emtek®

HEAVY EQUIPMENT MAT

DESIGN GUIDE

Anthony Hardwood Composites

emtek
HEAVY EQUIPMENT MAT

emtek is the engineered mat for enabling heavy equipment to operate on unstable or soft soil conditions.

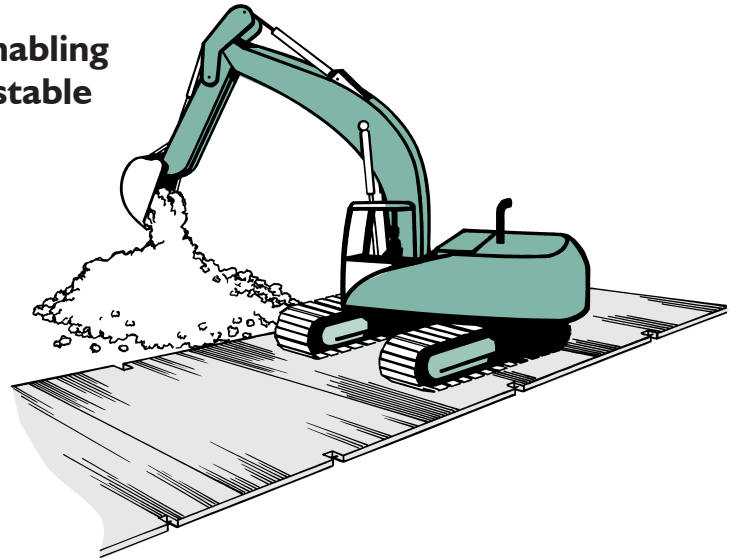- **Heavy lift**
- **Drilling**
- **Excavation**
- **Floating**
- **Elevated**
- **Crossings**

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How to use this guide...

emtek mats are engineered to support specified loads. The tables in this guide show allowable loads. Each mat has been proof loaded to 1.5 times the allowable load at the manufacturing facility to certify these values.

The following pages show different loading configurations for the mats. Generally pneumatic tired vehicles will be represented by the 6' wide loading configurations (Load Case 1 and Load Case 4). Tracked vehicles will generally be represented by the 9' wide loading configurations (Load Case 2 and Load Case 5). When one wheel or track is on one mat, the single load configurations shown in Load Case 3 and Load Case 6 will be applicable. In all cases the loads shown in the tables are in thousands of pounds (Kips). To get pounds simply multiply the number in the cell by 1000.

It is important to note that the loads are associated with one foot of mat width. If the footprint of the tire is 2' long then the allowable load can be multiplied by two. This is especially important when considering applications for tracked vehicles that can distribute loads along track lengths up to16' or longer.

There are threntire length of the mat is sitting on soil, or some continuous surface (Uniform Bearing). The last table (Table 7) is for applications where the mat will only be supported on the ends. In applications of Uniform Bearing, we have shown different allowable loads for different soil conditions (Soil Type "1", "3", and "5"). These soil conditions are described in the notes on each page of the tables. It is important to choose the soil condition that most closely approximates the conditions that will be supporting the mats, as this will affect the allowable loads.

The first (Tables 1-3) and second (Tables 4-6) set of tables show different deflection preferences. If you would like to see no more than 2" of deflection on the matted surface, Tables 4-6 should be considered. If a deflection up to 4" is acceptable, then Tables 1-3 should be considered. In some cases loads are limited by the strength of the product, and maximum deflections are not allowed. In this case the deflection at the maximum allowable load is indicated.

Table 7 assumes an adequate bearing surface on each end with bearing lengths as shown in the Loading Diagrams. Table 7 shows maximum allowable loads as well as the deflections associated with those loads.

Table 8 was developed specifically for crane and heavy lift application. This table deals with 8î to 24î thick mats under extremely high loading conditions. The loads, deflections, and soil reaction figures assume a Subgrade Modulus of 8K/ft^2/in.

Certainly construction applications with heavy equipment will result in unique loads and loading configurations. If you have any questions regarding your unique situation please feel free to call us at **870-942-4000**.

Caution to Users:

The design properties and strength characteristics of the emtek product are verified at the time of manufacture. During the service life of the product, use conditions will reduce the load carrying capacity of the product. If there are any questions as to whether the strength of the product has been compromised during handling, storage, aggressive use, etc., please feel free to contact us so we can help assess any potential degrade.

This Design Guide is intended to provide design information to enable you to determine how *emtek* can best serve your needs. Anthony Hardwood Compositesí *emtek* is an engineered, laminated wood mat that is made from indigenous Southern hardwoods in Sheridan, Arkansas. By eliminating or distributing natural defects, such as wane, knots, and checking, *emtek* is superior in strength when compared to solid sawn material twice its depth and weight.
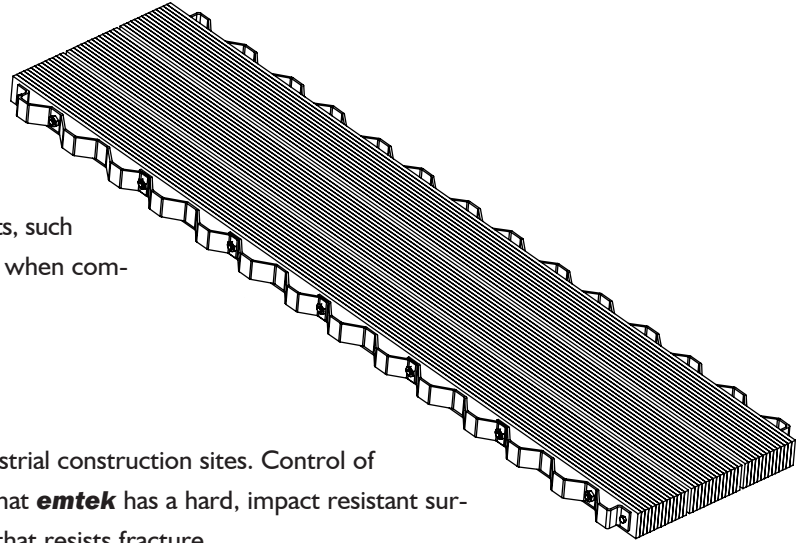
Durability

emtek is engineered to withstand the abuse of today's industrial construction sites. Control of raw material density in the manufacturing process ensures that *emtek* has a hard, impact resistant surface. The laminating process creates a composite structure that resists fracture.

