FIRM:Your Firm JOB NO.2004-0028 SHEET NO: 1
MADE BY:KJH DATE:05-05-2006 CHECKED BY: DATE:
TITLE:Example LOADER output

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LOADING CALCULATION:

Design Data:

Beam type: Steel beam/girder
Number of spans = 4
Beginning span number = 1
Design speed, v= 65 mph

Method of distributing superimposed dead loads to beams:
--> Distribute SDL equally to all beams

Superimposed Dead Loads:
Left Parapet: 2.500' * 1.000' * 0.15 k/ft^3 = .375 k/ft
Left Handrail: 0.050 k/ft

Left SDL = 1.437 k/ft
Centroid of Left SDL is located at 3.31 feet from left face/parapet

Right Parapet: 2.500' * 1.000' * 0.15 k/ft^3 = .375 k/ft
Right Handrail: 0.050 k/ft

Right SDL = 1.437 k/ft
Centroid of Right SDL is located at 3.31 feet from right face/parapet

TABLE OF BEAM SPACINGS MEASURED PERPENDICULAR TO STATIONING LINE

Span No.	From	To	Average Distance (feet)
Span 1	Left edge/deck	B3	2.83
	B3	B4	7.66
	B4	B5	7.66
	B5	B6	7.66
	B6	B7	7.66
	B7	B8	7.66
	B8	B9	7.66
	B9	B10	7.66
	B10	B11	7.66
	B11	B12	7.66
	B12	Right edge/deck	2.83
Span 2	Left edge/deck	B3	2.83
	B3	B4	7.66
	B4	B5	7.66
	B5	B6	7.66
	B6	B7	7.66
	B7	B8	7.66

LOADING CALCULATION:

TABLE OF BEAM SPACINGS MEASURED PERPENDICULAR TO STATIONING LINE

Span No.	From	To	Average Distance (feet)
	B8	B9	7.66
	B9	B10	7.66
	B10	B11	7.66
	B11	B12	7.66
	B12	Right edge/deck	2.83
Span 3	Left edge/deck	B3	2.83
	B3	B4	7.66
	B4	B5	7.66
	B5	B6	7.66
	B6	B7	7.66
	B7	B8	7.66
	B8	B9	7.66
	B9	B10	7.66
	B10	B11	7.66
	B11	B12	7.66
	B12	Right edge/deck	2.83
Span 4	Left edge/deck	B3	2.83
	B3	B4	7.66
	B4	B5	7.66
	B5	B6	7.66
	B6	B7	7.66
	B7	B8	7.66
	B8	B9	7.66
	B9	B10	7.66
	B10	B11	7.66
	B11	B12	7.66
	B12	Right edge/deck	2.83

FIRM:Your Firm JOB NO.2004-0028 SHEET NO: 3
MADE BY:KJH DATE:05-05-2006 CHECKED BY: DATE:
TITLE:Example LOADER output

LOADING CALCULATION SUMMARY:

TABLE OF BEAM LOADS

Location	Dead Loads (k/ft/beam)			LL Distribution Factors (lanes/beam)		
	Slab DL	Superim-posed DL	FWS only	Standard Spec. DF	LRFD Moment DF	LRFD Shear DF
B3						
Span 1	.666	.429	.142	.647	.417	.395
Span 2	.666	.429	.142	.647	.419	.395
Span 3	.666	.430	.142	.647	.428	.395
Span 4	.666	.430	.142	.647	.440	.395
B4						
Span 1	.766	.429	.142	.696	.632	.790
Span 2	.766	.429	.142	.696	.636	.790
Span 3	.766	.430	.142	.696	.648	.790
Span 4	.766	.430	.142	.696	.664	.790
B5						
Span 1	.766	.429	.142	.696	.632	.790
Span 2	.766	.429	.142	.696	.636	.790
Span 3	.766	.430	.142	.696	.648	.790
Span 4	.766	.430	.142	.696	.660	.790
B6						
Span 1	.766	.429	.142	.696	.632	.790
Span 2	.766	.429	.142	.696	.636	.790
Span 3	.766	.430	.142	.696	.648	.790
Span 4	.766	.430	.142	.696	.657	.790
B7						
Span 1	.766	.429	.142	.696	.632	.790
Span 2	.766	.429	.142	.696	.636	.790
Span 3	.766	.430	.142	.696	.648	.790
Span 4	.766	.430	.142	.696	.654	.790
B8						
Span 1	.766	.429	.142	.696	.632	.790
Span 2	.766	.429	.142	.696	.636	.790
Span 3	.766	.430	.142	.696	.648	.790
Span 4	.766	.430	.142	.696	.652	.790
B9						
Span 1	.766	.429	.142	.696	.632	.790
Span 2	.766	.429	.142	.696	.636	.790
Span 3	.766	.430	.142	.696	.648	.790
Span 4	.766	.430	.142	.696	.649	.790
B10						
Span 1	.766	.429	.142	.696	.632	.790
Span 2	.766	.429	.142	.696	.636	.790

Note: Superimposed DL includes the weight of the future wearing surface.

