STRUCTURAL PRESTRESSED INDUSTRIES, INC.

JOISTS AND SOFFIT BEAMS LOAD TABLES

11405 N.W. 112th Court Medley, FL 33178

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STRUCTURAL
PRESTRESSED
INDUSTRIES, INC.

About this Publication

To the best of our knowledge and understanding, the information given in this reference book is complete and accurate. This document is intended to guide the design professional while making his or her own preliminary evaluations of approximate depth, span, spacing and connections. The information given represents typical installations and applications for Structural Prestressed Industries Inc. (SPI) products. For applications requiring special loadings and or special serviceability requirements please contact SPI.

These guidelines are specific to Structural Prestressed Industries (SPI) precast/prestressed members and should never be used to evaluate members from other precast producers. These guidelines are not expressed nor implied warranties for other applications.

SPI encourages the Design and Construction Professionals to contact our Engineering Department for value engineering solutions and design build projects. Our team of experienced engineers, designers and project managers are available to assist you with all your needs.

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STRUCTURAL PRESTRESSED INDUSTRIES, INC.

11405 NW 112th Court Medley, Florida 33178
TEL (305) 556-6699 FAX (305) 556-9696 www.spimiami.com

FOR SPANS AND LOADS NOT SHOWN IN TABLES CONTACT SPI ENGINEERING. CHECK WITH SPI ENGINEERING DEPARTMENT FOR CASES OF HIGH WIND UPLIFT.

CAMBER IS INHERENT TO PRESTRESSED MEMBERS. HEAVY LOADING AND LONG SPANS MAY RESULT IN HIGHER CAMBERS. CONTACT SPI WITH ANY CAMBER CONCERNS.

8" PRESTRESSED KEYSTONE JOISTS 4" COMPOSITE SLAB f'c=4000psi

Spcg	Design	Span (ft)														Sys. Wt. (psf)
		18	19	20	21	22	23	24	25	26	27	28	30	32	34	
2'-6"	A	170	150	130	115	100	90	80	70	55						57
	B			150	135	120	105	95	85	75	65	55	45			
	C							130	110	90	70	65	60	50		
	D							200	180	165	155	140	115	95	65	

Spcg	Design	Span (ft)														Sys. Wt. (psf)
		18	19	20	21	22	23	24	25	26	27	28	30	32	34	
3'-6"	A	120	105	90	80	70	60	45								51
	B		120	105	90	80	70	60	45							
	C							95	85	75	65	55	45			
	D								130	120	110	105	85	75	55	

Spcg	Design	Span (ft)														Sys. Wt. (psf)
		18	19	20	21	22	23	24	25	26	27	28	29	30	32	
4'-6"	A	90	80	70	60	50										48
	B	105	90	75	65	60	50	45								
	C			100	90	80	70	65	60	55	50	45				
	D				145	135	125	115	105	95	85	80	70	65	50	

8" PRESTRESSED KEYSTONE JOISTS 4.75" (Min.) COMPOSITE SLAB f'c=5000psi

Spcg	Design	Span (ft)														Sys. Wt. (psf)
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	
5'-6"	A	70	60	50												59
	B	90	80	70	60	50										
	C	120	110	100	90	80	70	60	50							
	D	155	145	135	125	115	105	95	85	80	75	70	65	60	50	

Spcg	Design	Span (ft)														Sys. Wt. (psf)
		14	15	16	17	18	19	20	21	22	23	24	26	28	30	
6'-6"	A	70	65	60	55	50	45									57
	B	90	85	80	75	70	60	50	45							
	C	105	100	95	90	85	75	65	55	45						
	D	140	135	130	125	120	115	110	100	90	80	70	60	55	45	

These tables provide allowable superimposed service loads (in psf) on the composite system based on the following assumptions:

1. Prestressed Concrete: f'c=6000 psi.
2. 20 psf of the allowable superimposed service load is considered dead load on the composite system.
3. Loads are based on ACI 318-19.
4. Loads in the shaded boxes are controlled by serviceability (i.e. initial camber, permissible deflections). SPI recommends changing to a 4" thick slab with f'c=4000 psi min.