Strength

Predictable, reliable strength is a necessity when the safety of workers and equipment assets are at stake. Patented construction creates a work platform that has engineering design values that exceed all sawn woods identified by the National Design Standard (NDS 2004). Every *emtek* component is proof loaded by machine to ensure that the finished mat will meet the strict design criteria and quality standards established by AHC.

Consistency

Uniform product dimensions with a consistent finish create a work surface that helps contractors reduce workplace hazards.
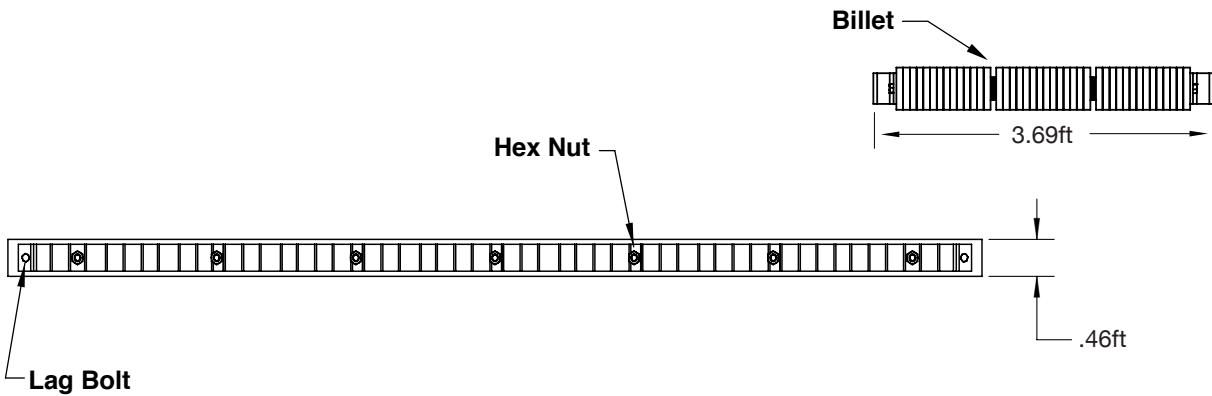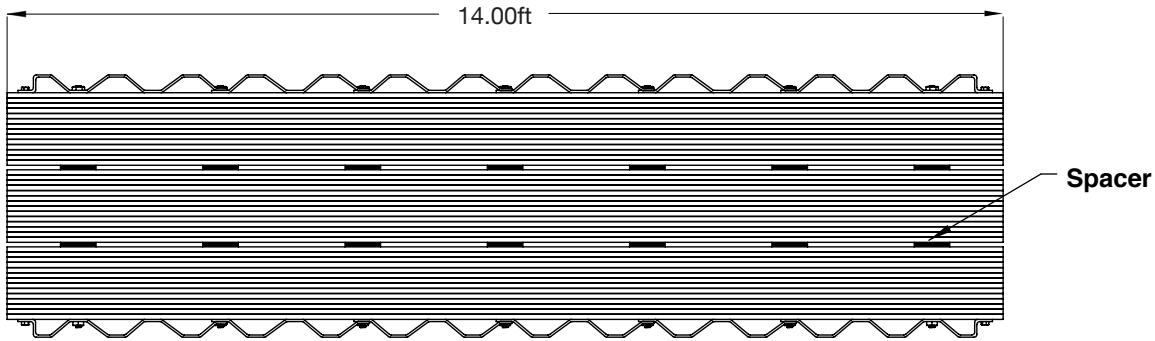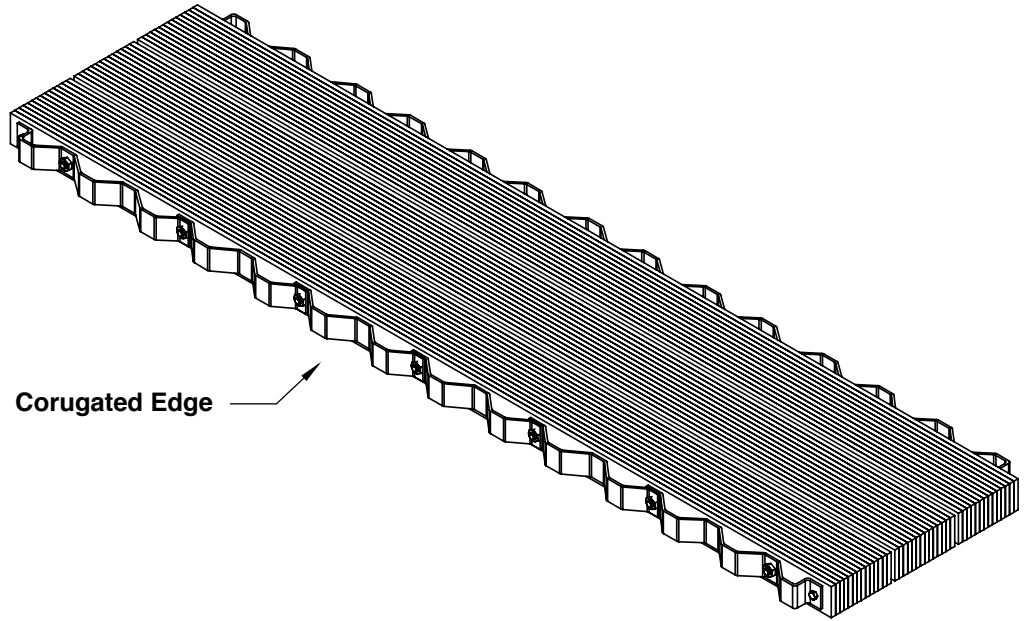
Storage and Work Environment Considerations

emtek mats are valuable to the contractor, and proper storage can extend the service life for many years. Product should be stored in an environment with good drainage. Stacking mats with stickers between layers provides an avenue for air movement that can reduce the effects of decay caused by prolonged exposure to moisture.