LOADING CALCULATION SUMMARY (CONT'D):

TABLE OF BEAM LOADS

Location	Dead Loads (k/ft/beam)			LL Distribution Factors (lanes/beam)		
	Slab DL	Superim-posed DL	FWS only	Standard Spec. DF	LRFD Moment DF	LRFD Shear DF
Span 3	.766	.430	.142	.696	.648	.790
Span 4	.766	.430	.142	.696	.646	.790
B11						
Span 1	.766	.429	.142	.696	.632	.790
Span 2	.766	.429	.142	.696	.636	.790
Span 3	.766	.430	.142	.696	.648	.790
Span 4	.766	.430	.142	.696	.643	.790
B12						
Span 1	.666	.429	.142	.647	.417	.395
Span 2	.666	.429	.142	.647	.419	.395
Span 3	.666	.430	.142	.647	.428	.395
Span 4	.666	.430	.142	.647	.423	.395

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MADE BY:KJH DATE:05-05-2006 CHECKED BY: DATE:
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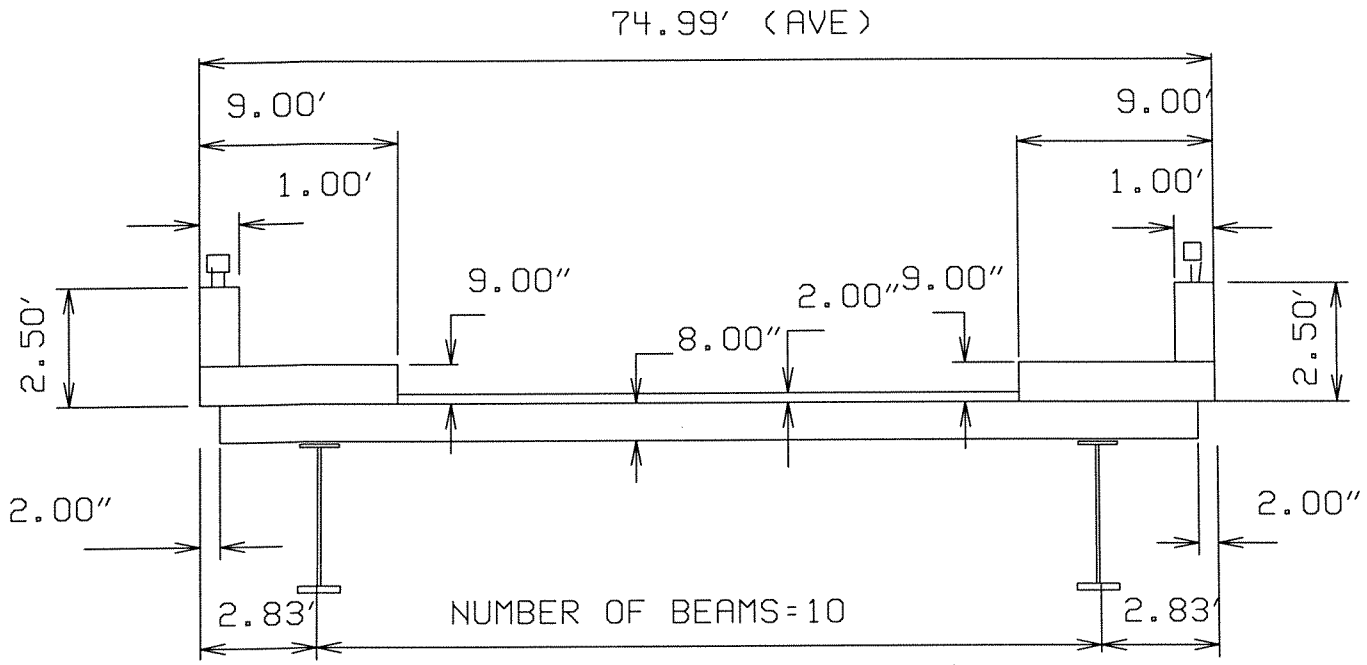
DETAILED LOADING CALCULATION FOR BEAM B3 SPAN 1:



