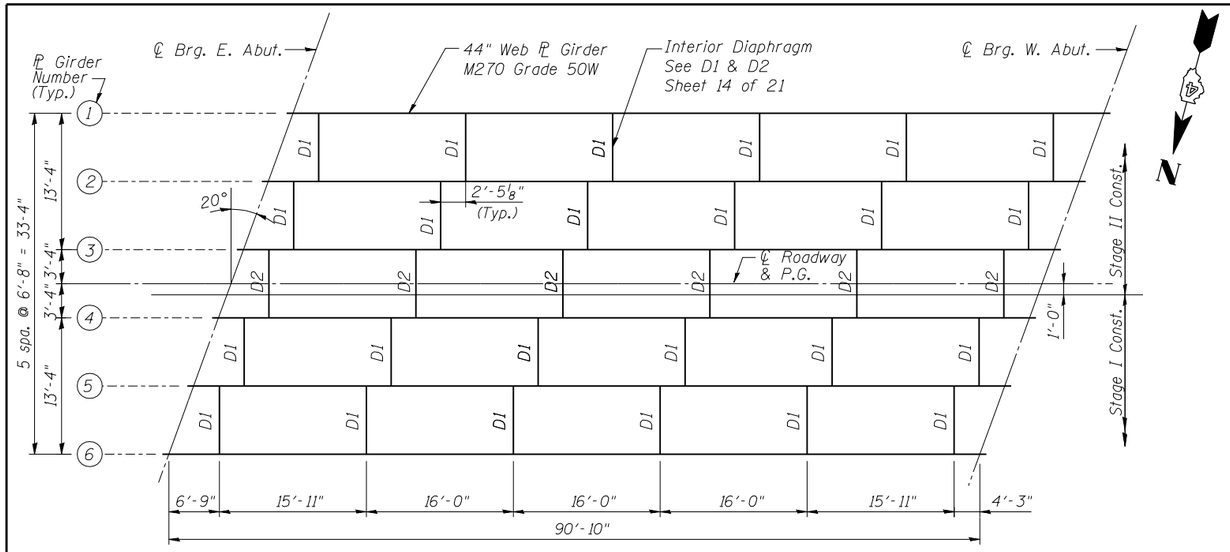
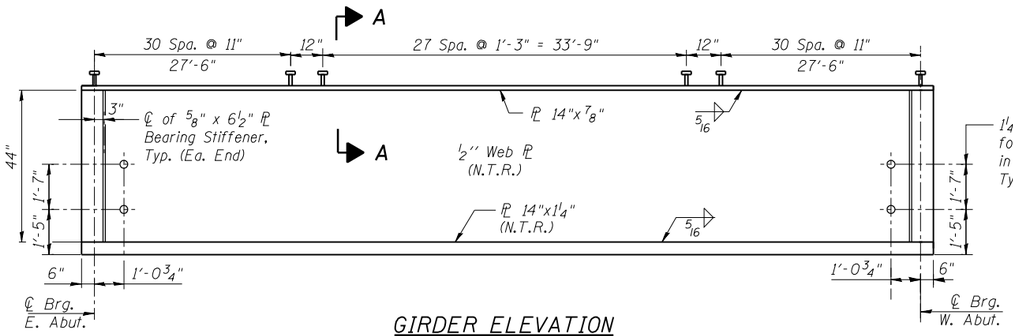


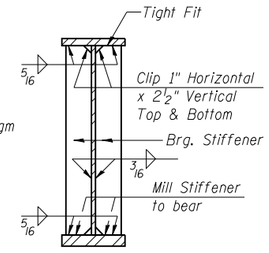
PLAN

See Sheet 14 of 21 for Interior Diaphragm details.



GIRDER ELEVATION

"N.T.R" denotes plates to which notch toughness requirements are applicable.
All plate Girders including Webs, Top and Bottom flanges and stiffeners are to be AASHTO M270 Grade 50W.