Wood is a natural polymer that exhibits good resistance to chemical exposure; however, extended contact with strong acids (ph<3) or strong bases (ph>9) can cause wood to degrade and compromise the structural integrity of the product. The resins used in *emtek* construction are thermoset polymers that are highly resistant to chemical attack and will degrade slower than the wood when exposed to high chemical concentrations. Chemical MSDS sheets should be referenced if the productís exposure is suspected.

Prolonged exposure to temperature above 150o F can cause the wood to degrade and should be avoided to ensure that the product performs at the designed levels.

Anthony Hardwood Composites

emtek
Specifications

Corugated Edge

14.00ft

Spacer

Billet

3.69ft

Hex Nut

.46ft

Lag Bolt

Materials:
Billet emtek 31F
Spacers: SBR (Styriene Butadiene Rubber)
Corrugated Edge: ASTM A36 Steel
Steel Rod: A307
Locking Hex Nut: Grade 5
End Lag Bolt: Grade 5

Units:
Length: ft
Mass: Lbs
Volume: ft^3
Size: 5.5"x4'x14'
Drawn by: Jon E. Fiutak

Load Case 1

Load Case 2

Load Case 3

Load Case 4

Load Case 5

Load Case 6

3.5' for 20' & 24' L.
1.5' for 12' & 16' L.
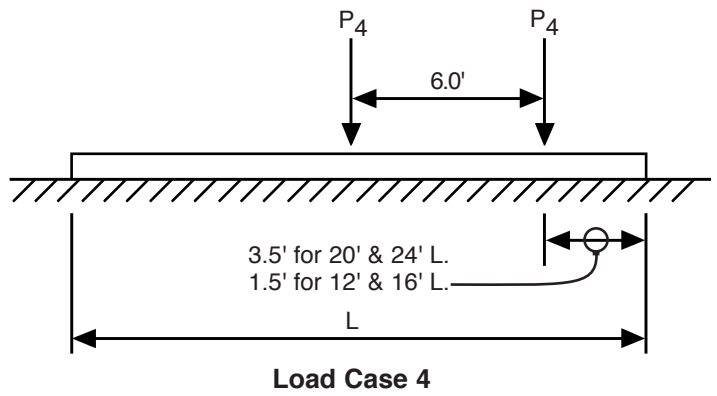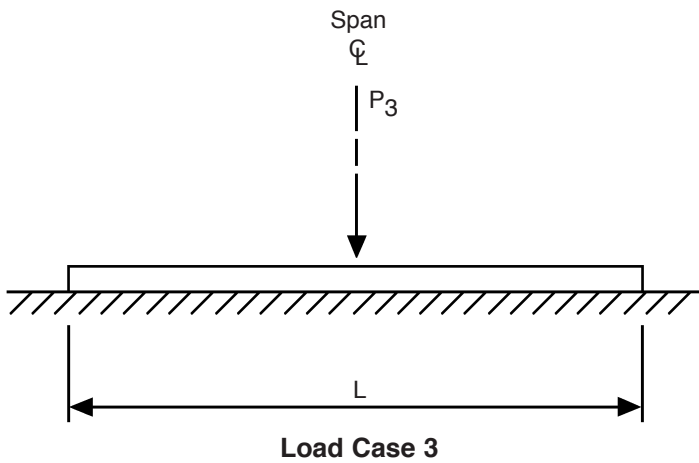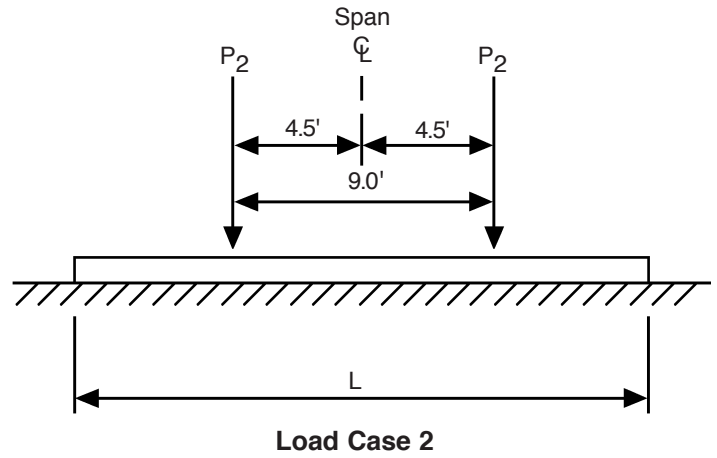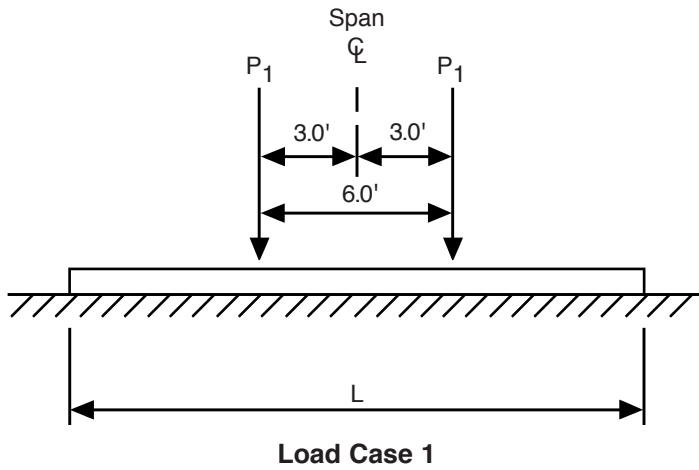
Anthony Hardwood Composites
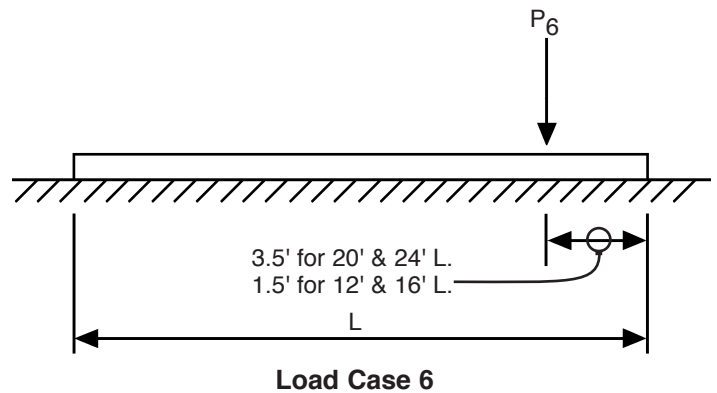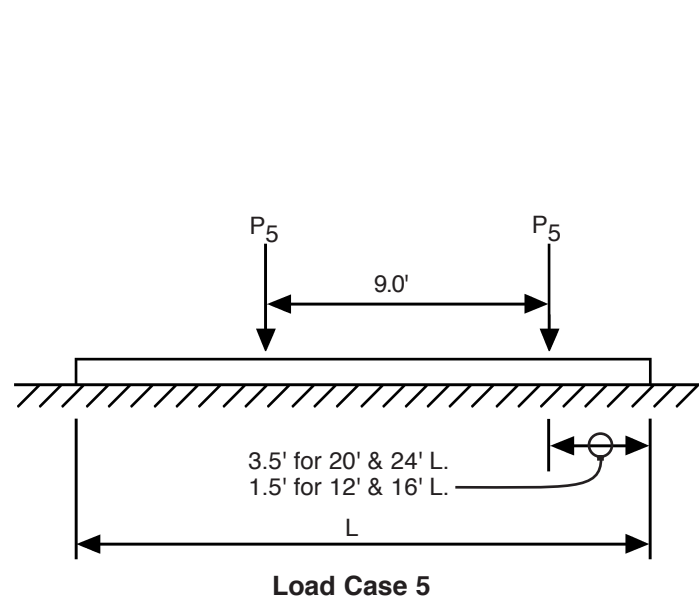
Table I-A
Load Criteria (centered loading)
Uniform Bearing On Soil Type "1"

