

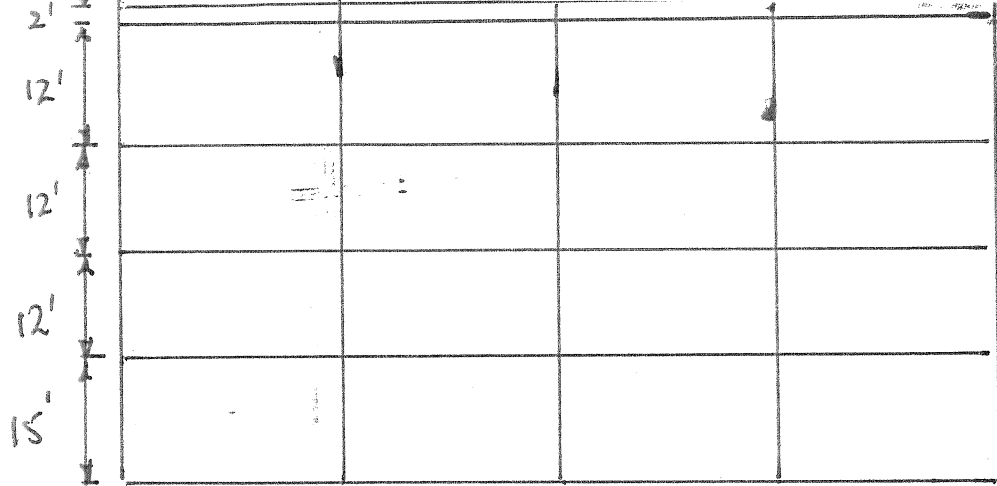
CAE 521: ADVANCED STEEL DESIGN
DESIGN PROJECT- Fall 2017

The elevation and two column layout options for a four-story office building are shown in the accompanying figures. The lateral load resistance for the structure is provided by rigid frames along grid lines A and E and braced frames along gridlines 1 and 5. The building is situated in Tampa with an exposure classified as Category "C". You may make assumptions on other design parameters as necessary, stating them in your report.

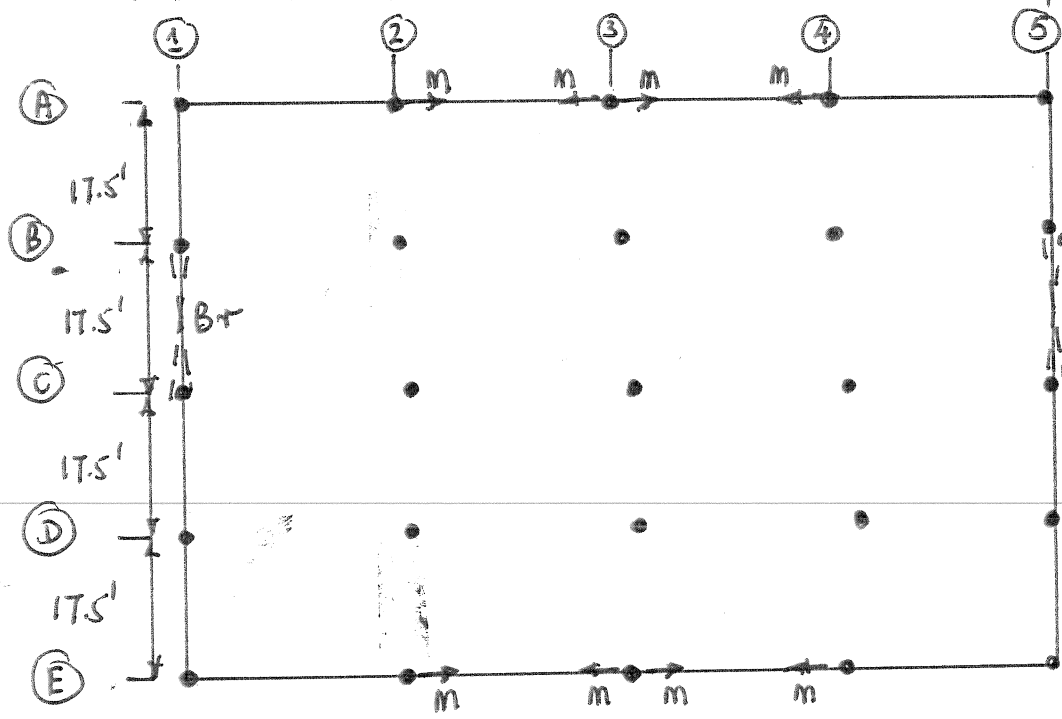
The following submittals are required during the semester according to the schedule to be announced in class. All submittals shall include drawings and calculations.

