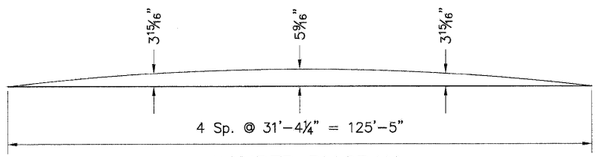
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

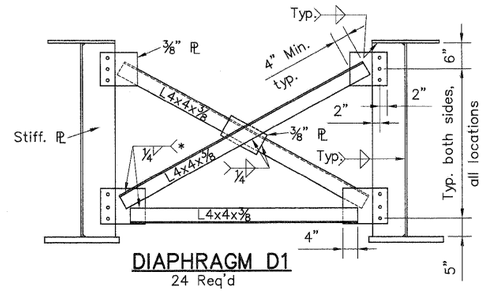
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
N 5TH ST	03-00289-00-BR	ADAMS	90	51
STRUCTURAL STEEL				

CONTRACT NO. 93542

SHEET 13 OF 18



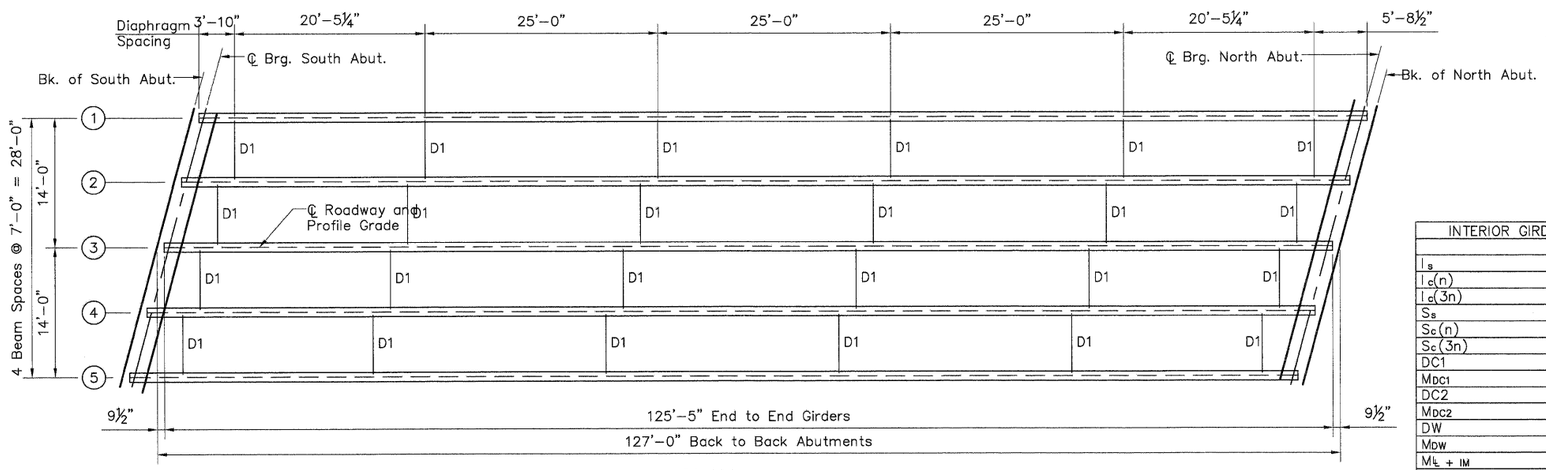
CAMBER DIAGRAM



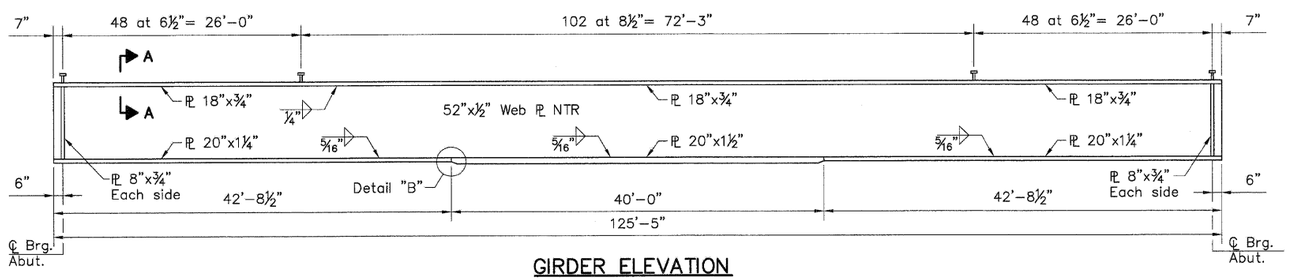
DIAPHRAGM D1

24 Req'd

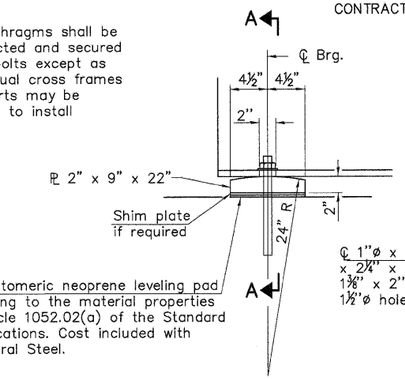
All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.



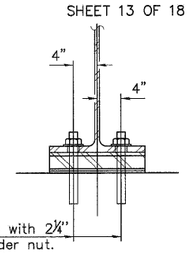
PLAN



GIRDER ELEVATION



ELEVATION AT ABUTMENT



SECTION A–A

FIXED BEARING

INTERIOR GIRDER MOMENT TABLE		
		0.5 Sp. 1
I_s	(in^4)	33,855
$I_c(n)$	(in^4)	88,122
$I_c(3n)$	(in^4)	61,799
S_s	(in^3)	1,021
$S_c(n)$	(in^3)	2,130
$S_c(3n)$	(in^3)	1,958
DC1	(k/')	0.99
M_{DC1}	('k)	1,893
DC2	(k/')	0.18
M_{DC2}	('k)	349
DW	(k/')	0.35
M_{DW}	('k)	678
M_{LL+IM}	('k)	2,165
M_u (Strength I)	('k)	7,608
$\phi_f M_n$, $\phi_f M_{nc}$	('k)	9,693
f_s DC1	(ksi)	14.2
f_s DC2	(ksi)	2.4
f_s DW	(ksi)	3.9
f_s 1.3(LL+IM)	(ksi)	15.8
f_s (Service II)	(ksi)	36.3
f_s (Total)(Strength I)	(ksi)	47.9

INTERIOR GIRDER REACTION TABLE		
		Abut.
R_{DC1}	(k)	61.8
R_{DC2}	(k)	10.9
R_{DW}	(k)	21.8
R_{LL+IM}	(k)	100.2
R_{Total}	(k)	194.7

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) 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) due to long-term composite (superimposed) dead loads ($in.^4$ and $in.^3$).