Load Per Linear Foot Of Width, K = Kip = 1,000 Lbs

Length	Thickness	Load Case 1			Load Case 2			Load Case 3		
Feet	Inches	P Load Kips	Defl. Inches	Bearing PSI	P Load Kips	Defl. Inches	Bearing PSI	P Load Kips	Defl. Inches	Bearing PSI
24	2.75	3.4	4.0	4.2	4.4	4.0	4.2	4.0	3.1	3.5
	3.5	3.8	4.0	4.2	4.5	4.0	4.2	5.4	4.0	4.2
	4.5	4.3	4.0	4.2	5.1	4.0	4.2	7.3	4.0	4.2
	5.5	4.8	4.0	4.2	5.4	4.0	4.2	8.5	4.0	4.2
	6.5	5.2	4.0	4.2	5.8	4.0	4.2	9.6	4.0	4.2
	7.5	5.6	4.0	4.2	6.0	4.0	4.2	10.5	4.0	4.2
20	2.75	3.4	4.0	4.2	4.7	4.0	4.2	4.0	3.1	3.5
	3.5	3.6	4.0	4.2	4.7	4.0	4.2	5.3	3.7	3.5
	4.5	4.1	4.0	4.2	4.9	4.0	4.2	7.0	4.0	4.2
	5.5	4.5	4.0	4.2	5.2	4.0	4.2	8.1	4.0	4.2
	6.5	4.9	4.0	4.2	5.3	4.0	4.2	8.9	4.0	4.2
	7.5	5.1	4.0	4.2	5.4	4.0	4.2	9.6	4.0	4.2
16	2.75	3.5	4.0	4.2	3.9	4.0	4.2	4.0	3.1	3.5
	3.5	3.6	4.0	4.2	4.3	4.0	4.2	5.4	3.7	3.5
	4.5	4.0	4.0	4.2	4.4	4.0	4.2	6.8	4.0	4.2
	5.5	4.2	4.0	4.2	4.5	4.0	4.2	7.6	4.0	4.2
	6.5	4.3	4.0	4.2	4.6	4.0	4.2	8.0	4.0	4.2
	7.5	4.4	4.0	4.2	4.6	4.0	4.2	8.4	4.0	4.2
12	2.75	3.1	4.0	4.2	2.1	4.0	3.5	4.4	3.5	3.5
	3.5	3.3	4.0	4.2	2.8	4.0	4.2	5.5	4.0	4.2
	4.5	3.4	4.0	4.2	3.0	4.0	4.2	6.1	4.0	4.2
	5.5	3.4	4.0	4.2	3.2	4.0	4.2	6.4	4.0	4.2
	6.5	3.4	4.0	4.2	3.3	4.0	4.2	6.5	4.0	4.2
	7.5	3.4	4.0	4.2	3.3	4.0	4.2	6.6	4.0	4.2

NOTES FOR LOAD TABLES

1. Loads listed in Tables 1 through 6 are based on a uniform soil bearing analysis using a simplified elastic soil procedure where the soil is assumed to act as a line of springs spaced one foot apart along the length with resistance directly proportional to settlement. (Similar to the subgrade modulus procedures for slab and paving design, except, with higher deflections allowed).