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12" PRESTRESSED KEYSTONE JOISTS 4" COMPOSITE SLAB f'c=4000psi

Spcg	Design	Span (ft)																			Sys. Wt. (psf)
		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
2'-6"	A	125	115	105	95	85	75	65	60	55	45										66
	B	170	165	160	140	130	120	110	100	90	80	75	65	60	55	50	45				
	C			180	170	160	150	135	120	110	100	90	85	75	70	65	55	50	45		
	D					200	190	185	170	160	150	130	115	105	95	85	80	75	65	45	

Spcg	Design	Span (ft)																			Sys. Wt. (psf)
		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
3'-6"	A	95	85	75	65	60	55	45													57
	B		135	125	115	105	95	85	75	70	65	60	55	45							
	C				160	150	140	120	110	95	85	75	65	55	50	45					
	D				190	170	150	140	130	125	110	100	90	80	70	60	50	45			
	E				200	180	160	150	140	135	125	115	105	95	85	70	60	50	45		

Spcg	Design	Span (ft)																			Sys. Wt. (psf)
		21	22	23	24	25	26	27	28	29	30	32	33	34	35	36	37	38	39	40	
4'-6"	A	95	90	85	80	75	70	65	55	45											53
	B	180	165	155	140	130	120	110	105	95	85	75	65	55	45						
	C		200	195	190	180	165	150	135	120	105	90	80	70	65	60	55	50	45		
	D						200	190	180	170	160	150	135	120	105	90	80	70	60	50	
	E							195	185	175	165	155	140	125	110	95	85	75	60	50	

12" PRESTRESSED KEYSTONE JOISTS 4.75" (Min.) COMPOSITE SLAB f'c=5000psi

Spcg	Design	Span (ft)																			Sys. Wt. (psf)
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
5'-6"	A	75	65	55	45																63
	B	150	140	130	120	110	100	90	80	70	60										
	C		180	170	160	150	140	130	120	110	100	90	80	70	60	55	50				
	D				200	180	160	150	140	130	120	110	100	90	80	70	60	55	45		
	E					190	170	155	145	135	125	115	105	95	85	75	65	60	55	45	

Spcg	Design	Span (ft)																			Sys. Wt. (psf)
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
6'-6"	A	60	50																		61
	B	95	85	75	65	55															
	C	115	95	85	80	75	70	65	60	55	45										
	D	140	125	115	110	105	100	95	90	85	80	75	70	65	60	55	45				
	E	150	135	125	120	115	110	105	100	95	90	85	80	75	70	65	60	55	45		

These tables provide allowable superimposed service loads (in psf) on the composite system based on the following assumptions:

1. Prestressed Concrete: f'c=6000 psi.
2. 20 psf of the allowable superimposed service load is considered dead load on the composite system.
3. Loads are based on ACI 318-19.
4. Loads in the shaded boxes are controlled by serviceability (i.e. initial camber, permissible deflections). SPI recommends changing to a 4" thick slab with f'c=4000 psi min.

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16" PRESTRESSED KEYSTONE JOISTS 4" COMPOSITE SLAB f'c=4000psi

Spcg	Design	Span (ft)																		Sys. Wt. (psf)
		24	26	28	30	32	34	36	38	40	42	44	46	48	50	51	52	53	54	55	
3'-6"	A	160	130	105	80	65	55														65
	B	220	190	160	145	120	105	95	80	60	50										
	C				200	175	150	125	105	95	75	70	60	50							
	D						190	170	150	130	110	90	80	70	60	55	50				
	E						200	180	160	140	120	100	90	80	70	65	60	55	50	45	

Spcg	Design	Span (ft)																		Sys. Wt. (psf)
		28	30	32	34	36	38	40	41	42	43	44	45	46	47	48	49	50	51	52	
4'-6"	A	80	65	45																	59
	B	130	110	90	75	60	50	45													
	C	170	150	120	100	85	75	70	65	60	55	50	45								
	D		180	160	140	130	110	100	90	85	80	75	70	65	60	55	50	45			
	E		200	180	160	140	120	110	100	95	90	85	80	75	70	65	60	55	50	45	

16" PRESTRESSED KEYSTONE JOISTS 4.75" (Min.) COMPOSITE SLAB f'c=5000psi

Spcg	Design	Span (ft)																		Sys. Wt. (psf)
		28	30	32	34	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
5'-6"	B	105	85	65	45																67
	C	145	120	100	80	70	60	55	50	45											
	D	180	160	140	120	100	95	90	85	80	75	70	65	60	55	50	45				
	E	200	180	160	140	120	110	105	100	95	90	85	80	75	70	65	60	55	50	**45**	

Spcg	Design	Span (ft)																			Sys. Wt. (psf)
		28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	
6'-6"	B	85	65	45																	65
	C	115	95	75	55																
	D	155	135	120	110	105	100	95	90	85	80	75	70	65	60	55	50	45			
	E	170	150	140	130	120	110	105	100	95	90	85	80	75	70	65	60	55	50	**45**	

These tables provide allowable superimposed service loads (in psf) on the composite system based on the following assumptions:

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20" PRESTRESSED KEYSTONE JOISTS 4" COMPOSITE SLAB f'c=5000psi

