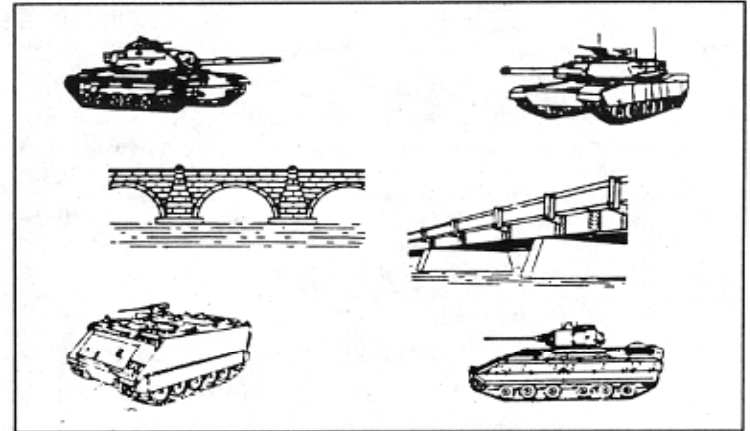


GTA 05-07-012

TRACK COMMANDER'S BRIDGE CROSSING BOOKLET

PURPOSE: This booklet enables track commanders of all branches and MOSs to rapidly determine whether a bridge is safe for their vehicle to cross with **one lane** traffic in the center of the bridge. This booklet should **not** be used for bridge classification, which must be performed by a qualified engineer.

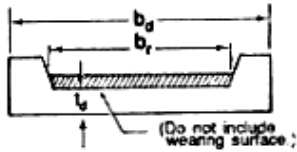


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CONCRETE SLAB - MLC 30



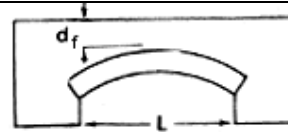
b_d = Width of slab
 b_r = Width of roadway (ft)
 t_d = Deck thickness (in)

- STEP 1. Is the roadway width (b_r) 3.35m (11') wide or more?**
 YES: Go to step 2.
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2
- STEP 2. Is the overhead clearance 4.7m (15'5") or more ?**
 YES: Go to step 3.
 NO: Report and post height restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3
- STEP 3. Measure and use the span length (L) (rounded up) on the width of slab (b_d) (rounded down) in table 1-30 to get the table "minimum deck thickness." Measure the deck thickness (t_d). Does (t_d) equal or exceed the table "minimum deck thickness (excluding asphalt and other wearing surfaces)?"**
 YES: Safe to cross class 30 traffic
 NO: DO NOT CROSS until bridge is approved by a qualified engineer

TABLE 1-30 MINIMUM DECK THICKNESS

SPAN LENGTH (L) in feet	WIDTH OF SLAB (b_d):			
	14' 9" WIDE	18' WIDE	24' WIDE	28' WIDE
10 ft	10"	9½"	9"	9"
15 ft	13"	12½"	12"	11½"
20 ft	15"	14"	13½"	13"
25 ft	17"	16"	15 ½"	15"
30 ft	19½"	18½"	17½"	17"

MASONRY ARCH BRIDGE - MLC 70



b_r = Width of roadway (ft)
 d_r = Smallest depth of bridge, roadway to top of arch (in)
 L = span length (ft)

- STEP 1. Is the roadway width (b_r) 4.5m (14'9") or more?**
 YES: Go to step 2.
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2.
- STEP 2. Is the overhead clearance 4.7m (15'6") or more?**
 YES: Go to step 3.
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3.
- STEP 3. Measure and use the span length (L) (rounded up) in table 7-70 to get the table "minimum bridge depth." Measure the smallest depth of bridge (d_r). Does (d_r) equal or exceed the table "minimum bridge depth?"**
 YES: Safe to cross class 70 traffic
 NO: DO NOT CROSS until bridge is approved for class 70 traffic by a qualified engineer.

TABLE 7-70 MINIMUM DECK THICKNESS

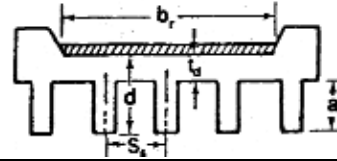
SPAN LENGTH (L) in feet	MINIMUM BRIDGE DEPTH in inches
10 ft	21 ½ in
15 ft	28 in
20 ft	33 in
25 ft	38 in
30 ft	42 in
35 ft	47 in
40 ft	51 in
45 ft	54 in
50 ft	58 in
55 ft	62 in
60 ft	66 in