- Design loads for the building including dead loads, live loads and wind loads
- Design the roof framing system using metal deck and roof joists spanning 70 ft.
- Design the floor framing system with the following options:
Option A- metal deck with concrete fill supported on 22.5 ft non-composite beams.
- 11/13. Option B- metal deck with concrete fill supported on 35 ft composite beams.
- Design the columns for the gravity loads. The columns are expected to be spliced above the third story.
- Design the components of the moment frames for lateral and gravity loads.
- Design the braced frames for the lateral loads.
- Design a typical shear connection, a rigid connection and brace connection.
- Design a typical base plate and foundation.
- Evaluate the difference in construction costs for option A and B. case 1

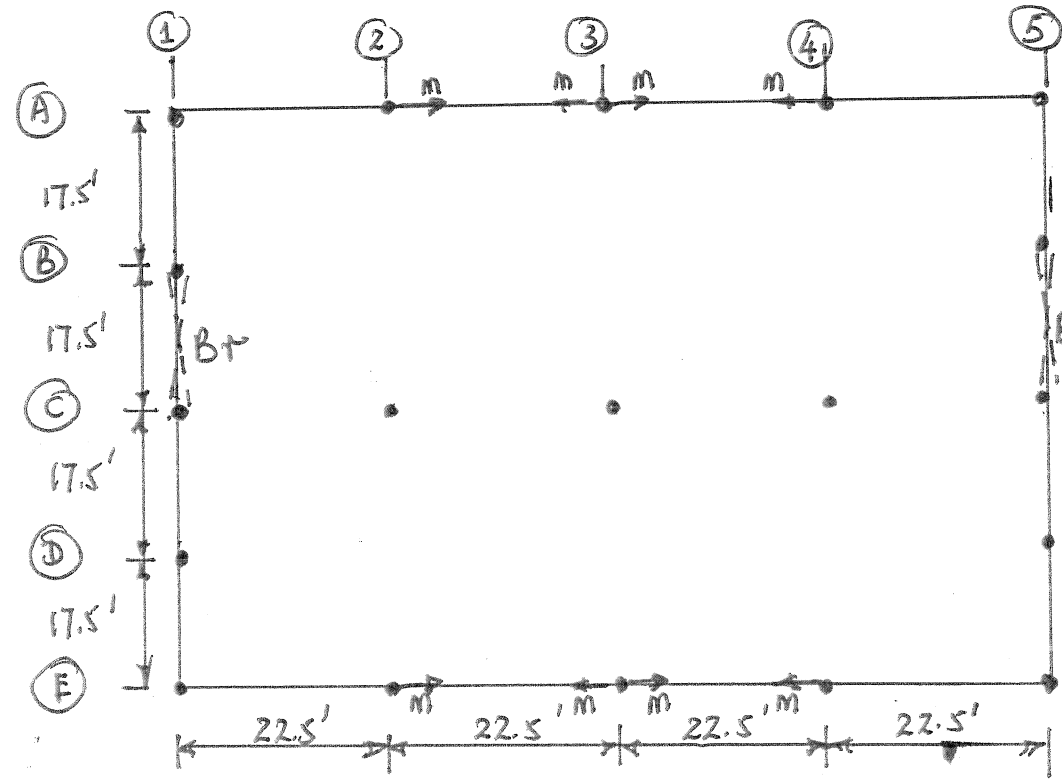
beam column foundation



ELEVATION

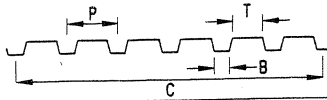


OPTION - A
COLUMN LAYOUT



OPTION - B
COLUMN LAYOUT

TECHNICAL PRODUCT INFORMATION

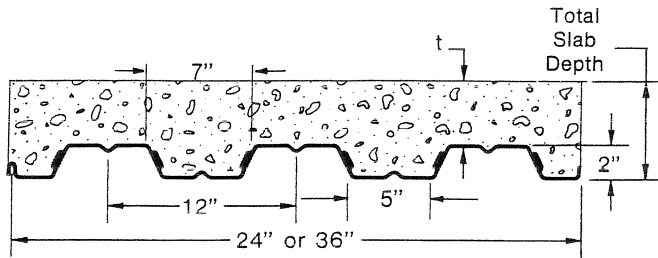


		Approximate Dimensions in Inches																								
		Indiana				Nebraska				South Carolina				Texas				Alabama/New York								
Deck Type	Gage	C	P	T	B	C	P	T	B	C	P	T	B	C	P	T	B	C	P	T	B					
ROOF 	24	36				30				36				36				36				36				
	22	36				36				36				36				36				36				
	21	36				36				36				36				36				36				
	20	36	6.00	3.50	1.75	36	6.00	3.50	1.75	36	6.00	3.50	1.75	36	6.00	3.50	1.75	36	6.00	3.50	1.75	36	6.00	3.50	1.75	
	19	36				36				36				36				36				36				
18	36				36				36				36				36				36					
16	36				36				36				36				36				NA	-	-	-		
	All	30	6.00	4.25	0.50	36	6.00	4.25	0.50	36	6.00	4.25	0.50	36	6.00	4.25	0.50	36	6.00	4.25	0.50	36	6.00	4.25	0.50	
	All	36	6.00	5.00	0.38	36	6.00	5.00	0.38	36	6.00	5.00	0.38	36	6.00	5.00	0.38	36	6.00	5.00	0.38	NA	-	-	-	