Type "1" (SGM-1) soil has a spring constant of 144 pounds per square foot, per inch settlement. Type "3" (SGM-3) soil has a spring constant of 432 pounds per square foot, per inch of settlement. Type "5" (SGM-5) soil has a spring constant of 720 pounds per square foot, per inch of settlement.

2. Loads listed in Table 7 are based on normal simple span beam design methods. Adequate bearing must be provided at the ends to support the loads.

3. Load duration - Loads listed in all tables are based on a stress increase of 1/3 (33 1/3%) for short duration loading. Where stresses govern the load, applied long term loads should be reduced accordingly and as much as 1/3 less for long term loading or frequent cycles of loading.

4. Load distribution - Load Tables are based on a unit width one foot wide perpendicular to the length. Loads can be assumed distributed over more than one foot depending on the type of load and loading conditions.

5. Edge loading - Load cases 4, 5, & 6 as shown in the load diagrams, are based on off-center loading. Under edge loading conditions the unloaded end of the member will deflect upward and should be considered when using edge loading.

Table II-A
Load Criteria (centered loading)
Uniform Bearing On Soil Type "3"

Load Per Linear Foot Of Width, K = Kip = 1,000 Lbs

Length	Thickness	Load Case 1			Load Case 2			Load Case 3		
Feet	Inches	P Load Kips	Defl. Inches	Bearing PSI	P Load Kips	Defl. Inches	Bearing PSI	P Load Kips	Defl. Inches	Bearing PSI
24	2.75	6.8	2.8	8.3	6.2	2.0	6.3	5.5	1.8	5.6
	3.5	8.8	3.6	11.1	8.9	2.7	8.3	7.4	2.1	6.3
	4.5	10.7	4.0	11.8	12.1	3.4	10.4	9.8	2.4	6.9
	5.5	11.6	4.0	11.8	14.6	4.0	11.8	12.5	2.6	7.6
	6.5	12.7	4.0	11.8	15.1	4.0	11.8	15.3	2.8	8.3
	7.5	13.7	4.0	11.8	15.9	4.0	11.8	18.2	3.0	9.0
20	2.75	6.8	2.8	8.3	6.2	2.0	6.3	5.3	1.8	5.6
	3.5	8.7	3.5	10.4	9.0	2.5	7.6	7.4	2.1	6.3
	4.5	10.6	4.0	11.8	13.0	3.7	11.1	9.8	2.4	6.9
	5.5	11.6	4.0	11.8	14.5	4.0	11.8	12.3	2.6	7.6
	6.5	12.6	4.0	11.8	15.1	4.0	11.8	15.3	2.8	8.3
	7.5	13.6	4.0	11.8	15.5	4.0	11.8	18.8	3.1	9.0
16	2.75	6.8	2.8	8.3	7.7	2.8	8.3	5.3	1.8	5.6
	3.5	8.8	3.6	11.1	11.2	3.6	11.1	7.0	2.1	6.3
	4.5	10.7	4.0	11.8	13.0	4.0	11.8	9.6	2.3	6.9
	5.5	11.5	4.0	11.8	13.4	4.0	11.8	12.6	2.7	8.3
	6.5	12.1	4.0	11.8	13.5	4.0	11.8	16.5	3.1	9.0
	7.5	12.6	4.0	11.8	13.6	4.0	11.8	21.1	3.7	11.1
12	2.75	9.1	4.0	11.8	4.3	4.0	9.7	5.3	1.8	5.6
	3.5	9.7	4.0	11.8	6.7	4.0	11.8	7.1	2.1	6.9
	4.5	10.0	4.0	11.8	7.9	4.0	11.8	10.5	2.6	7.6
	5.5	10.1	4.0	11.8	8.7	4.0	11.8	14.8	3.4	10.4
	6.5	10.2	4.0	11.8	9.2	4.0	11.8	18.5	4.0	11.8
	7.5	10.2	4.0	11.8	9.5	4.0	11.8	19.1	4.0	11.8

NOTES FOR LOAD TABLES

1. Loads listed in Tables 1 through 6 are based on a uniform soil bearing analysis using a simplified elastic soil procedure where the soil is assumed to act as a line of springs spaced one foot apart along the length with resistance directly proportional to settlement. (Similar to the subgrade modulus procedures for slab and paving design, except, with higher deflections allowed).

Type "1" (SGM-1) soil has a spring constant of 144 pounds per square foot, per inch settlement. Type "3" (SGM-3) soil has a spring constant of 432 pounds per square foot, per inch of settlement. Type "5" (SGM-5) soil has a spring constant of 720 pounds per square foot, per inch of settlement.

2. Loads listed in Table 7 are based on normal simple span beam design methods. Adequate bearing must be provided at the ends to support the loads.

3. Load duration - Loads listed in all tables are based on a stress increase of 1/3 (33 1/3%) for short duration loading. Where stresses govern the load, applied long term loads should be reduced accordingly and as much as 1/3 less for long term loading or frequent cycles of loading.

4. Load distribution - Load Tables are based on a unit width one foot wide perpendicular to the length. Loads can be assumed distributed over more than one foot depending on the type of load and loading conditions.

5. Edge loading - Load cases 4, 5, & 6 as shown in the load diagrams, are based on off-center loading. Under edge loading conditions the unloaded end of the member will deflect upward and should be considered when using edge loading.