TABLE 6-70 STEEL STRINGER MOMENT AND SHEAR REQUIREMENTS

SPAN LENGTH (L) in feet	STRINGER SPACING (S_s) in feet:				
	4'	5'	6'	7'	8'
10': m (ft-kip) v (kip)	75 38	85 38	94 38	101 38	108 38
15': m (ft-kip) v (kip)	156 42	177 42	196 42	212 42	226 43
20': m (ft-kip) v (kip)	261 52	300 53	331 53	358 53	383 53
25': m (ft-kip) v (kip)	375 59	427 59	473 59	512 60	548 60
30': m (ft-kip) v (kip)	491 63	564 64	624 64	677 65	725 65
35': m (ft-kip) v (kip)	619 67	706 67	782 67	849 68	910 68
40': m (ft-kip) v (kip)	747 70	853 70	949 70	1032 71	1108 71
45': m (ft-kip) v (kip)	880 72	1009 72	1121 73	1222 73	1313 73
50': m (ft-kip) v (kip)	1024 74	1172 74	1303 74	1429 75	1535 76
55': m (ft-kip) v (kip)	1170 76	1340 76	1501 77	1636 77	1761 77
60': m (ft-kip) v (kip)	1321 77	1527 78	1698 78	1893 81	2036 81

For spans greater than 60 feet or stringer spacing over 8 feet DO NOT CROSS UNTIL APPROVED BY QUALIFIED ENGINEER

CONCRETE T-BEAM – MLC 30



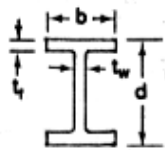
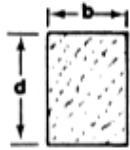
a = Apparent stringer depth (in)
 b_r = Width of roadway (ft)
 d = Depth of stringer (in)
 S_s = Stringer spacing (ft)
 t_d = Deck thickness (in)

- STEP 1. Is the roadway width (b_r) 3.35m (11') wide or more?**
 YES: Go to step 2.
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2.
- STEP 2. Is the overhead clearance 4.7m (15'6") or more?**
 YES: Go to step 3.
 NO: Report and post height restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3.
- STEP 3. Is the deck thickness (t_d) 6" or more (excluding asphalt and other wearing surfaces)?**
 YES: Go to step 4.
 NO: STOP. DO NOT CROSS until bridge is approved for class 30 traffic by a qualified engineer.
- STEP 4. Is the stringer spacing (S_s) 8 feet or less?**
 YES: Go to step 5.
 NO: DO NOT CROSS until bridge is approved for class 30 traffic by a qualified engineer.
- STEP 5. Measure and use the span length (L) (rounded up) in table 2-30 to get the table "minimum apparent depth." Measure the apparent depth (a). Does (a) equal or exceed the table "minimum apparent depth?"**
 YES: Safe to cross class 30 traffic
 NO: DO NOT CROSS until bridge is approved for class 30 traffic by a qualified engineer.

TABLE 2-30 MINIMUM DEPTH OF STRINGER

SPAN LENGTH (L) in feet	20 ft	25 ft	30 ft	35 ft	40 ft	45 ft	50 ft	55 ft	60 ft	65 ft	70 ft	75 ft	80 ft	85 ft	90 ft	95 ft	100 ft
MINIMUM APPARENT DEPTH (a) in inches	6	9	11	13	15	18	20	22	24	26	29	31	34	36	38	41	43

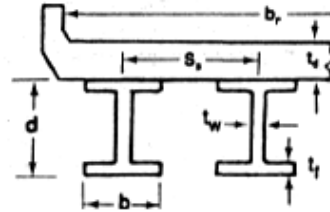
TIMBER TRESTLE - MLC 30



b = Width of stringer (in)
 b_r = Width of roadway (ft)
 d = Depth of stringer (in)
 t_d = Deck thickness (in)
 t_f = Flange thickness (in)
 t_w = Web thickness (in)

- STEP 1. Is the roadway width (b_r) 3.35m (11') or more?**
 YES: Go to step 2
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2:
- STEP 2. Is the overhead clearance 4.7m (15'6") or more?**
 YES: Go to step 3
 NO: Report and post height restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3:
- STEP 3. Measure and use the stringer spacing (S_s) (rounded up) in table 3-30 to get the table "minimum deck thickness." Measure the deck thickness (t_d). Does (t_d) equal or exceed the table "minimum deck thickness" (not including wearing treadway)?**
 YES: Go to step 4
 NO: DO NOT CROSS until bridge is approved by a qualified engineer
- STEP 4. Are the stringers made of WOOD or STEEL?**
 WOOD: Go to step 5
 STEEL: Go to step 6
- STEP 5. WOOD: Measure and use the span length (L) (rounded up) and the stringer spacing (S_s) (rounded up) in table 4-30 to get the table "minimum wood stringer dimensions." Measure the stringer dimensions (b) X (d). Do both (b) and (d) equal or exceed the table "minimum wood stringer dimensions?"**
 YES: Safe to cross class 30 traffic
 NO: DO NOT CROSS until bridge is approved by a qualified engineer
- STEP 6. STEEL: Measure stringer width (b), stringer depth (d), flange thickness (t_f), and web thickness (t_w). Do these measurements exactly equal those of a stringer in table 8?**
 YES: Take moment (m) and shear capacity (v) from table 8 and go to step 7
 NO: DO NOT CROSS until bridge is approved by a qualified engineer