	All	24	8.00	5.38	1.88	24	8.00	5.38	1.88	24	8.00	5.38	1.88	24	8.00	5.38	1.88	24	8.00	5.38	1.88	24	8.00	5.38	1.88	
	All	36	4.00	1.13	1.13	32	4.00	1.01	1.25	33	3.67	0.90	0.90	33	3.67	1.00	1.00	36	4.00	1.13	1.13	36	4.00	1.13	1.13	
NON-COMPOSITE 	28	30				30				30				30				30				30				
	26	30	2.50	0.62	0.62	36	3.04	0.63	0.63	30	2.50	0.75	0.75	35	2.50	0.62	0.62	30	2.50	0.75	0.75	30	2.50	0.75	0.75	
	24	30				36				30				35				30				30				
	22	30				36				30				35				30				30				
		All	36	4.00	1.13	1.13	32	4.00	1.25	1.01	33	3.67	0.90	0.90	33	3.67	1.00	1.00	36	4.00	1.13	1.13	36	4.00	1.13	1.13
		All	NA	-	-	-	NA	-	-	-	NA	-	-	-	32	4.57	1.06	1.06	NA	-	-	-	NA	-	-	-
	24	36				30				36				30				36				36				
	22	36	6.00	1.75	3.50	36	6.00	1.75	3.50	36	6.00	1.75	3.50	36	6.00	1.75	3.50	36	6.00	1.75	3.50	36	6.00	1.75	3.50	
	20	36				36				36				36				36				36				
18	36				36				36				36				36				36					
	All	36	12.0	5.00	5.00	36	12.0	5.00	5.00	36	12.0	5.00	5.00	36	12.0	5.00	5.00	36	12.0	5.00	5.00	36	12.0	5.00	5.00	
	All	36	12.0	4.75	4.75	36	12.0	4.75	4.75	36	12.0	4.75	4.75	36	12.0	4.75	4.75	36	12.0	4.75	4.75	36	12.0	4.75	4.75	
COMPOSITE 	All	36	6.0	3.50	1.75	36	6.0	3.50	1.75	36	6.0	3.50	1.75	36	6.0	3.50	1.75	36	6.0	3.50	1.75	36	6.0	3.50	1.75	
		All	36	6.0	1.75	3.50	36	6.0	1.75	3.50	36	6.0	1.75	3.50	36	6.0	1.75	3.50	36	6.0	1.75	3.50	36	6.0	1.75	3.50
		All	36	12.0	5.00	5.00	36	12.0	5.00	5.00	36	12.0	5.00	5.00	36	12.0	5.00	5.00	36	12.0	5.00	5.00	36	12.0	5.00	5.00
		All	36	12.0	4.75	4.75	36	12.0	4.75	4.75	36	12.0	4.75	4.75	36	12.0	4.75	4.75	36	12.0	4.75	4.75	36	12.0	4.75	4.75

- NOTES:
- *This profile is not available from Indiana.
 - ** This profile is not available from Nebraska.
 - 1.5B, 3N and 3NA are only profiles available in 16 gage from Indiana.
 - No profile in 16 gage is available from Alabama.
 - Cellular deck (not shown) is available only from Nebraska.
 - Gage thickness of 21 gage is not recommended.