Table III-A
Load Criteria (centered loading)
Uniform Bearing On Soil Type "5"

Load Per Linear Foot Of Width, K = Kip = 1,000 Lbs

Length	Thickness	Load Case 1			Load Case 2			Load Case 3		
Feet	Inches	P Load Kips	Defl. Inches	Bearing PSI	P Load Kips	Defl. Inches	Bearing PSI	P Load Kips	Defl. Inches	Bearing PSI
24	2.75	7.7	2.0	9.7	6.7	1.4	6.9	6.0	1.4	6.9
	3.5	10.0	2.4	11.8	10.0	1.9	9.7	8.6	1.6	8.3
	4.5	13.3	3.2	16.0	15.5	2.8	13.9	11.3	1.9	9.7
	5.5	15.9	3.5	17.4	18.0	3.0	15.3	14.3	2.0	9.7
	6.5	18.7	3.8	18.8	21.9	3.6	18.1	17.5	2.2	11.1
	7.5	20.9	4.0	20.1	25.0	4.0	20.1	20.8	2.3	11.8
20	2.75	7.7	2.0	9.7	6.7	1.4	6.9	6.0	1.4	6.9
	3.5	10.4	2.6	13.2	9.8	1.9	9.7	8.2	1.6	8.3
	4.5	13.3	3.2	16.0	14.2	2.5	12.5	11.4	1.9	9.7
	5.5	15.9	3.5	17.4	19.0	3.2	16.0	14.2	2.0	9.7
	6.5	18.8	3.9	19.4	24.3	4.0	20.1	17.3	2.2	11.1
	7.5	20.9	4.0	20.1	25.1	4.0	20.1	20.7	2.3	11.8
16	2.75	7.6	2.0	9.7	7.7	1.8	9.0	6.0	1.4	6.9
	3.5	9.9	2.5	12.5	11.2	2.3	11.8	8.2	1.6	8.3
	4.5	13.5	3.2	16.0	18.4	3.5	17.4	10.9	1.8	9.0
	5.5	17.6	3.9	20.1	22.0	4.0	20.1	14.0	2.0	9.7
	6.5	19.2	4.0	20.1	22.3	4.0	20.1	17.7	2.2	11.1
	7.5	20.1	4.0	20.1	22.5	4.0	20.1	22.2	2.6	13.2
12	2.75	9.9	2.7	13.2	6.3	3.9	16.0	6.0	1.4	6.9
	3.5	12.5	3.1	15.3	9.4	3.7	18.8	7.9	1.6	8.3
	4.5	16.4	4.0	20.1	11.9	4.0	20.1	11.3	1.9	9.7
	5.5	16.7	4.0	20.1	13.5	4.0	20.1	15.4	2.3	11.8
	6.5	16.9	4.0	20.1	14.6	4.0	20.1	20.8	2.8	13.9
	7.5	17.0	4.0	20.1	15.4	4.0	20.1	27.0	3.5	17.4

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5. Edge loading - Load cases 4, 5, & 6 as shown in the load diagrams, are based on off-center loading. Under edge loading conditions the unloaded end of the member will deflect upward and should be considered when using edge loading.

Fb = 3100 psi

Fv = 285 psi

E = 1.5 (10)^6 psi

Unit Section Properties

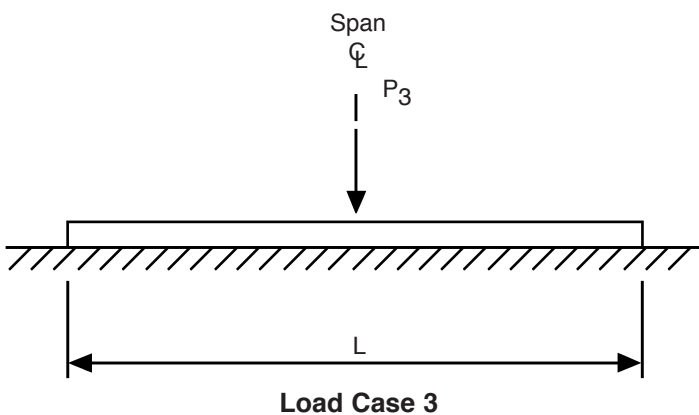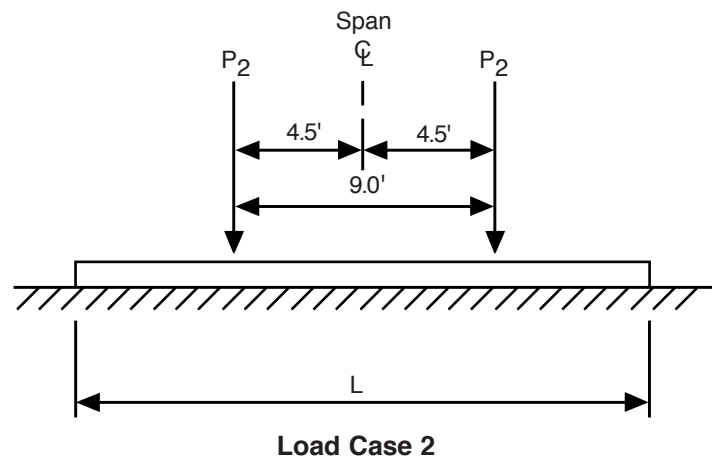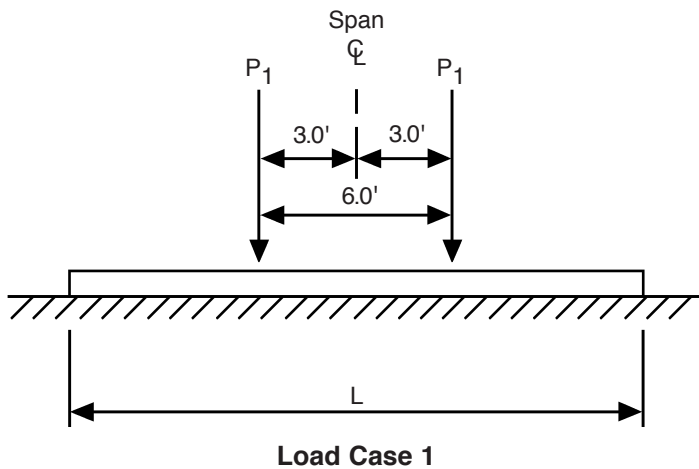| No	Size t x b	A In^2	I In^4	S In^3	M$_A$ Kip-Ft	V$_A$ Kip
1	3.5" x 12"	42	42.875	24.50	6.329	7.980
2	4.5" x 12"	54	91.125	40.50	10.463	10.260
3	5.5" x 12"	66	166.375	60.50	15.629	12.540
4	6.5" x 12"	78	274.625	84.50	21.829	14.820
5	7.5" x 12"	90	421.875	112.50	29.063	17.100