Z: Plastic Section Modulus of the steel section in non-composite areas. Omit line in Moment Table if not used in design calculations ($in.^3$).

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

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

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

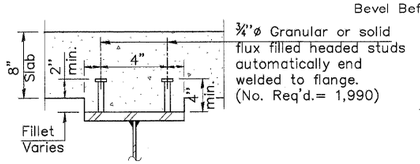
$\phi_f M_{nc}$: Compact non-composite negative moment capacity computed according to Article A6.1.1 (kip-ft.).

f_s (Service II): Sum of stresses as computed from the moments below (ksi).
$M_{DC1} + M_{DC2} + M_{DW} + 1.3\ M_{LL+IM}$

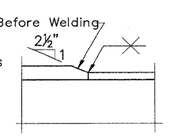
f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).
$1.25\ (M_{DC1} + M_{DC2}) + 1.5\ M_{DW} + 1.75\ M_{LL+IM}$

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

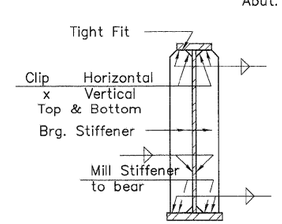
Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.



SECTION A–A



DETAIL "B"



SECTION AT ABUTMENT

DESIGNED	D.S.P.	
CHECKED	C.S.B.	
DRAWN	D.S.P.	
CHECKED	C.S.B.	

20

EXAMINED
ENGINEER OF BRIDGE DESIGN

PASSED
ENGINEER OF BRIDGES AND STRUCTURES

PSBA
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REVISIONS	
NAME	DATE

STRUCTURAL STEEL
STRUCTURE NO. 001-6012

CITY OF QUINCY, ILLINOIS

N. 5TH STREET BRIDGE

STRUCTURAL STEEL

SCALE: VERT.
HORIZ.
DATE

DRAWN BY: DSP
CHECKED BY: CSB