in<sup>3</sup>).
- $I_c(3n), S_c(3n)$ : Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).
- $I_c(cr), S_c(cr)$ : Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing  $f_s$  (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).
- DC1: Un-factored non-composite dead load (kips/ft.).
- MDC1: Un-factored moment due to non-composite dead load (kip-ft.).
- DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
- MDC2: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
- DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
- M<sub>DW</sub>: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
- M<sub>κ + μ</sub>: Un-factored live load moment plus dynamic load allowance (Impact) (kip-ft.).
- M<sub>u</sub> (Strength I): Factored design moment (kip-ft.).  
1.25 (MDC1 + MDC2) + 1.5 M<sub>DW</sub> + 1.75 M<sub>κ + μ</sub>
- φ<sub>r</sub>M<sub>n</sub>: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).
- f<sub>s</sub> DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).  
MDC1 / S<sub>nc</sub>
- f<sub>s</sub> DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).  
MDC2 / S<sub>c(3n)</sub> or MDC2 / S<sub>c(cr)</sub> as applicable.
- f<sub>s</sub> DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).  
M<sub>DW</sub> / S<sub>c(3n)</sub> or M<sub>DW</sub> / S<sub>c(cr)</sub> as applicable.
- f<sub>s</sub> (κ + μ): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).  
M<sub>κ + μ</sub> / S<sub>c(n)</sub> or M<sub>DW</sub> / S<sub>c(cr)</sub> as applicable.
- f<sub>s</sub> (Service II): Sum of stresses as computed below (ksi).  
f<sub>sDC1</sub> + f<sub>sDC2</sub> + f<sub>sDW</sub> + 1.3 f<sub>s</sub> (κ + μ)
- 0.95R<sub>n</sub>F<sub>y</sub>: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).
- f<sub>s</sub> (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).  
1.25 (f<sub>sDC1</sub> + f<sub>sDC2</sub>) + 1.5 f<sub>sDW</sub> + 1.75 f<sub>s</sub> (κ + μ)
- φ<sub>r</sub>F<sub>n</sub>: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).
- V<sub>r</sub>: Maximum factored shear range in span computed according to Article 6.10.10.

**BILL OF MATERIAL**

Item	Unit	Total
Stud Shear Connectors	Each	16,830

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