STEEL STRINGER W/CONCRETE DECK - MLC70



b = Width of stringer (in)
 b_r = Width of roadway (ft)
 d = Depth of stringer (in)
 S_s = Stringer spacing (ft)
 t_d = Deck thickness (in)
 t_f = Flange thickness (in)
 t_w = Web thickness (in)

- STEP 1. Is the roadway width (b_r) 4.5m (14'9") or more?**
 YES: Go to step 2
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2:
- STEP 2. Is the overhead clearance 4.7m (15'6") or more?**
 YES: Go to step 3
 NO: Report and post height restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3:
- STEP 3. Is the deck thickness (t_d) between 6" and 9" (excluding asphalt and other wearing surfaces)?**
 YES: Go to step 4
 NO: DO NOT CROSS until bridge is approved by a qualified engineer
- STEP 4. Measure stringer width (b), stringer depth (d), flange thickness (t_f), and web thickness (t_w). Do these measurements exactly equal those of a stringer in table 8?**
 YES: Take moment (m) and shear capacity (v) from table 8 and go to step 5
 NO: DO NOT CROSS until bridge is approved by a qualified engineer
- STEP 5. Measure and use span length (L) (rounded up) and the stringer spacing (S_s) (rounded up) in table 6-70 to get the REQUIRED stringer moment (m) and shear capacity (v). Do both the stringer moment (m) and shear capacity (v) in table 8 equal or exceed the required (m) and (v) in table 6-70?**
 YES: Safe to cross class 70 traffic
 NO: DO NOT CROSS until bridge is approved by a qualified engineer

TABLE 5-70 STEEL STRINGER MOMENT AND SHEAR REQUIREMENTS

SPAN LENGTH (L) in feet	STRINGER SPACING (S _s) in feet:				
	2'	3'	4'	5'	6'
10': m (ft-kip)	43	57	67	76	83
v (kip)	37	37	37	38	38
15': m (ft-kip)	90	118	141	159	173
v (kip)	41	42	42	42	42
20': m (ft-kip)	149	196	232	262	286
v (kip)	52	52	52	53	53
25': m (ft-kip)	209	275	327	369	403
v (kip)	58	58	59	59	60
30': m (ft-kip)	270	356	423	477	522
v (kip)	62	63	64	64	65
35': m (ft-kip)	333	438	522	589	645
v (kip)	66	66	67	68	68
40': m (ft-kip)	396	522	622	703	770
v (kip)	68	69	70	71	72
45': m (ft-kip)	460	608	724	819	898
v (kip)	70	71	72	73	74
50': m (ft-kip)	526	696	830	939	1030
v (kip)	72	73	74	76	77
55': m (ft-kip)	594	786	938	1062	1166
v (kip)	74	75	76	78	79
60': m (ft-kip)	663	878	1049	1189	1306
v (kip)	75	77	78	80	81
65': m (ft-kip)	736	976	1167	1324	1455
v (kip)	76	78	80	82	83
70': m (ft-kip)	807	1071	1282	1455	1601
v (kip)	77	80	82	84	85
75': m (ft-kip)	886	1177	1410	1602	1763
v (kip)	78	81	83	85	87
80': m (ft-kip)	957	1272	1525	1734	1910
v (kip)	80	83	85	88	90
85': m (ft-kip)	1035	1377	1653	1881	2074
v (kip)	82	85	88	90	93
90': m (ft-kip)	1112	1481	1778	2025	2234
v (kip)	83	87	90	93	95
100': m (ft-kip)	1283	1711	2057	2346	2591
v (kip)	87	90	94	98	101

STEP 7. STEEL: Measure and use span length (L) (rounded up) and the stringer spacing (S_s) (rounded up) in table 5-30 to get the REQUIRED stringer moment (m) and shear capacity (v). Do both the stringer moment (m) and shear capacity (v) in table 8 equal the required (m) and (v) in table 5-30?

YES: Safe to cross class 30 traffic.
 NO: DO NOT CROSS until bridge is approved by a qualified engineer.