2 VLI

Maximum Sheet Length 42'-0"
 Extra Charge for Lengths Under 6'-0"
 ICBO Approved (No. 3415)



STEEL SECTION PROPERTIES

Fy = 40 KSI

Deck Type	Design Thick.	Weight PSF	Ip in ⁴ /ft	In in ⁴ /ft	Sp in ³ /ft	Sn in ³ /ft
2VLI22	0.0295	1.62	0.332	0.329	0.274	0.277
2VLI21	0.0329	1.81	0.378	0.375	0.317	0.321
2VLI20	0.0358	1.97	0.418	0.415	0.355	0.360
2VLI19	0.0418	2.30	0.493	0.492	0.435	0.443
2VLI10	0.0474	2.61	0.557	0.557	0.512	0.510
2VLI17	0.0538	2.96	0.633	0.633	0.589	0.589
2VLI16	0.0598	3.29	0.704	0.704	0.653	0.653

(N=9) NORMAL WEIGHT CONCRETE (145 PCF)

Total Slab Depth	Deck Type	SDI Max. Unshored Clear Span			Superimposed Live Load, PSF															
		1 Span	2 Span	3 Span	Clear Span (ft.-in.)															
					5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	
4"	2VLI22	6'-6"	8'-9"	8'-10"	274	239	211	164	145	129	115	104	94	85	78	71	65	59	54	
	2VLI21	7'-2"	9'-5"	9'-8"	294	255	224	200	155	138	123	111	100	91	83	76	69	64	58	
	2VLI20	7'-8"	9'-11"	10'-3"	310	269	236	210	188	146	130	117	106	96	87	80	73	67	62	
	2VLI19	8'-8"	11'-0"	11'-4"	344	298	261	231	207	186	169	130	117	106	97	88	81	74	68	
39 PSF	2VLI18	9'-6"	11'-10"	12'-3"	373	324	285	253	228	206	188	172	159	122	112	103	95	87	81	
	2VLI17	10'-4"	12'-7"	13'-0"	400	351	308	273	245	221	201	184	170	157	120	111	102	94	87	
4 1/2"	2VLI16	10'-11"	13'-2"	13'-5"	400	376	330	292	261	235	214	195	180	166	154	118	109	100	93	
	2VLI22	6'-2"	8'-4"	8'-5"	319	278	217	190	168	150	134	121	109	99	90	83	76	69	63	
4 1/2"	2VLI21	6'-9"	8'-11"	9'-3"	341	297	261	204	180	160	144	129	117	106	97	88	81	74	68	
	2VLI20	7'-3"	9'-5"	9'-9"	361	313	275	244	190	169	152	136	123	112	102	93	85	78	72	
	2VLI19	8'-2"	10'-5"	10'-10"	400	346	303	268	240	216	168	151	136	124	113	103	94	86	79	
	2VLI18	9'-0"	11'-3"	11'-8"	400	376	331	295	264	239	218	200	156	142	130	119	110	102	94	
45 PSF	2VLI17	9'-9"	12'-0"	12'-5"	400	400	358	318	284	257	234	214	197	153	140	129	118	109	101	
	2VLI16	10'-4"	12'-7"	13'-0"	400	400	383	339	303	274	248	227	209	193	150	137	126	117	108	
5"	2VLI22	5'-11"	7'-9"	8'-0"	364	285	247	217	192	171	153	138	125	113	103	94	86	79	72	
	2VLI21	6'-5"	8'-6"	8'-10"	389	338	266	233	206	183	164	147	133	121	110	101	92	84	78	
	2VLI20	6'-11"	9'-0"	9'-4"	400	356	313	246	217	193	173	156	141	128	116	106	97	89	82	
	2VLI19	7'-9"	10'-0"	10'-4"	400	394	345	306	273	214	192	172	156	141	128	117	107	99	91	
51 PSF	2VLI18	8'-7"	10'-9"	11'-2"	400	400	377	336	301	273	249	195	178	162	148	136	126	116	107	
	2VLI17	9'-3"	11'-6"	11'-10"	400	400	400	362	324	293	266	244	192	175	160	147	135	125	116	
5 1/2"	2VLI16	9'-10"	12'-1"	12'-5"	400	400	400	386	346	312	283	259	238	187	171	157	144	133	123	
	2VLI22	5'-8"	7'-2"	7'-4"	400	320	278	244	216	192	172	155	140	127	116	106	97	89	81	
5 1/2"	2VLI21	6'-2"	8'-2"	8'-5"	400	379	298	261	231	205	184	166	150	136	124	113	104	95	87	
	2VLI20	6'-7"	8'-8"	8'-11"	400	400	351	276	244	217	194	175	158	143	131	119	109	100	92	
	2VLI19	7'-5"	9'-7"	9'-11"	400	400	388	343	271	241	215	193	175	159	144	132	121	111	102	
	2VLI18	8'-2"	10'-4"	10'-8"	400	400	400	377	338	306	243	219	199	182	167	153	141	130	121	
57 PSF	2VLI17	8'-10"	11'-0"	11'-5"	400	400	400	400	364	329	299	237	215	196	180	165	152	140	130	
	2VLI16	9'-4"	11'-7"	12'-0"	400	400	400	400	388	350	318	290	230	210	192	176	162	150	138	
6"	2VLI22	5'-5"	6'-8"	6'-10"	400	355	308	270	239	213	191	172	156	141	129	118	108	99	90	
	2VLI21	5'-11"	7'-11"	8'-1"	400	381	331	290	256	228	204	184	166	151	137	126	115	105	97	
	2VLI20	6'-4"	8'-4"	8'-7"	400	400	350	306	271	241	215	194	175	159	145	132	121	111	102	
	2VLI19	7'-2"	9'-3"	9'-7"	400	400	400	381	301	267	239	215	194	176	160	146	134	123	113	
63 PSF	2VLI18	7'-10"	10'-0"	10'-4"	400	400	400	400	375	299	269	243	221	202	185	170	157	145	134	
	2VLI17	8'-6"	10'-7"	11'-0"	400	400	400	400	400	364	331	263	239	218	199	183	169	156	144	
6 1/2"	2VLI16	9'-0"	11'-2"	11'-6"	400	400	400	400	400	388	352	322	255	233	213	195	180	166	154	
	2VLI22	5'-1"	6'-2"	6'-4"	400	390	339	297	263	234	210	189	171	155	141	129	118	108	99	
6 1/2"	2VLI21	5'-9"	7'-6"	7'-6"	400	400	363	318	281	250	224	202	183	166	151	138	126	116	106	
	2VLI20	6'-1"	8'-1"	8'-4"	400	400	385	337	297	264	237	213	193	175	159	145	133	122	112	
	2VLI19	6'-10"	8'-11"	9'-3"	400	400	400	375	330	293	262	236	213	193	176	161	147	135	124	
	2VLI18	7'-7"	9'-8"	9'-11"	400	400	400	400	400	329	296	268	243	222	203	187	172	159	147	
69 PSF	2VLI17	8'-2"	10'-3"	10'-7"	400	400	400	400	400	400	400	320	289	262	239	219	201	185	171	158
	2VLI16	8'-8"	10'-9"	11'-2"	400	400	400	400	400	400	400	387	309	280	256	234	215	198	183	169