SECTION - SPAN 1
(LOOKING UPSTATION)

Dead Loads (exclusive of beam and fillet dead loads):

Average beam spacing, S = 7.66 ft
Average cantilever width = 2.83 ft

Deck: 6.66 ft * 8.00 inch/12 * .15 = .666 k/ft
(Beam and fillet dead loads to be computed separately during beam design)

Overlay: 56.99 ft * 2.00 inch/12 * .15 = 1.42 k/ft
* .100/bm = .142 k/ft/bm

Left side parapet/sidewalk/median: 1.43 k/ft
* .100/bm = .143 k/ft/bm

Right side parapet/sidewalk/median: 1.43 k/ft
* .100/bm = .143 k/ft/bm

Superimposed Dead Load = .429 k/ft/bm

Live Load Distribution Factor Per AASHTO Standard Specifications:

(Refer to Standard Spec. 3.23.2.3.1.5)
LL DF = S/(4 + 0.25*S) wheels/beam * 1 Lane/2 wheels
= 7.666 ft/(4 + 0.25* 7.666) * 1/2
= .647 lanes/beam

DETAILED LOADING CALCULATION FOR BEAM B3 SPAN 1 (CONT'D):

Live Load Distribution Factor Per AASHTO LRFD Specifications:

Span length along beam, L = 75.00 feet
Distance between curbs = 56.99 feet curb-to-curb
Maximum number of lanes = 56.99 feet/12 feet/lane = 4 lanes

Compute Live Load Distribution for Moment in Exterior Beams:
(Refer to Table 4.6.2.2d-1)

$g = e * g_{interior}$

$g_{interior} = 0.075 + (S / 9.5)^{0.6} * (S / L)^{0.2}$ (Table 4.6.2.2b-1)
$= 0.075 + (7.66/9.5)^{0.6} *(7.66/ 75.00)^{0.2}$
$= .632$ lanes/beam

$e = 0.77 + d_e /9.1$

Distance from the centerline beam to inside face of curb/parapet,
d_e = -6.00 feet < -1 (outside range in table)
Base this calculation on using de = -1.

--> e = 0.77 + (-1.00/9.1) = .660
--> g = .660 * .632 lanes/beam = .417 lanes/beam

Therefore, LL DF Moment = .417 lanes per beam

Compute Live Load Distribution for Shear in Exterior Beams:
(Refer to Table 4.6.2.3b-1)

$g = e * g_{interior}$

$g_{interior} = 0.2 + S/12 - (S/35)^2$ (Table 4.6.2.2.3a-1)
$= 0.2 + 7.66/12 - (7.66/35)^2$
$= .790$ lanes/beam

$e = 0.6 + d_e /10$
$= 0.6 + (-1.000/10) = .500$
--> g = .500 * .790 lanes/beam = .395 lanes/beam

Therefore, LL DF Shear = .395 lanes per beam

FIRM:Your Firm JOB NO.2004-0028 SHEET NO: 7
MADE BY:KJH DATE:05-05-2006 CHECKED BY: DATE:
TITLE:Example LOADER output

