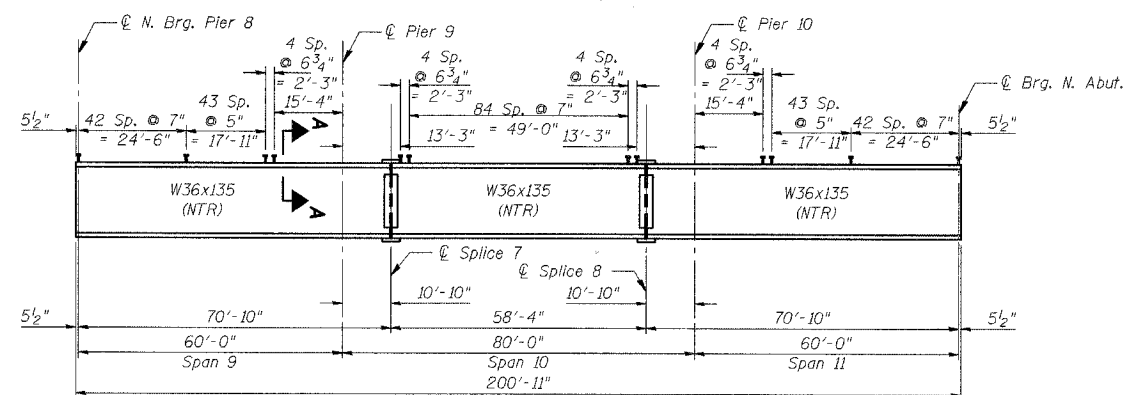


ELEVATION - BEAMS 1 & 2
(SPANS 1 THRU 4)



ELEVATION - BEAMS 1 & 2
(SPANS 9 THRU 11)

Notes:

- All Structural Steel for beams and splice plates shall be M270 Grade 50.
- "NTR" denotes notch toughness requirements.
- For diaphragm and splice details see sheet no. S12.
- For Section A-A see sheet no. S12.

	S. Abutment	Pier 1	Pier 2	Pier 3	Pier 4-S. Brq.
R _ℓ (k)	25.6	88.6	92.0	88.6	25.6
R _ℓ (k)	22.4	64.1	66.2	64.1	22.4
R (Total) (k)	48.0	152.7	158.2	152.7	48.0

Beam	ℓ Bearing S. Abut.	ℓ Bearing Pier 1	ℓ Field Splice 1	ℓ Field Splice 2	ℓ Bearing Pier 3	ℓ Field Splice 3	ℓ Field Splice 4	ℓ Bearing Pier 4	ℓ S. Bearing Pier 4
1	759.219	761.590	762.048	764.167	764.745	765.323	767.409	767.874	770.281
2	759.219	761.590	762.048	764.167	764.745	765.323	767.409	767.874	770.281

	Pier 8-N. Brq.	Pier 9	Pier 10	N. Abutment
R _ℓ (k)	20.7	74.6	74.6	20.7
R _ℓ (k)	17.6	50.7	50.7	17.6
R (Total) (k)	38.3	125.3	125.3	38.3

Beam	ℓ N. Bearing Pier 8	ℓ Bearing Pier 9	ℓ Field Splice 7	ℓ Field Splice 8	ℓ Bearing Pier 10	ℓ Bearing N. Abut.
1	764.298	762.224	761.845	759.879	759.512	757.518
2	764.298	762.224	761.845	759.879	759.512	757.518