- NOTES:
- Minimum exterior bearing length required is 2.0 inches. Minimum interior bearing length required is 4.0 inches. If these minimum lengths are not provided, web crippling must be checked.
 - Always contact Vulcraft when using loads in excess of 200 psf. Such loads often result from concentrated, dynamic, or long term load cases for which reductions due to bond breakage, concrete creep, etc. should be evaluated.
 - All fire rated assemblies are subject to an upper live load limit of 250 psf.
 - Inquire about material availability of 17, 19 & 21 gage.

OPEN WEB STEEL JOISTS, K-SERIES

Adopted by the Steel Joist Institute November 4, 1985; Revised to May 2, 1994 - Effective September 1, 1994.

The black figures in the following table give the TOTAL safe uniformly distributed load-carrying capacities, in pounds per linear foot, of K-Series Steel Joists. The weight of DEAD loads, including the joists, must be deducted to determine the LIVE load-carrying capacities of the joists. The load table may be used for parallel chord joists installed to a maximum slope of 1/2 inch per foot.

The figures shown in RED in this load table are the LIVE loads per linear foot of joist which will produce an approximate deflection of 1/360 of the span. LIVE loads which will produce a deflection of 1/240 of the span may be obtained by multiplying the figures in RED by 1.5. In no case shall the TOTAL load capacity of the joists be exceeded.

The approximate joist weights per linear foot shown in these tables do not include accessories.

The approximate moment of inertia of the joist, in inches⁴ is: $I_x = 26.767(W_{LL})(L^3)(10^{-6})$, where W_{LL} = RED figure in the Load Table and L = (Span - .33) in feet.

For the proper handling of concentrated and/or varying loads, see Section 5.5 in the Recommended Code of Standard Practice.

Where the joist span is equal to or greater than the span corresponding to the RED shaded area shown in the load table, the row of bridging nearest the mid span of the joist shall be installed as bolted diagonal bridging. Hoisting cables shall not be released until this bolted diagonal bridging is completely installed.

