



BEAM ELEVATION

INTERIOR BEAM MOMENT TABLE									
	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	(in ⁴)	4,760	4,760	4,760	4,760	4,760	4,760	4,760	4,760
$I_c(n)$	(in ⁴)	13,629	-	13,629	-	13,629	-	13,629	-
$I_c(3n)$	(in ⁴)	10,212	-	10,212	-	10,212	-	10,212	-
$I_c(cr)$	(in ⁴)	-	6,886	-	6,886	-	6,886	-	6,886
S_s	(in ³)	345	345	345	345	345	345	345	345
$S_c(n)$	(in ³)	517.60	-	517.60	-	517.60	-	517.60	-
$S_c(3n)$	(in ³)	470.40	-	470.40	-	470.40	-	470.40	-
$S_c(cr)$	(in ³)	-	406.60	-	406.60	-	406.60	-	406.60
DC1	(k/ft)	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
MDC1	(k)	255	338	110	289	186	292	114	328
DC2	(k/ft)	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
MDC2	(k)	140	189	59	161	101	163	61	183
DW	(k/ft)	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
MDW	(k)	75	102	32	87	54	88	33	99
M ϕ + IM	(k)	635	517	521	505	551	505	520	510
M $_u$ (Strength I)	(k)	1,719	1,715	1,172	1,577	1,403	1,584	1,177	1,680
$\phi_r M_n$	(k)	2,559	1,988	2,674	2,020	2,626	2,015	2,674	1,998
f_s DC1	(ksi)	8.87	11.77	1.51	10.06	6.46	10.17	3.95	11.43
f_s DC2	(ksi)	3.57	3.59	2.00	3.07	2.57	3.11	1.55	3.49
f_s DW	(ksi)	1.92	1.94	0.81	1.66	1.40	1.67	0.84	1.88
f_s (ϕ +IM)	(ksi)	14.40	14.93	11.81	14.60	12.47	14.59	11.78	14.07
f_s (Service II)	(ksi)	33.52	40.21	21.86	36.80	27.01	36.98	22.01	39.35
0.95R $_h$ F $_{yF}$	(ksi)	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
f_s (Total)(Strength I)	(ksi)	44.20	43.20	29.50	48.50	35.70	48.70	29.70	42.10
$\phi_r F_n$	(ksi)	50	50	50	50	50	50	50	50
V $_r$	(k)	21.37	33.63	21.45	35.83	21.55	34.85	21.45	35.47

INTERIOR BEAM REACTION TABLE						
	W. Abut.	Pier 1	Pier 2	Pier 3	Pier 4	E. Abut.
RDC1	(k)	24.21	62.54	57.37	57.69	23.66
RDC2	(k)	12.07	34.54	31.65	31.83	11.77
R $_{DW}$	(k)	6.50	18.60	17.04	17.14	6.34
R ϕ +IM	(k)	74.61	109.80	108.95	108.97	74.08
R $_{Total}$	(k)	117.39	225.47	215.02	215.64	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.

BILL OF MATERIAL

Item	Unit	Total
Stud Shear Connectors	Each	16,830

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 (in⁴ and in³).

$I_c(n), S_c(n)$: 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 (in⁴ and in³).

$I_c(3n), S_c(3n)$: 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 (in⁴ and in³).

$I_c(cr), S_c(cr)$: 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 (in⁴ and in³).

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.).

MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

M ϕ + IM: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

M $_u$ (Strength I): Factored design moment (kip-ft.).
1.25 (MDC1 + MDC2) + 1.5 MDW + 1.75 M ϕ + IM

$\phi_r M_n$: 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_s 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 $_{nc}$

f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).
MDC2 / S $_c(3n)$ or MDC2 / S $_c(cr)$ as applicable.

f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).
MDW / S $_c(3n)$ or MDW / S $_c(cr)$ as applicable.

f_s (ϕ +IM): 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 ϕ + IM / S $_c(n)$ or MDW / S $_c(cr)$ as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).
 $f_{SDC1} + f_{SDC2} + f_{SDW} + 1.3 f_s(\phi + IM)$

0.95R $_h$ F $_{yF}$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

f_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).
1.25 ($f_{SDC1} + f_{SDC2}$) + 1.5 f_{SDW} + 1.75 $f_s(\phi + IM)$

$\phi_r F_n$: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V $_r$: Maximum factored shear range in span computed according to Article 6.10.10.

H:\p\p\2011\0223\CAD\Structur\al\dgn\06-1149_Final\00\160105-s27-beam-df.dgn 5/20/2013 11:24:08 AM