

Typical Beam Design

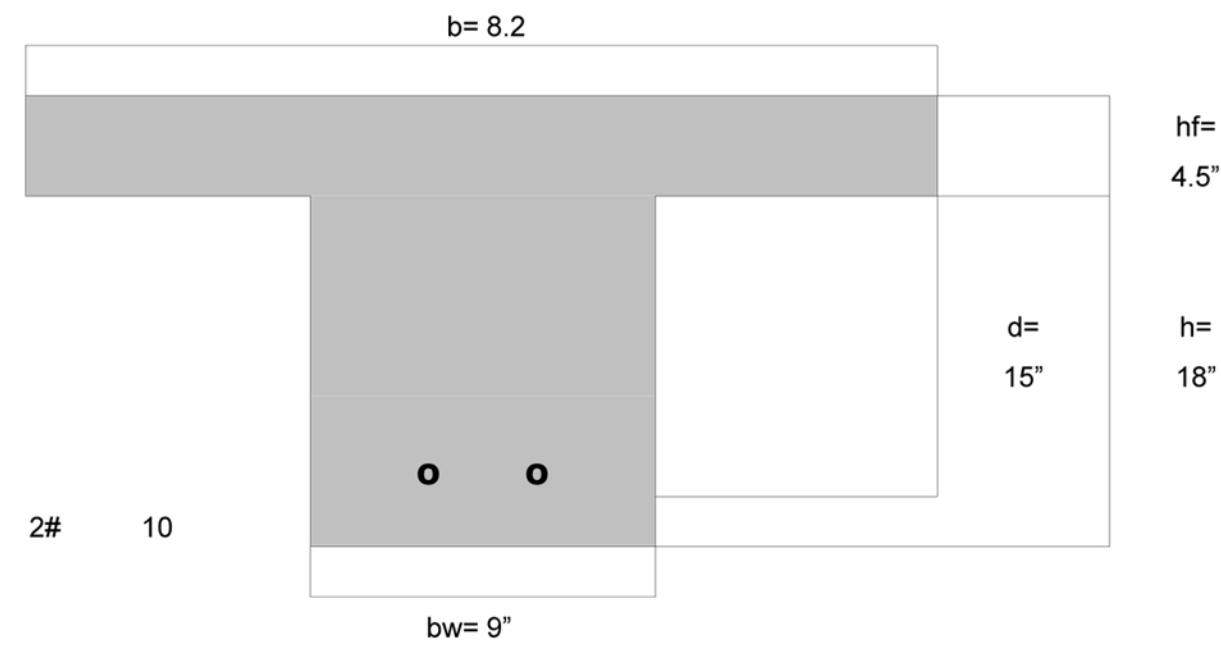
Slab Span	L= 25.42	ft.	
Clear distance from beam to beam	8.20	ft.	
Width of beam	bw= 9	in.	
Height of flange	hf= 4.5	in.	
Compressive strength	f _c = 4	ksi	
Yield Stress	F _y = 60	ksi	
Full beam Height	h= 18	in.	
Dead Load (Not beam)	DL= 82.5	k/ft.	
Live Load	LL= 100	k/ft.	
Top cover	d'= 2.5	in.	
Bottom cover	= 1.5	in.	
Inbetween layer clearance if existed	= 0.5	in.	
Beam width (used)	b= 76.26	in.	76.26 81 98.40
Factored Load on beam	W _u = 2.017	k/ft	
Nominal Moment Strength	φM _n = 1239.70	K-ft. =	14876.4195 K-in.
Factored Moment	M _u = 162.9475144	K-ft. =	1955.3701724 K-in.
Coefficient of Resistance	k= 0.1266		
Reinforcement ratio	ρ= 0.0022	Table A-10	
Assumed effective depth	d= 15	in.	
Moment	φM _n = 1955.37	k-in =	162.95 k-ft
No top rebar is necessary.			
As=	2.52 in ²		
As min=	0.45 in ²		
Bottom rebar selected:	2 #10	1 Layer	# 3 Stirrup Min b= 8"
As actual=	2.54 in ²		