JOIST DESIGNATION	8K1	10K1	12K1	12K3	12K5	14K1	14K3	14K4	14K6	16K2	16K3	16K4	16K5	16K6	16K7	16K9
DEPTH (IN.)	8	10	12	12	12	14	14	14	14	16	16	16	16	16	16	16
APPROX. WT. (lbs./ft.)	5.1	5.0	5.0	5.7	7.1	5.2	6.0	6.7	7.7	5.5	6.3	7.0	7.5	8.1	8.6	10.0
SPAN (ft.)																
8	550															
9	550															
10	550 480	550														
11	532 377	550 542														
12	444 288	550 455	550 550	550 550	550 550											
13	377 225	479 363	550 510	550 510	550 510											
14	324 179	412 289	500 425	550 463	550 463	550 550	550 550	550 550	550 550							
15	281 145	358 234	434 344	543 428	550 434	511 475	550 507	550 507	550 507							
16	246 119	313 192	380 282	476 351	550 396	448 390	550 467	550 467	550 467	550 550	550 550	550 550	550 550	550 550	550 550	550 550
17		277 159	336 234	420 291	550 366	395 324	495 404	550 443	550 443	512 488	550 526	550 526	550 526	550 526	550 526	550 526
18		246 134	299 197	374 245	507 317	352 272	441 339	530 397	550 408	456 409	508 456	550 490	550 490	550 490	550 490	550 490
19		221 113	268 167	335 207	454 269	315 230	395 287	475 336	550 383	408 347	455 386	547 452	550 455	550 455	550 455	550 455
20		199 97	241 142	302 177	409 230	284 197	356 246	428 287	525 347	368 297	410 330	493 386	550 426	550 426	550 426	550 426
21			218 123	273 153	370 198	257 170	322 212	388 248	475 299	333 255	371 285	447 333	503 373	548 405	550 406	550 406
22			199 106	249 132	337 172	234 147	293 184	353 215	432 259	303 222	337 247	406 289	458 323	498 351	550 385	550 385
23			181 93	227 116	308 150	214 128	268 160	322 188	395 226	277 194	308 216	371 252	418 282	455 307	507 339	550 363
24			166 81	208 101	282 132	196 113	245 141	295 165	362 199	254 170	283 189	340 221	384 248	418 269	465 298	550 346
25						180 100	226 124	272 145	334 175	234 150	260 167	313 195	353 219	384 238	428 263	514 311
26						166 88	209 110	251 129	308 156	216 133	240 148	289 173	326 194	355 211	395 233	474 276
27						154 79	193 98	233 115	285 139	200 119	223 132	268 155	302 173	329 188	366 208	439 246
28						143 70	180 88	216 103	265 124	186 106	207 118	249 138	281 155	306 168	340 186	408 220
29										173 95	193 106	232 124	261 139	285 151	317 167	380 198
30										161 86	180 96	216 112	244 126	266 137	296 151	355 178
31										151 78	168 87	203 101	228 114	249 124	277 137	332 161
32										142 71	158 79	190 92	214 103	233 112	259 124	311 147



