



FRAMING PLAN —Z—

All beams are W30x108 AASHTO M270, Grade 50 (NTR)

		0.4 Sp. 1 or 0.6 Sp. 3	Pier	0.5 Sp. 2
I_s	(in ⁴)	4,470	4,470	4,470
$I_c(n)$	(in ⁴)	12,882	---	12,882
$I_c(3n)$	(in ⁴)	9,652	---	9,652
S_s	(in ³)	300	300	300
$S_c(n)$	(in ³)	456	---	456
$S_c(3n)$	(in ³)	414	---	414
DC1	(k/ft.)	0.85	0.85	0.85
M_{DC1}	(k)	95	238	147
DC2	(k/ft.)	0.38	0.38	0.38
M_{DC2}	(k)	50	87	84
DW	(k/ft.)	0.23	0.23	0.23
M_{DW}	(k)	29	52	50
M_{LL+IM}	(k)	456	312	631
M_u (Strength I)	(k)	1,023	1,030	1,468
$\phi_r M_n$ $\phi_r M_{nc}$	(k)	2,484	---	2,484
f_s DC1	(k.s.i.)	3.8	9.5	5.9
f_s DC2	(k.s.i.)	1.4	3.5	2.4
f_s DW	(k.s.i.)	0.8	2.1	1.4
f_s 1.3(LL+IM)	(k.s.i.)	15.6	16.2	21.6
f_s (Service II)	(k.s.i.)	21.7	31.3	31.4
f_s (Total)(Strength I)	(k.s.i.)	---	41.2	---
Vf	(k)	23.6	---	22.2

* Compact sections
** Non-Compact sections

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) 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) due to long-term composite (superimposed) dead loads (in⁴ and in³).

DC1: Un-factored non-composite dead load (kips/ft.).

M_{DC1} : 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.).

M_{DC2} : 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_{DW} : Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

M_{LL+IM} : Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

M_u (Strength I): Factored design moment (kip-ft.).

$1.25(M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{LL+IM}$

$\phi_r M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

$\phi_r M_{nc}$: Compact non-composite negative moment capacity computed according to Article A6.1.1 (kip-ft.).

f_s (Service II): Sum of stresses as computed from the moments below (ksi).

f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).

$1.25(M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{LL+IM}$

Vf: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

NOTES:

All materials shall be AASHTO M270 Grade 50.

"NTR" denotes members to which Notch Toughness Requirements are applicable.

See Sheet S-16 of S-25 for beam elevation and framing details.

All diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual diaphragms at supports may be temporarily disconnected to install bearing anchor rods.

LOCATION	SOUTH ABUT.	NORTH ABUT.	PIER 1	PIER 2	SPLICE 1	SPLICE 2
BEAM 1	820.22	814.92	818.62	816.44	818.35	816.68
BEAM 2	820.43	815.13	818.83	816.65	818.56	816.89
BEAM 3	820.63	815.33	819.03	816.85	818.77	817.10
BEAM 4	820.73	815.43	819.13	816.95	818.86	817.19
BEAM 5	820.71	815.41	819.11	816.93	818.84	817.17
BEAM 6	820.70	815.40	819.10	816.92	818.83	817.16

	Abut.	Pier
R DC1	(k) 12.9	49.6
R DC2	(k) 6.2	21.6
R DW	(k) 3.6	12.8
R LL + I	(k) 68.9	102.7
R Total	(k) 91.6	186.7

STEEL FRAMING PLAN
THOMPSON ROAD
OVER NIPPERSINK CREEK
SECTION NO. 06-00005-00-BR
McHENRY COUNTY
STATION 206+30.48
STRUCTURE NO. 056-6006

DATE: 11/18/09

DESIGNED	MGH/JPG
CHECKED	KMA
DRAWN	WJH
CHECKED	RGD

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SHEET NO. S-15	F.A.U RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	4081	06-00005-00-BR	McHENRY	45	26
S-25 SHEETS	CONTRACT NO. 63409				
FED. ROAD DIST. NO. 1		ILLINOIS	FED. AID PROJECT		

FILE NAME: 060563.Stn.dwg 11/30/2009
 PLOT DRIVER: pct.plt
 PEN TABLE: standard-trans.tbl