Typical Girder Design

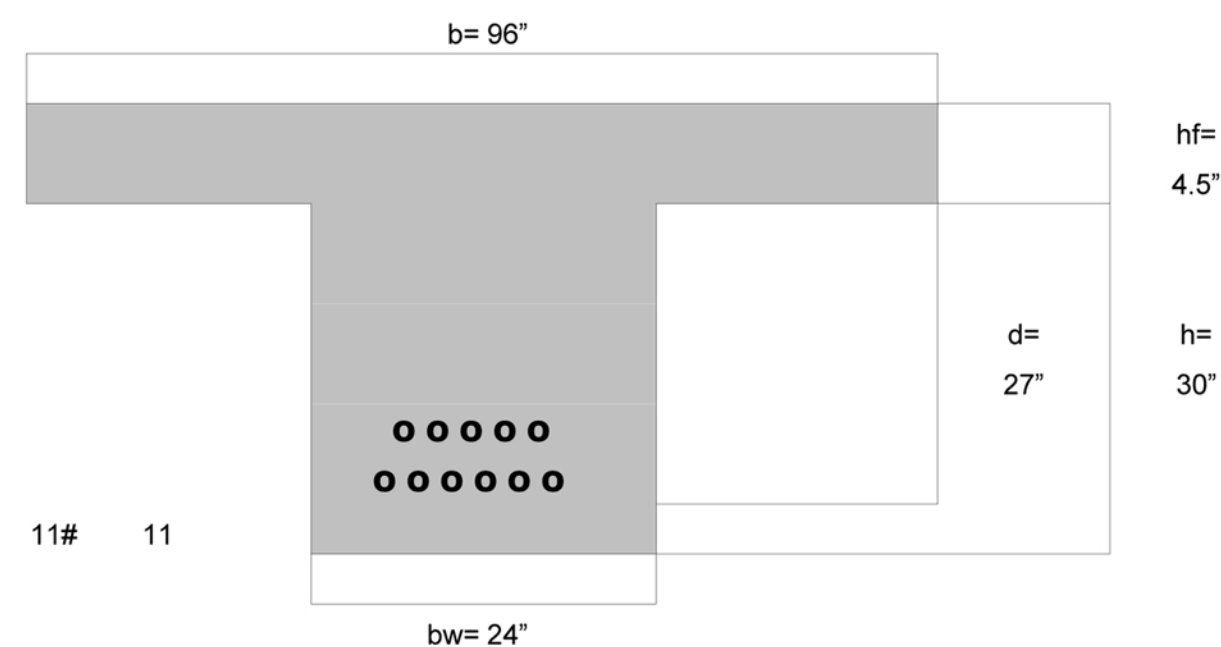
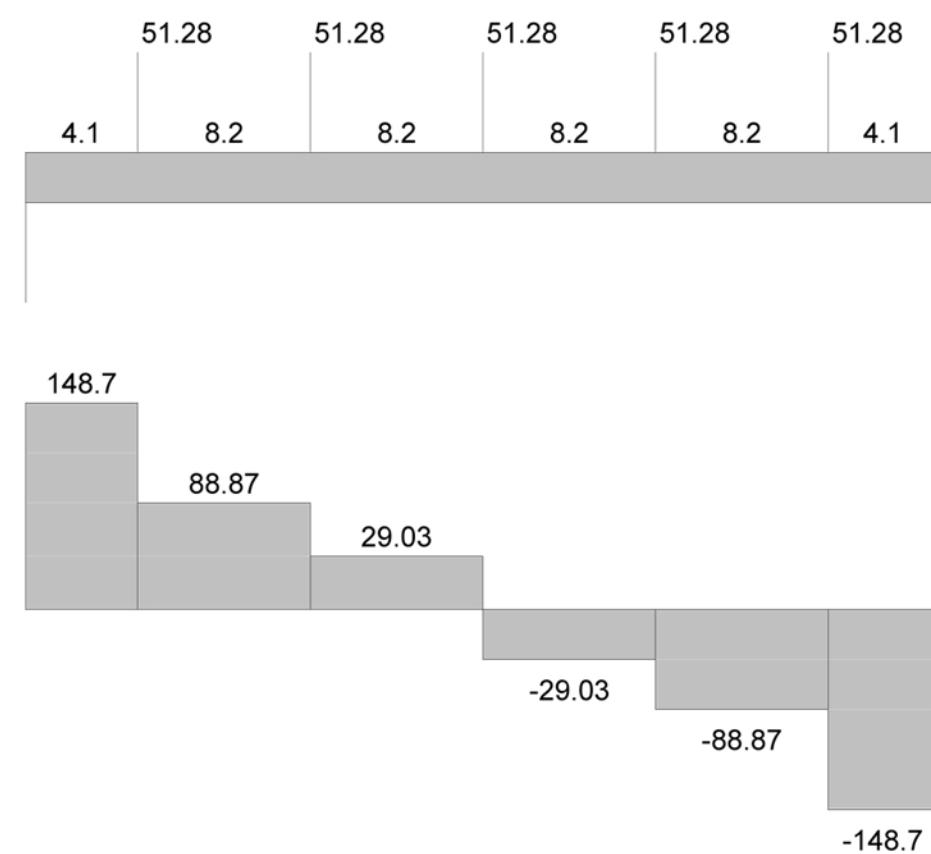
Girder Span	L= 41	ft.	148.71
Slab Span	L= 25.42	ft.	88.87
Clear distance from beam to beam	8.20	ft.	29.03
Width of beam	b= 96	in.	
Height of beam	hf= 4.5	in.	
Compressive strength	f _c = 4	ksi	
Yield Stress	F _y = 60	ksi	
Factored Load on beam	W _u = 2.017	k/ft	21510
	P _u = 51.2816725	K	
Factored Moment	M _u = 1792.5	K-ft. =	21510 K-in.
Moment	φM _n = 3396.600	K-ft.=	40759.200 K-in.
Effective Depth	d= 27	in.	
Coefficient of Resistance	k= 0.3415		
Reinforcement ratio	ρ= 0.0061	Table A-10	
As=	15.8112 in ²		
As min=	8.5536 in ²		
Bottom rebar selected:	11 #11	2 Layers	# 3 Stirrup Min b = 20.5
As actual=	17.2 in ²		
	23.4285714286 <30	No need to check deflection	

Note* Typical girder designed as a T-beam

Note* beam section not to scale



Note* girder section not to scale



Consultants

Structural Engineer
Holle Becker
Mechanical Engineer
Matthew Setzekorn
Electrical Engineer
Jim Stadelman
Aeronautic Specialist
David Aston

Contract Information

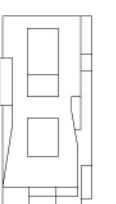
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Client



Key Plan



Date: 4/10/2011
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Chkd by: Harker
Sheet Title:
Calculations