STANDARD LOAD TABLE / OPEN WEB STEEL JOISTS, K-SERIES

Based on a Maximum Allowable Tensile Stress of 30,000 psi

JOIST DESIGNATION	24K4	24K5	24K6	24K7	24K8	24K9	24K10	24K12	26K5	26K6	26K7	26K8	26K9	26K10	26K12	
DEPTH (in.)	24	24	24	24	24	24	24	24	26	26	26	26	26	26	26	
APPROX. WT. (lbs./ft.)	8.4	9.3	9.7	10.1	11.5	12.0	13.1	16.0	9.8	10.6	10.9	12.1	12.2	13.8	16	
SPAN (ft.)	↓															
24	520 516	550 544	550 544	550 544	550 544	550 544	550 544	550 544								
25	479 456	540 511	550 520	550 520	550 520	550 520	550 520	550 520								
26	442 405	499 453	543 493	550 499	550 499	550 499	550 499	550 499	542 535	550 541	550 541	550 541	550 541	550 541	550 541	
27	410 361	462 404	503 439	550 479	550 479	550 479	550 479	550 479	502 477	547 519	550 522	550 522	550 522	550 522	550 522	
28	381 323	429 362	467 393	521 436	550 456	550 456	550 456	550 456	466 427	508 464	550 501	550 501	550 501	550 501	550 501	
29	354 290	400 325	435 354	485 392	536 429	550 436	550 436	550 436	434 381	473 417	527 463	550 479	550 479	550 479	550 479	
30	331 262	373 293	406 319	453 353	500 387	544 419	550 422	550 422	405 346	441 377	492 417	544 457	550 459	550 459	550 459	
31	310 237	349 266	380 289	424 320	468 350	510 379	550 410	550 410	379 314	413 341	480 378	509 413	560 444	550 444	550 444	
32	290 215	327 241	357 262	397 290	439 318	478 344	549 393	549 393	356 285	387 309	432 343	477 375	519 407	549 431	549 431	
33	273 196	308 220	335 230	373 265	413 289	449 313	532 368	532 368	334 259	364 282	406 312	448 342	488 370	532 404	532 404	
34	257 179	290 201	315 218	351 242	388 264	423 286	502 337	516 344	315 237	343 257	382 285	422 312	459 338	516 378	516 378	
35	242 164	273 184	297 200	331 221	366 242	399 262	473 308	501 324	297 217	323 236	360 261	398 286	433 310	501 356	501 356	
36	229 150	258 169	281 183	313 203	346 222	377 241	447 283	487 306	280 199	305 216	340 240	376 263	409 284	486 334	487 334	
37	216 138	244 155	266 169	296 187	327 205	356 222	423 260	474 290	265 183	289 199	322 221	356 242	387 262	460 308	474 308	
38	205 128	231 143	252 156	281 172	310 189	338 204	401 240	461 275	251 169	274 184	305 204	337 223	367 241	436 284	461 299	
39	195 118	219 132	239 144	266 159	294 174	320 189	380 222	449 261	238 156	260 170	289 188	320 206	348 223	413 262	449 283	
* 40	185 109	208 122	227 133	253 140	280 161	304 175	361 206	438 247	227 145	247 157	275 174	304 191	331 207	393 243	438 269	
41	176 101	198 114	216 124	241 137	266 150	290 162	344 191	427 235	215 134	235 146	262 162	289 177	315 192	374 225	427 256	
42	168 94	189 106	206 115	229 127	253 139	276 151	327 177	417 224	205 125	224 136	249 150	275 164	300 178	356 210	417 244	
43	160 88	180 98	196 107	219 118	242 130	263 140	312 165	406 213	196 116	213 126	238 140	263 153	286 166	339 195	407 232	
44	153 82	172 92	187 100	209 110	231 121	251 131	298 154	387 199	187 108	204 118	227 131	251 143	273 155	324 182	398 222	
45	146 76	164 86	179 93	199 103	220 113	240 122	285 144	370 185	179 101	194 110	217 122	240 133	261 145	310 170	389 212	
46	139 71	157 80	171 87	191 97	211 106	230 114	272 135	354 174	171 95	186 103	207 114	229 125	250 135	296 159	380 203	
47	133 67	150 75	164 82	183 90	202 99	220 107	261 126	339 163	164 89	178 96	199 107	219 117	239 127	284 149	369 192	
48	128 63	144 70	157 77	175 85	194 93	211 101	250 118	325 153	157 83	171 90	190 100	210 110	229 119	272 140	353 180	
49									150 78	164 85	183 94	202 103	220 112	261 131	339 169	
50									144 73	157 80	175 89	194 97	211 105	250 124	325 159	
51									139 69	151 75	168 83	186 91	203 99	241 116	313 150	
52									133 65	145 71	162 78	179 86	195 93	231 110	301 145	

* IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.



ECONOMICAL

HIGH STRENGTH

DESIGN - Vulcraft K Series open web steel joists are designed in accordance with specifications of the Steel Joist Institute.

ACCESSORIES see page 32.

FOR TOP CHORD EXTENSIONS AND EXTENDED ENDS See page 37.

SJI SPANS TO 60'-0"

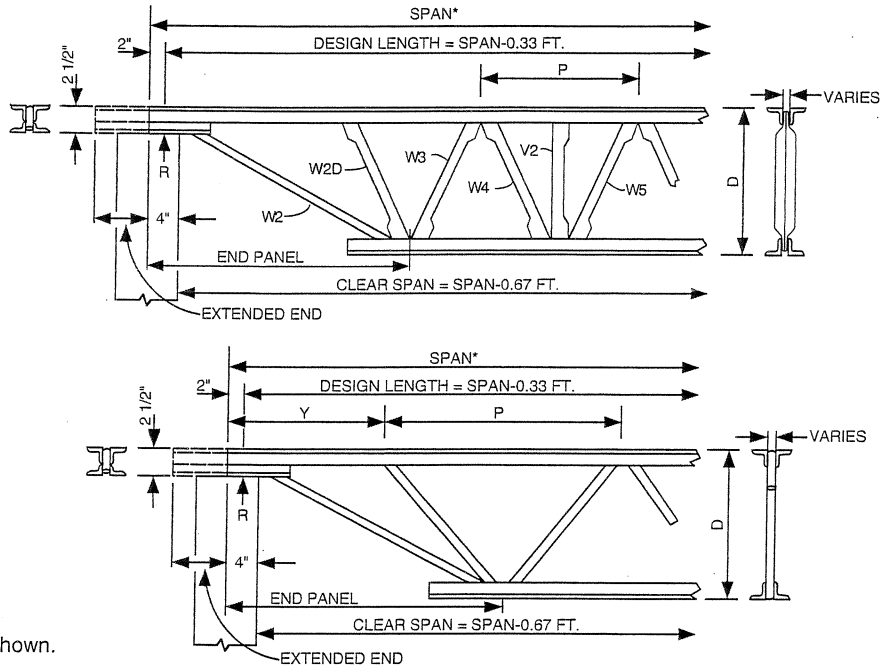
PAINT - Vulcraft joists receive a shop-coat of rust inhibitive primer whose performance characteristics conform to those of the Steel Joist Institute specifications 3.3.