$$A = t(b) \qquad I = \frac{bt^3}{12} \qquad S = \frac{bt^2}{6} \qquad M_A = F_b S \qquad V_A = \frac{FV_A}{1.5} \sim \left(\frac{FV\ lb}{Q}\right)$$

K = KIP = 1000 lbs

M$_A$ = Allowable Moment

V$_A$ = Allowable Shear

Load Diagrams Bearing At Ends Of Span

Load Case 1

Load Case 2

Load Case 3

Fb = 3100 psi

Fv = 285 psi

E = 1.5 $(10)^6$ psi

Unit Section Properties

No	Size t x b	A In²	I In⁴	S In³	M_A Kip-Ft	V_A Kip
1	8" x 12"	96	512	128	33.067	18.240
2	12" x 12"	144	1728	288	74.400	27.360
3	16" x 12"	192	4096	512	132.267	36.480
4	24" x 12"	288	13824	1152	297.600	54.720

$$A = t(b) \qquad I = \frac{bt^3}{12} \qquad S = \frac{bt^2}{6} \qquad M_A = F_bS \qquad V_A = \frac{FV_A}{1.5} \sim \left(\frac{FV\ lb}{Q} \right)$$
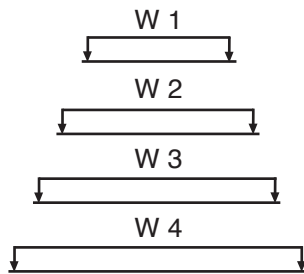
K = KIP = 1000 lbs

M_A = Allowable Moment

V_A = Allowable Shear

Mat Load Diagrams

Lengths (Ft)   12,16, 20, 24, 28, 32, 36, 40
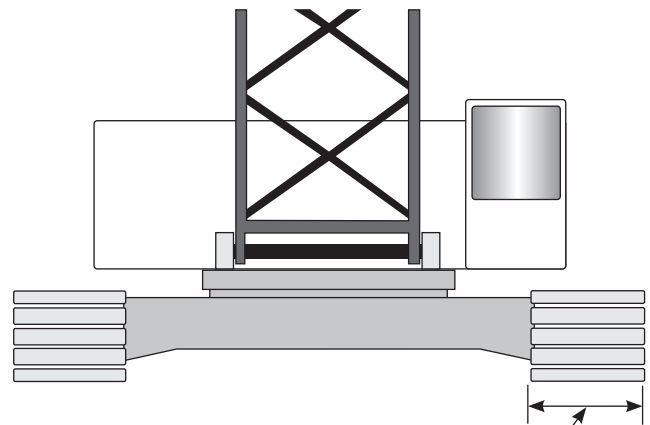
Track Pad Widths (Ft)   3, 4, 5, 6

W 1

Track Pad Width 3' LC - 1

W 2

Track Pad Width 4' LC - 2

W 3

Track Pad Width 5' LC - 3

W 4

Track Pad Width 6' LC - 4

Track Pad Width
is a single track.

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Table VIII
Heavy Lift Sections

Mat Thickness (Inches)	Mat Length (Feet)	Load Track Width (Feet)	Unit Load K/SF	Soil Reaction K(K/SF)	Estimated Deflection (Inches)	Control Stress M or V
8	16 [1]	3	20.1	8.07	1.00	M
		4	17.4	9.00	1.13	M
		5	16.1	10.10	1.26	M
		6	15.9	11.42	1.43	M
	12	3	20.0	7.92	0.99	M
		4	17.3	8.89	1.12	M
		5	16.2	10.06	1.26	M
		6	16.2	11.53	1.44	M
12	20 [1]	3	29.9	8.94	1.12	M
		4	24.7	9.72	1.21	M
		5	21.9	10.55	1.31	M
		6	20.3	11.45	1.43	M
	16	3	29.9	8.95	1.12	M
		4	24.9	9.75	1.19	M
		5	22.1	10.62	1.29	M
		6	20.7	11.62	1.43	M
	12	3	34.8	10.72	1.34	V
		4	26.0	10.53	1.31	V
		5	27.5	13.67	1.70	M
		6	22.9	13.42	1.67	V
16	20 [1]	3	40.7	9.93	1.24	M
		4	31.8	10.23	1.27	V
		5	28.6	11.33	1.42	M
		6	25.9	12.13	1.51	M
	16	3	43.0	10.84	1.36	V
		4	32.2	10.73	1.34	V
		5	32.3	13.28	1.66	V
		6	26.8	13.00	1.63	V
	12	3	45.7	13.47	1.68	V
		4	34.3	13.37	1.67	V
		5	37.1	17.98	2.24	V
		6	30.7	17.71	2.21	V

NOTES

1. Longer mats have same capacity for soil conditions and mat thickness.

2. Loads listed are based on a uniform soil bearing analysis using a simplified elastic soil procedure where the soil is assumed to act as a line of springs spaced one foot apart along the length with resistance directly proportional to settlement. (Similar to the subgrade modulus procedures for slab and paving design, except, with higher deflections allowed). All figures are based on Subgrade Modulus of 8K/ft2/in.