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
4'-8"	A	155	135	115	100	85	70	60	50				82
	B	185	160	140	125	105	90	80	70	60	50		
	C	240	210	185	160	140	130	110	100	85	75	65	
	D	275	240	210	185	165	150	130	115	105	90	80	

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
5'-8"	A	125	105	90	75	65	55						76
	B	150	130	110	95	85	70	60	50				
	C	195	170	150	130	115	100	90	75	70	55		
	D	220	195	175	150	130	120	105	90	80	70	**60**	

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
6'-8"	A	100	85	70	60	50							72
	B	125	105	90	80	65	55						
	C	160	140	120	105	95	80	70	55				
	D	185	160	140	120	110	95	85	75	65	**55**		

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
7'-8"	B	105	90	75	60	50							69
	C	135	120	100	90	75	65	55					
	D	165	135	120	100	90	80	65	55	**50**			

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
8'-8"	B	80	65	50									67
	C	115	100	85	70	50	55						
	D	145	125	110	95	80	70	60	**50**				

These tables provide allowable superimposed service loads (in psf) on the composite system based on the following assumptions:

1. Prestressed Concrete: f'c=6000 psi. minimum
2. 20 psf of the allowable superimposed service load is considered dead load on the composite system.
3. Loads are based on ACI 318-19.
4. Values in bold font are Class C based on computed extreme fiber stress at service loads as per ACI 318. Additional mild reinforcement may be required.
5. These design loads are based on 1 hour fire rating.

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20" PRESTRESSED KEYSTONE JOISTS 4.75" COMPOSITE SLAB f'c=5000psi

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
4'-8"	A	160	135	120	100	85	75	60	50				91
	B	190	165	140	120	105	90	80	70	60	50		
	C	250	220	190	165	145	130	110	100	85	75	65	
	D	290	250	220	185	165	150	130	120	105	90	80	

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
5'-8"	A	125	110	90	75	65	55						85
	B	155	135	110	95	85	70	60	50				
	C	200	175	150	135	115	100	90	75	70	55		
	D	230	200	175	150	130	120	105	90	80	70	**60**	

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
6'-8"	A	100	85	70	60	50							81
	B	130	110	90	75	65	55						
	C	165	145	125	105	95	80	70	60	50			
	D	190	170	145	125	110	95	85	75	65	**55**		

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
7'-8"	B	105	90	75	60	50							78
	C	135	120	100	90	75	65	55					
	D	165	140	120	100	90	80	65	55	**50**			

Spcg	Design	Span (ft)											Sys. Wt. (psf)
		36	38	40	42	44	46	48	50	52	54	56	
8'-8"	B	80	65	50									76
	C	115	95	85	70	60	55						
	D	150	130	110	95	80	70	60	**55**				

These tables provide allowable superimposed service loads (in psf) on the composite system based on the following assumptions:

1. Prestressed Concrete: f'c=6000 psi. minimum
2. 20 psf of the allowable superimposed service load is considered dead load on the composite system.
3. Loads are based on ACI 318-19.
4. Values in bold font are Class C based on computed extreme fiber stress at service loads as per ACI 318. Additional mild reinforcement may be required.
5. These design loads are based on 1 hour fire rating.

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24" PRESTRESSED KEYSTONE JOISTS 4" COMPOSITE SLAB f'c=5000psi

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		40	42	44	46	48	50	52	54	56	58	60	62	64	
4'-8"	A	195	165	145	130	110	90	80	70	60	50				88
	B	260	230	200	180	165	150	130	105	90	80	70	**60**	**50**	
	C	300	285	270	245	220	185	170	150	135	120	100	**85**	**75**	

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		40	42	44	46	48	50	52	54	56	58	60	62	64	
5'-8"	A	165	140	120	100	85	65								81
	B	200	185	165	145	120	105	95	80	70	60	**50**			
	C	240	220	200	180	165	150	130	110	95	80	**70**	**50**		
	D	270	245	225	205	180	160	140	125	105	90	**80**	**70**		

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		40	42	44	46	48	50	52	54	56	58	60	62	64	
6'-8"	A	100	95	90	85	80									77
	B	135	120	115	100	95									
	C	190	170	150	130	110	90	70	50						
	D	240	215	200	175	160	135	115	95	85	70	**60**	**55**		
	E	260	235	220	195	180	145	125	105	95	80	**70**	**65**		

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		40	42	44	46	48	50	52	54	56	58	60	62	64	
8'-8"	B	110	90	75	60										70
	C	130	110	90	70	50									
	D	165	140	115	105	90	80	70	60	55	**50**				
	E	185	155	130	125	110	100	90	80	70	**60**				

These tables provide allowable superimposed service loads (in psf) on the composite system based on the following assumptions:

1. Prestressed Concrete: f'c=6000 psi. minimum
2. 20 psf of the allowable superimposed service load is considered dead load on the composite system.
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5. These design loads are based on 1 hour fire rating.