SPECIFICATIONS see page 22.

KCS SERIES JOIST see page 14.

ANGLE WEB

ROD WEB



* For Definition of Span, see page 30.
NOTE: Actual layout may vary from that shown.

MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING							
SECTION NUMBER*	BRIDGING MATERIAL SIZE						
	Round Rod	Equal Leg Angles					
	1/2" DIA (13mm) r = .13"	1 x 7/64 (25mm x 3mm) r = .20"	1-1/4 x 7/64 (32mm x 3mm) r = .25"	1-1/2 x 7/64 (38mm x 3mm) r = .30"	1-3/4 x 7/64 (45mm x 3mm) r = .35"	2 x 1/8 (51mm x 3mm) r = .40"	2-1/2 x 5/32 (64mm x 4mm) r = .50"
1 thru 9	3'-3" (991mm)	5'-0" (1524mm)	6'-3" (1905mm)	7'-6" (2286mm)	8'-7" (2616mm)	10'-0" (3048mm)	12'-6" (3810mm)
10	3'-0" (914mm)	4'-8" (1422mm)	6'-3" (1905mm)	7'-6" (2286mm)	8'-7" (2616mm)	10'-0" (3048mm)	12'-6" (3810mm)
11 and 12	2'-7" (787mm)	4'-0" (1219mm)	5'-8" (1727mm)	7'-6" (2286mm)	8'-7" (2616mm)	10'-0" (3048mm)	12'-6" (3810mm)

*SECTION NUMBER REFERS TO THE LAST DIGITS OF JOIST DESIGNATION. CONNECTION TO JOIST MUST RESIST 700 POUNDS (3114 N).

BRIDGING FOR STANDING SEAM ROOF SYSTEMS:

Generally, standing seam roof systems will not adequately brace the top chords of the joists with standard SJI bridging. We therefore, recommend that when a standing seam roof system is specified, the design professional specifically state that the joist manufacturer is to check the bridging requirements and provide bridging as required to adequately brace the top chord against lateral movement under full loading conditions.

UPLIFT BRIDGING:

Where uplift forces due to wind are a design requirement, these forces must be indicated on the structural drawings in terms of net uplift in pounds per square foot or pounds per lineal foot. When these loads are specified, they must be considered in the design of joists and bridging. As a minimum, a single line of bottom chord bridging must be provided near the first bottom chord panel point, at each end of the joist, whenever uplift is a design consideration.*

*See Section 5.11 of the specifications.

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.

MAXIMUM JOIST SPACING FOR DIAGONAL BRIDGING				
JOIST DEPTH	BRIDGING ANGLE SIZE-EQUAL LEG ANGLES			
	1 x 7/64 (25mm x 3mm) r = .20"	1-1/4 x 7/64 (32mm x 3mm) r = .25"	1-1/2 x 7/64 (38mm x 3mm) r = .30"	1-3/4 x 7/64 (45mm x 3mm) r = .35"
12	6'-6" (1981mm)	8'-3" (2514mm)	9'-11" (3022mm)	11'-7" (3530mm)
14	6'-6" (1981mm)	8'-3" (2514mm)	9'-11" (3022mm)	11'-7" (3530mm)
16	6'-6" (1981mm)	8'-2" (2489mm)	9'-10" (2997mm)	11'-6" (3505mm)
18	6'-6" (1981mm)	8'-2" (2489mm)	9'-10" (2997mm)	11'-6" (3505mm)
20	6'-5" (1955mm)	8'-2" (2489mm)	9'-10" (2997mm)	11'-6" (3505mm)
22	6'-4" (1930mm)	8'-1" (2463mm)	9'-10" (2997mm)	11'-6" (3505mm)
24	6'-4" (1930mm)	8'-1" (2463mm)	9'-9" (2971mm)	11'-5" (3479mm)
26	6'-3" (1905mm)	8'-0" (2438mm)	9'-9" (2971mm)	11'-5" (3479mm)
28	6'-2" (1879mm)	8'-0" (2438mm)	9'-8" (2946mm)	11'-5" (3479mm)
30	6'-2" (1879mm)	7'-11" (2413mm)	9'-8" (2946mm)	11'-4" (3454mm)

K-series--all sections numbers use A307 bolt 3/8" (9mm) diameter.

See page 27 for number of rows of bridging required.