Table VIII (Contíd)
Heavy Lift Sections

Mat Thickness (Inches)	Mat Length (Feet)	Load Track Width (Feet)	Unit Load K/SF	Soil Reaction K(K/SF)	Estimated Deflection (Inches)	Control Stress M or V
24	32[1]	3	59.1	10.71	1.34	V
		4	44.3	10.63	1.33	V
		5	41.2	12.25	1.53	V
		6	34.1	12.09	1.52	V
	28	3	59.1	10.71	1.35	V
		4	44.3	10.63	1.33	V
		5	41.2	12.25	1.53	V
		6	34.1	12.09	1.52	V
	24	3	59.3	10.84	1.35	V
		4	44.4	10.74	1.35	V
		5	41.3	12.40	1.55	V
		6	34.3	12.24	1.52	V
	20	3	59.9	11.45	1.44	V
		4	44.9	11.40	1.42	V
		5	42.2	13.31	1.66	V
		6	35.1	13.16	1.64	V
	16	3	61.9	13.47	1.68	V
		4	46.4	13.41	1.67	V
		5	45.1	16.24	2.02	V
		6	37.6	16.12	2.02	V
	12	3	67.4	18.85	2.35	V
		4	50.4	18.75	2.34	V
		5	54.0	25.04	3.13	V
		6	44.94	24.93	3.11	V

NOTES

1. Longer mats have same capacity for soil conditions and mat thickness.

2. Loads listed are based on a uniform soil bearing analysis using a simplified elastic soil procedure where the soil is assumed to act as a line of springs spaced one foot apart along the length with resistance directly proportional to settlement. (Similar to the subgrade modulus procedures for slab and paving design, except, with higher deflections allowed). All figures are based on Subgrade Modulus of 8K/ft2/in.

Table IX
Load Criteria
Bearing At Ends Of Span

Load Per Linear Foot Of Width, K = Kip = 1,000 Lbs

Length	Span	Thickness		Load Case 1		Load Case 2		Load Case 3	
				P Load Kips	Defl. Inches	P Load Kips	Defl. Inches	P Load Kips	Defl. Inches
Feet	Feet	Inches		Kips	Inches	Kips	Inches	Kips	Inches
24 L/120=2.4"	23	2.75	A	0.5	15.3	0.6	16.1	0.7	12.9
			B	0.0	2.4	0.0	2.4	0.0	2.4
		3.5	A	0.8	11.6	0.9	12.2	1.1	9.9
			B	0.0	2.4	0.0	2.4	0.0	2.4
		4.5	A	1.3	8.8	1.6	9.2	2.0	7.4
			B	0.2	2.4	0.2	2.4	0.4	2.4
		5.5	A	2.2	7.3	2.7	7.8	3.3	6.1
			B	0.6	2.4	0.6	2.4	1.0	2.4
		6.5	A	3.2	6.2	3.9	6.6	4.8	5.2
			B	1.1	2.4	1.2	2.4	1.8	2.4
		7.5	A	4.3	5.3	5.2	5.7	6.3	4.4
			B	1.8	2.4	2.0	2.4	3.3	2.4
20 L/120=2.0"	19	2.75	A	0.7	10.8	0.9	11.5	1.0	8.8
			B	0.0	2.0	1.0	2.0	0.0	2.0
		3.5	A	1.1	8.0	1.4	8.6	1.5	6.4
			B	0.1	2.0	0.1	2.0	0.2	2.0
		4.5	A	1.9	6.2	2.5	6.6	2.6	5.0
			B	0.5	2.0	0.6	2.0	0.8	2.0
		5.5	A	3.0	5.1	3.9	5.5	4.1	4.1
			B	1.0	2.0	1.2	2.0	1.8	2.0
		6.5	A	4.3	4.4	5.6	4.7	5.8	3.5
			B	1.8	2.0	2.2	2.0	3.2	2.0
		7.5	A	5.7	3.8	7.4	4.0	7.8	3.0
			B	3.0	2.0	3.6	2.0	5.1	2.0
16 L/120=1.6"	15	2.75	A	1.0	7.0	1.5	7.6	1.2	5.5
			B	0.2	1.6	0.2	1.6	0.1	1.6
		3.5	A	1.6	5.2	2.5	5.6	2.0	4.1
			B	0.4	1.6	0.5	1.6	0.6	1.6
		4.5	A	2.9	4.1	4.3	4.4	3.5	3.2
			B	1.0	1.6	1.4	1.6	1.6	1.6
		5.5	A	4.4	3.3	6.7	3.6	5.3	2.5
			B	2.0	1.6	2.8	1.6	3.2	1.6
		6.5	A	6.3	2.5	9.4	3.0	7.5	2.1
			B	3.4	1.6	4.8	1.6	5.5	1.6
		7.5	A	8.4	2.4	12.6	2.6	10.0	1.9
			B	5.4	1.6	7.6	1.6	8.6	1.6
12 L/120=1.0"	11	2.75	A	1.8	4.1	4.0	4.4	1.7	3.0
			B	0.5	1.2	1.1	1.2	0.6	1.2
		3.5	A	3.2	3.0	7.9	3.1	2.9	2.2
			B	1.0	1.0	2.3	1.0	1.2	1.0
		4.5	A	5.4	2.3	13.4	2.4	4.9	1.7
			B	2.2	1.0	5.2	1.0	2.8	1.0
		5.5	A	8.1	1.9	16.4	1.6	7.3	1.4
			B	4.2	1.0	9.9	1.0	5.3	1.0
		6.5	A	11.4	1.6	19.4*	1.2	10.3	1.2
			B	7.1	1.0	16.7	1.0	8.9	1.0
		7.5	A	15.3	1.4	22.4*	0.9	13.8	1.0
			B	11.0	1.0	N/A	N/A	N/A	N/A

* Shear Stress Governs   A - Load & Deflection Based On Strength   B - Load for L/120 Deflection As Listed

NOTES & CALCULATIONS

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