	0.4 Sp. 1 or 0.6 Sp. 4	Pier 1 or Pier 3	0.5 Sp. 2 or Sp. 3	Pier 2
I _s (in ⁴)	9040	9040	9040	9040
I _c (n) (in ⁴)	26197	---	26197	---
I _c (3n) (in ⁴)	18516	---	18516	---
S _s (in ³)	504	504	504	504
S _c (n) (in ³)	792	---	792	---
S _c (3n) (in ³)	703	---	703	---
Z (in ³)	---	581	---	581
ℓ (k/ft.)	0.86	0.92	0.86	0.92
M _ℓ (k)	323.86	691.1	357.19	755.39
s _ℓ (k/ft.)	0.06	---	0.06	---
M _{sℓ} (k)	24.67	---	30.32	---
M _ℓ (k)	356.76	467.71	476.66	457.29
M (Imp) (k)	---	---	---	---
S ₃ [M _ℓ +M(Imp)] (k)	594.60	779.52	794.43	762.15
M _a (k)	1225.07	1911.80	1536.53	1972.80
M _u (k)	3562	---	3729	---
f _{sℓ} non-comp (k.s.i.)	7.71	16.45	8.50	17.99
f _{sℓ} (comp) (k.s.i.)	0.41	---	0.52	---
f _s S ₃ (ℓ+Imp) (k.s.i.)	9.01	18.56	12.04	18.15
f _s (Overload) (k.s.i.)	17.13	35.01	21.06	36.13
f _s (Total) (k.s.i.)	---	45.52	---	46.97
VR (k)	32.82	---	38.66	---

	0.4 Sp. 9 or 0.6 Sp. 11	Pier 9 or Pier 10	0.5 Sp. 10
I _s (in ⁴)	7800	7800	7800
I _c (n) (in ⁴)	23695	---	23695
I _c (3n) (in ⁴)	16827	---	16827
S _s (in ³)	439	439	439
S _c (n) (in ³)	708	---	708
S _c (3n) (in ³)	629	---	629
Z (in ³)	---	509	---
ℓ (k/ft.)	0.86	0.92	0.86
M _ℓ (k)	204.66	477.70	262.69
s _ℓ (k/ft.)	0.06	---	0.06
M _{sℓ} (k)	15.06	---	20.97
M _ℓ (k)	229.29	295.74	308.39
M (Imp) (k)	---	---	---
S ₃ [M _ℓ +M(Imp)] (k)	382.15	492.90	513.98
M _a (k)	782.43	1261.78	1036.94
M _u (k)	3119	---	3407
f _{sℓ} non-comp (k.s.i.)	5.59	13.06	7.18
f _{sℓ} (comp) (k.s.i.)	0.29	---	0.40
f _s S ₃ (ℓ+Imp) (k.s.i.)	6.48	13.47	8.71
f _s (Overload) (k.s.i.)	12.36	26.53	16.29
f _s (Total) (k.s.i.)	---	34.49	---
VR (k)	25.84	---	29.84

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (Total & Overload).
I_{c(n)} and S_{c(n)} are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.
I_{c(3n)} and S_{c(3n)} are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. (see AASHTO 10.38)
VR is the maximum Live Load + Impact shear range in span.
Z is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.
M_a (Applied Moment) = 1.3[M_ℓ + M_{sℓ} + S₃(M_ℓ + M(Imp))].
The Plastic Moment capacity (M_u) is computed according to AASHTO 10.48.1 and 10.50.1.1.
f_s (Overload) is the sum of the stresses due to M_ℓ + M_{sℓ} + S₃(M_ℓ + M(Imp)).
f_s (Total) (Non-compact section) is the sum of the stresses due to 1.3[M_ℓ + M_{sℓ} + S₃(M_ℓ + M(Imp))].

PREPARED FOR:
WHEATON PARK DISTRICT
666 S. MAIN STREET
WHEATON, ILLINOIS 60187



PREPARED BY:
CEMCON, Ltd.
Consulting Engineers, Land Surveyors & Planners
2280 White Oak Circle, Suite 100
Aurora, Illinois 60504-9675
Ph: 630.862.2100 Fax: 630.862.2199
E-Mail: cadd@cemcon.com Website: www.cemcon.com

NO.		DATE	DESCRIPTION	NO.		DATE	DESCRIPTION

STEEL BEAM DETAILS			
PEDESTRIAN/BICYCLE PATH BRIDGE OVER UNION PACIFIC RAILROAD			
FILE NAME: BEAMELEV	DSGN. BY: MMH	JOB NO.: 551.007	FLD. BK./PG.: -----
DISC. NUMBER: 551007	DRN. BY: RDS	DATE: 04-26-04	SCALE: -----
SHEET NO. 27 of 54			INDEX OF BRIDGE SHEETS SHEET S14 OF S29