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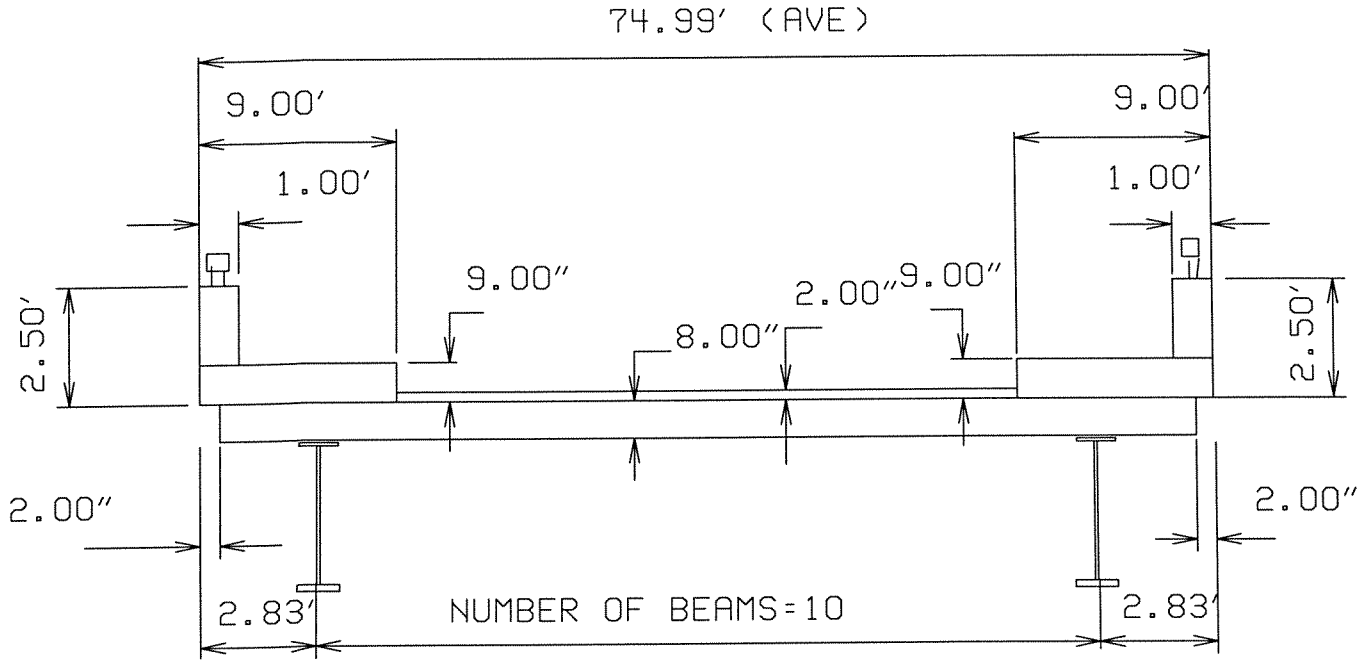
DETAILED LOADING CALCULATION FOR BEAM B3 SPAN 2:



SECTION - SPAN 2
(LOOKING UPSTATION)

Dead Loads (exclusive of beam and fillet dead loads):

Average beam spacing, S = 7.66 ft
Average cantilever width = 2.83 ft

Deck: 6.66 ft * 8.00 inch/12 * .15 = .666 k/ft
(Beam and fillet dead loads to be computed separately during beam design)

Overlay: 56.99 ft * 2.00 inch/12 * .15 = 1.42 k/ft
* .100/bm = .142 k/ft/bm

Left side parapet/sidewalk/median: 1.43 k/ft
* .100/bm = .143 k/ft/bm

Right side parapet/sidewalk/median: 1.43 k/ft
* .100/bm = .143 k/ft/bm

Superimposed Dead Load = .429 k/ft/bm

Live Load Distribution Factor Per AASHTO Standard Specifications:

(Refer to Standard Spec. 3.23.2.3.1.5)
LL DF = S/(4 + 0.25*S) wheels/beam * 1 Lane/2 wheels
= 7.666 ft/(4 + 0.25* 7.666) * 1/2
= .647 lanes/beam

