Operator: dheberling
Date: 9/9/2009 3:16:37 PM
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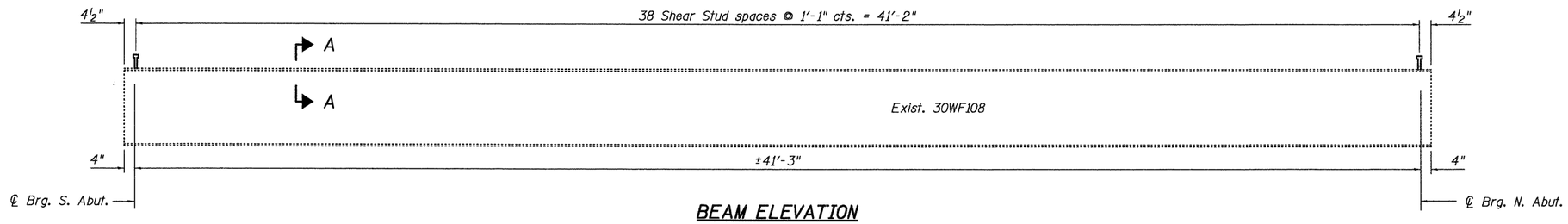
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



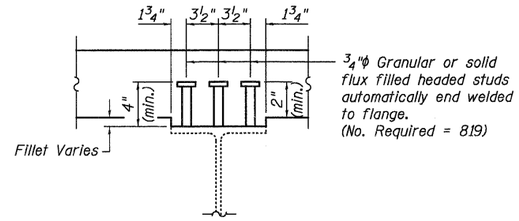
BEAM ELEVATION
(Typ. all beams)

* Section properties and moment capacities are based upon a 10% reduction in flange thickness due to deterioration documented during an April 2009 inspection.

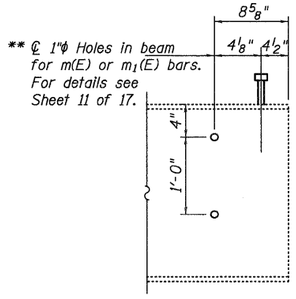
INTERIOR GIRDER MOMENT TABLE*		
		0.462 Span
I_s	(in^4)	4,043
$I_c(n)$	(in^4)	11,530
$I_c(3n)$	(in^4)	8,612
S_s	(in^3)	272
$S_c(n)$	(in^3)	415
$S_c(3n)$	(in^3)	376
$\mathcal{D}$	(k/')	0.710
$M\mathcal{D}$	('k)	150
$s\mathcal{D}$	(k/')	0.30
$M_s\mathcal{D}$	('k)	64
$M\ell$	('k)	261
M_I	('k)	78
$\frac{5}{3}[M\ell + I]$	('k)	566
M_a	('k)	1,014
M_u	('k)	1,641
f_s $\mathcal{D}$ non-comp	(ksi)	6.7
f_s $\mathcal{D}$ (comp)	(ksi)	2.0
f_s $\frac{5}{3}[M\ell + M_I]$	(ksi)	16.3
f_s (Overload)	(ksi)	25.0
f_s (Total)	(ksi)	-
VR	(k)	40

INTERIOR GIRDER REACTION TABLE		
		Abutments
$R\mathcal{D}$	(k)	20.8
$R\ell$	(k)	30.8
R_I	(k)	9.2
R_{Total}	(k)	60.8

I_s, S_s: Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total and Overload) 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 and Overload) 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 and Overload) due to long-term composite (superimposed) dead loads (in.^{4} and in.^{3}).
$\mathcal{D}$: Un-factored non-composite dead load (kips/ft.).
$M\mathcal{D}$: Un-factored moment due to non-composite dead load (kip-ft.).
$s\mathcal{D}$: Un-factored long-term composite (superimposed) dead load (kips/ft.)
$M_s\mathcal{D}$: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
$M\ell$: Un-factored live load moment (kip-ft.).
M_I: Un-factored moment due to impact (kip-ft.).
M_a: Factored design moment (kip-ft.).
$1.3\ [\ M\mathcal{D} + M_s\mathcal{D} + \frac{5}{3}(M\ell + M_I)]$
M_u: Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).
f_s (Overload): Sum of stresses as computed from the moments below (ksi).
$M\mathcal{D} + M_s\mathcal{D} + \frac{5}{3}(M\ell + M_I)$
f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
$1.3\ [M\mathcal{D} + M_s\mathcal{D} + \frac{5}{3}(M\ell + M_I)]$
VR: Maximum ℓ + impact shear range within the composite portion of the span for stud shear connector design (kips).



SECTION A-A



** Field drill holes. Cost included with "Concrete Superstructure".

TYP. END OF BEAM ELEVATION

STRUCTURAL STEEL
INTERSTATE 55 W. FRONTAGE ROAD
OVER I & M CANAL & STATE TRAIL
F.A.I. ROUTE 55 - SECTION 86B-3-R
WILL COUNTY
STRUCTURE NO. 099-0036
PUBLIC WATERS

SHEET NO. 14	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
17 SHEETS	55	86B-3-R	WILL	38	27
	S.N. 099-0036		CONTRACT NO. 60F53		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

DESIGNED	- SDS
CHECKED	- CWC
DRAWN	- DLH
CHECKED	- SDS/CEH

WHKS & CO. ENGINEERING
7018 KINGSMILL CT.,
SPRINGFIELD, IL
(217) 483-9457
DESIGN FIRM #184001036

D-91-097-09