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24" PRESTRESSED KEYSTONE JOISTS 4.75" COMPOSITE SLAB f'c=5000psi

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		40	42	44	46	48	50	52	54	56	58	60	62	64	
6'-8"	B	135	120	115	100	95									85
	C	190	170	150	130	110	90	70	50						
	D	245	220	205	175	160	135	115	95	85	70	**60**	**55**		
	E	265	240	225	195	180	145	125	105	95	80	**70**	**65**		

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		40	42	44	46	48	50	52	54	56	58	60	62	64	
8'-8"	B	110	90	75	60										80
	C	130	110	90	70	50									
	D	180	150	120	110	95	85	80	70	65	**60**	**55**			
	E	200	165	135	125	110	100	90	80	70	**60**	**55**	**50**		

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		40	42	44	46	48	50	52	54	56	58	60	62	64	
10'-8"	E	120	105	95	85	80	75	70	60	**55**	**50**				76

These tables provide allowable superimposed service loads (in psf) on the composite system based on the following assumptions:

1. Prestressed Concrete: f'c=6000 psi. minimum
2. 20 psf of the allowable superimposed service load is considered dead load on the composite system.
3. Loads are based on ACI 318-19.
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28" PRESTRESSED KEYSTONE JOISTS 4" COMPOSITE SLAB f'c=5000psi

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		54	56	58	60	62	64	66	68	70	72	74	76	78	
4'-8"	A	155	140	125	110	100	90	80	70	60					95
	B	210	190	170	150	140	120	100	80	75	70	65	**60**	**55**	
	C	240	215	195	175	155	135	115	100	85	80	75	**70**	**65**	

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		54	56	58	60	62	64	66	68	70	71	72	73	74	
5'-8"	A	125	110	95	80	70	65	60	55						87
	B	170	145	125	110	95	85	80	75	70	65	60	55	50	
	C	220	190	165	145	125	110	95	90	85	80	75	70	65	

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		54	55	56	57	58	60	62	64	66	68	70	72	74	
6'-8"	A	100	90	80	70	65	60	55	50						82
	B	145	135	125	115	105	95	85	75	65	60	55	50		
	C	170	150	135	125	115	105	95	85	70	65	60	55	50	

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		54	55	56	57	58	59	60	61	62	64	66	68	70	
7'-8"	A	85	80	75	70	65	60	55	50						78
	B	120	110	100	90	85	80	75	70	65	60	55	50		
	C	145	130	115	100	95	90	85	80	75	70	65	60	55	

These tables provide allowable superimposed service loads (in psf) on the composite system based on the following assumptions:

1. Prestressed Concrete: f'c=6000 psi. minimum
2. 20 psf of the allowable superimposed service load is considered dead load on the composite system.
3. Loads are based on ACI 318-19.
4. Values in bold font are Class C based on computed extreme fiber stress at service loads as per ACI 318. Additional mild reinforcement may be required.
5. These design loads are based on 1 hour fire rating.

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FOR SPANS AND LOADS NOT SHOWN IN TABLES CONTACT SPI ENGINEERING. CHECK WITH SPI ENGINEERING DEPARTMENT FOR CASES OF HIGH WIND UPLIFT.

CAMBER IS INHERENT TO PRESTRESSED MEMBERS. HEAVY LOADING AND LONG SPANS MAY RESULT IN HIGHER CAMBERS. CONTACT SPI WITH ANY CAMBER CONCERNS.

28" PRESTRESSED KEYSTONE JOISTS 4.75" COMPOSITE SLAB

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		54	55	56	57	58	59	60	61	62	64	66	68	70	
8'-8"	A	70	65	60	55	50	45								84
	B	100	90	85	80	75	70	65	60	55	50	45			
	C	125	115	105	95	85	80	75	70	65	60	55	**50**		

Spcg	Design	Span (ft)													Sys. Wt. (psf)
		54	55	56	57	58	59	60	61	62	63	64	65	66	
10'-8"	B	70	65	60	55	50	45								79
	C	90	85	80	75	70	65	60	55	50					
	D	100	95	90	85	80	75	70	65	60	**55**	**50**			

These tables provide allowable superimposed service loads (in psf) on the composite system based on the following assumptions:

1. Prestressed Concrete: f'c=6000 psi. minimum
2. 20 psf of the allowable superimposed service load is considered dead load on the composite system.
3. Loads are based on ACI 318-19.
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