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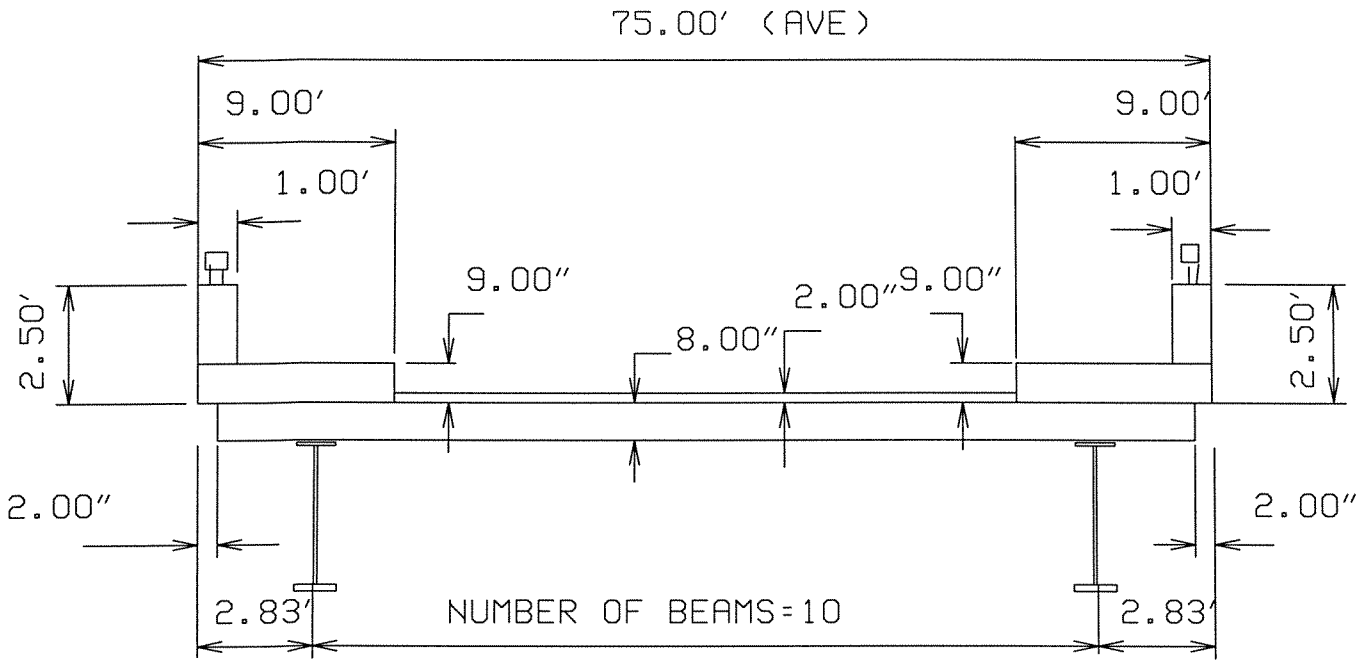
DETAILED LOADING CALCULATION FOR BEAM B3 SPAN 3:



SECTION - SPAN 3
(LOOKING UPSTATION)

Dead Loads (exclusive of beam and fillet dead loads):

Average beam spacing, S = 7.66 ft
Average cantilever width = 2.83 ft

Deck: 6.66 ft * 8.00 inch/12 * .15 = .666 k/ft
(Beam and fillet dead loads to be computed separately during beam design)

Overlay: 57.00 ft * 2.00 inch/12 * .15 = 1.42 k/ft
* .100/bm = .142 k/ft/bm

Left side parapet/sidewalk/median: 1.43 k/ft
* .100/bm = .143 k/ft/bm

Right side parapet/sidewalk/median: 1.43 k/ft
* .100/bm = .143 k/ft/bm

Superimposed Dead Load = .430 k/ft/bm

Live Load Distribution Factor Per AASHTO Standard Specifications:

(Refer to Standard Spec. 3.23.2.3.1.5)
LL DF = S/(4 + 0.25*S) wheels/beam * 1 Lane/2 wheels
= 7.666 ft/(4 + 0.25* 7.666) * 1/2
= .647 lanes/beam

DETAILED LOADING CALCULATION FOR BEAM B3 SPAN 3 (CONT'D):

Live Load Distribution Factor Per AASHTO LRFD Specifications:

Span length along beam, L = 64.84 feet
Distance between curbs = 57.00 feet curb-to-curb
Maximum number of lanes = 57.00 feet/12 feet/lane = 4 lanes

Compute Live Load Distribution for Moment in Exterior Beams:
(Refer to Table 4.6.2.2d-1)

$g = e * g_{interior}$

$g_{interior} = 0.075 + (S / 9.5)^{0.6} * (S / L)^{0.2}$ (Table 4.6.2.2b-1)
$= 0.075 + (7.66/9.5)^{0.6} *(7.66/ 64.84)^{0.2}$
$= .648$ lanes/beam

$e = 0.77 + d_e /9.1$

Distance from the centerline beam to inside face of curb/parapet,
d_e = -6.00 feet < -1 (outside range in table)
Base this calculation on using de = -1.

--> e = 0.77 + (-1.00/9.1) = .660
--> g = .660 * .648 lanes/beam = .428 lanes/beam

Therefore, LL DF Moment = .428 lanes per beam

Compute Live Load Distribution for Shear in Exterior Beams:
(Refer to Table 4.6.2.3b-1)

$g = e * g_{interior}$

$g_{interior} = 0.2 + S/12 - (S/35)^2$ (Table 4.6.2.2.3a-1)
$= 0.2 + 7.66/12 - (7.66/35)^2$
$= .790$ lanes/beam

$e = 0.6 + d_e /10$
$= 0.6 + (-1.000/10) = .500$
--> g = .500 * .790 lanes/beam = .395 lanes/beam

Therefore, LL DF Shear = .395 lanes per beam