SECTION AT ABUTMENT

INTERIOR GIRDER MOMENT TABLE		
		0.5 Sp.
I_S	(in^4)	16,289.70
$I_{C(n)}$	(in^4)	42,398.69
$I_{C(3n)}$	(in^4)	30,702.0
S_S	(in^3)	773.3
$S_{C(n)}$	(in^3)	1084.8
$S_{C(3n)}$	(in^3)	988.14
DC1	(k/')	0.879
M_{DC1}	('k)	906.4
DC2	(k/')	0.15
M_{DC2}	('k)	154.5
DW	(k/')	0.3
M_{DW}	('k)	309.0
M_{L+Imp}	('k)	1,388.7
M_U(Strength I)	('k)	4,220.8
$\phi_f M_n$	('k)	5,457
f_S DC1	(ksi)	13.96
f_S DC2	(ksi)	1.88
f_S DW	(ksi)	3.76
f_S 1.3(L+I)	(ksi)	19.97
f_S (Service II)	(ksi)	39.7
Vf	(k)	25.9

INTERIOR GIRDER REACTION TABLE HL93 Loading		
		Abut.
R_{DC1}	(k)	39.9
R_{DC2}	(k)	6.81
R_{DW}	(k)	13.62
R_{L+Imp}	(k)	82.7
R_{Total}	(k)	143.03

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 ($in.^4$ and $in.^3$).

$I_{c(n)}$, $S_{c(n)}$: 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 ($in.^4$ and $in.^3$).

$I_{c(3n)}$, $S_{c(3n)}$: 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 ($in.^4$ and $in.^3$).

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

M_u (Strength I): Factored design moment (kip-ft.).
$1.25\ (M_{DC1} + M_{DC2}) + 1.5\ M_{DW} + 1.75\ M_{L+IM}$

$\phi_f M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (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).
M_{DC1} / 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).
$M_{DC2} / S_{c(3n)}$ or $M_{DC2} / S_{c(cr)}$ 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).
$M_{DW} / S_{c(3n)}$ or $M_{DW} / S_{c(cr)}$ as applicable.

f_s (L+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live plus impact loads as calculated below (ksi).
$M_{L+IM} / S_{c(n)}$ or $M_{L+IM} / S_{(cr)}$ as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).
$f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3\ f_s(L+IM)$

$0.95R_hF_yf$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

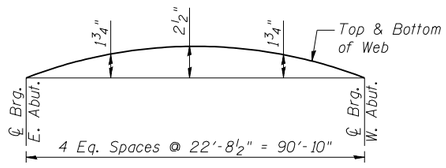
f_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).
$1.25\ (f_{sDC1} + f_{sDC2}) + 1.5\ f_{sDW} + 1.75\ f_{L+IM}$

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

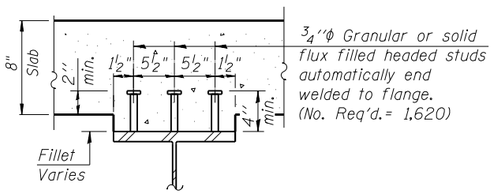
* TOP OF WEB ELEVATIONS

Beam Number	℄ Brg. E. Abut.	℄ Brg. W. Abut.
1	463.24	462.89
2	463.38	463.03
3	463.49	463.15
4	463.50	463.15
5	463.41	463.06
6	463.29	462.94

* For Fabrication only



CAMBER DIAGRAM



SECTION A-A

General Notes

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

2. Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.

STRUCTURE DESIGNS, INCORPORATED
ARCHITECTS & ENGINEERS
PH: (312) 551-9780 ♦ www.structuredesignsinc.com

USER NAME =	DESIGNED - LRT	REVISED -	
	CHECKED - OAO	REVISED -	
PLOT SCALE =	DRAWN - TCS	REVISED -	
PLOT DATE =	CHECKED - LRT	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL BEAM FRAMING PLAN AND DETAILS
STRUCTURE NO. 029-0074
SHEET NO. 13 OF 21 SHEETS

F.A.P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
317	(137 BR, BR-1) BR	FULTON	118	76
		CONTRACT NO. 68699		
	ILLINOIS FED. AID PROJECT			