Gravity Beam Design

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Diaba

STEEL CODE: AISC 360-10 LRFD

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (30.00,0.00)

Beam Size (Optimum) = W16X31Fy = 50.0 ksi

= 30.00Total Beam Length (ft) Distance to Adjacent Beam on Left (ft) = 8.0 Distance to Adjacent Beam on Right (ft) = 8.0

COMPOSITE PROPERTIES (Not Shored):

			Left		Right	
Deck Label						
Concrete thickness	(in)		3.50		3.50	
Unit weight concrete (pcf)			150.00		150.00	
fc (ksi)			4.00		4.00	
Decking Orientation		perpendicular		perpendicular		
Decking type			ASC 3W	I	ASC 3W	
beff (in)	=	90.00	Y bar(in)	=	18.37	
Mnf (kip-ft)	=	521.33	Mn (kip-ft)	=	412.96	
C (kips)	=	223.99	PNA (in)	=	15.48	
Ieff (in4)	=	938.11	Itr (in4)	=	1625.32	
Stud length (in)	=	5.00	Stud diam (in)	=	0.75	
Stud Capacity (kips) $Qn = 17.2$ $Rg = 1.00$ $Rp = 0.60$						
# of stude: May	= 60	Partial = 26	$\Lambda \text{ ctual} = 26$			

of studs: Max = 60Partial = 26Actual = 26

Number of Stud Rows = 1Percent of Full Composite Action = 49.06

Top flange braced by decking for Composite condition.

Top flange braced by decking for Pre-composite condition.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	PartL	CLL
1	0.000	0.031	0.031	0.000	0.000	0.000
	30.000	0.031	0.031	0.000	0.000	0.000
2	0.000	0.584	0.504	0.800	0.000	0.200
	30.000	0.584	0.504	0.800	0.000	0.200

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 30.27 kips 1.00Vn = 131.18 kips

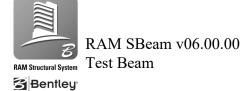
MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	<u>@</u>	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.2DL+1.6LL	108.2	15.0	0.0	1.00	0.90	202.50
	Init DL	1.4DL	84.3	15.0				
	Max +	1.2DL+1.6LL	227.0	15.0			0.90	371.66
Controlling		1.2DL+1.6LL	227.0	15.0			0.90	371.66

REACTIONS (kips):

	Left	Right
Initial reaction	11.03	11.03
DL reaction	9.23	9.23
Max +LL reaction	12.00	12.00
Max +total reaction (factored)	30.27	30.27

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DEFLECTIONS:	DEFL	ECTI	ONS:
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Initial load (in)	at	15.00 ft =	-0.897	L/D =	401
Live load (in)	at	15.00 ft =	-0.536	L/D =	672
Post Comp load (in)	at	15.00 ft =	-0.590	L/D =	611
Net Total load (in)	at	15.00 ft =	-1.486	L/D =	242