TABLE 3-30 MINIMUM DECK THICKNESS

STRINGER SPACING (S _s) in feet	100% LAMINATED DECK	80% LAMINATED DECK	50% LAMINATED DECK	PLANK DECK
2 ft	3 1/2"	4 3/8"	7"	5 1/2"
3 ft	4 7/8"	6"	9 5/8"	6 7/8"
4 ft	5 3/4"	7 1/8"	11 1/2"	7 3/4"
5 ft	6 1/8"	7 5/8"	12 1/4"	8 1/8"
6 ft	6 3/8"	7 7/8"	12 5/8"	8 3/8"

TABLE 4-30 MINIMUM WOOD STRINGER DIMENSIONS

SPAN LENGTH (L) in feet	STRINGER SPACING (S _s) in feet:				
	2 ft : b x d (in)	3 ft : b x d (in)	4 ft : b x d (in)	5 ft : b x d (in)	6 ft : b x d (in)
10'	8" x 10"	8" x 11"	8" x 12"	8" x 12"	8" x 13 1/4"
15'	8" x 13 1/2"	8" x 15 1/2"	10" x 15 1/4"	10" x 16"	10" x 16 3/4"
20'	10" x 15"	10" x 17 1/4"	10" x 18 3/4"	10" x 20"	12" x 19"
25'	10" x 17 1/2"	10" x 20"	12" x 20"	12" x 21 1/4"	12" x 21 1/4"
30'	10" x 19 3/4"	12" x 20 3/4"	12" x 22 1/2"	12" x 24"	14" x 23 3/4"

TABLE 5-30 STEEL STRINGER MOMENT AND SHEAR REQUIREMENTS

SPAN LENGTH (L) in feet	STRINGER SPACING (S _s) in feet:				
	2'	3'	4'	5'	6'
10': m (ft-kip)	25	32	38	43	47
v (kip)	21	21	21	22	22
15': m (ft-kip)	50	66	79	89	97
v (kip)	23	24	24	24	24
20': m (ft-kip)	76	101	120	135	148
v (kip)	26	27	27	27	28
25': m (ft-kip)	104	137	163	185	203
v (kip)	29	29	30	30	30
30': m (ft-kip)	132	174	208	236	259
v (kip)	30	31	31	32	32
35': m (ft-kip)	161	214	255	290	318
v (kip)	31	32	33	34	34
40': m (ft-kip)	192	255	305	345	381
v (kip)	32	33	34	35	36
45': m (ft-kip)	224	297	356	405	447
v (kip)	33	34	36	36	37
50': m (ft-kip)	257	342	411	468	516
v (kip)	34	36	37	38	39
55': m (ft-kip)	292	389	468	534	589
v (kip)	35	36	38	39	40
60': m (ft-kip)	328	438	527	602	667
v (kip)	36	37	39	41	42
65': m (ft-kip)	368	492	593	678	751
v (kip)	37	40	42	43	46
70': m (ft-kip)	405	543	657	752	834
v (kip)	38	40	42	44	46
75': m (ft-kip)	462	620	750	860	954
v (kip)	39	41	44	46	48
80': m (ft-kip)	504	678	821	942	1046
v (kip)	40	42	45	47	50
85': m (ft-kip)	556	748	907	1041	1158
v (kip)	41	44	46	49	51
90': m (ft-kip)	599	808	981	1128	1256
v (kip)	42	45	45	51	54
95': m (ft-kip)	651	879	1068	1230	1370
v (kip)	43	46	50	53	56
100': m (ft-kip)	701	116	1153	1328	1481
v (kip)	44	48	55	55	58

STEP 7. **STEEL:** Measure and use span length (L) (rounded up) and the stringer spacing (S_s) (rounded up) in table 5-70 to get the **REQUIRED** stringer moment (m) and shear capacity (v). Do both the stringer moment (m) and shear capacity (v) in table 8 equal the required (m) and (v) in table 5-70?

YES: Safe to cross class 70 traffic.
 NO: DO NOT CROSS until bridge is approved by a qualified engineer.

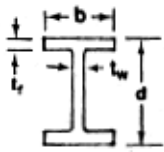
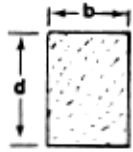
TABLE 3-70 MINIMUM DECK THICKNESS

STRINGER SPACING (S _s) in feet	100% LAMINATED DECK	80% LAMINATED DECK	50% LAMINATED DECK	PLANK DECK
2 ft	3 ³ / ₈ "	4 ³ / ₄ "	7 ⁷ / ₈ "	5 ⁷ / ₈ "
3 ft	6"	7 ³ / ₈ "	11 ¹ / ₈ "	8"
4 ft	7"	8 ³ / ₄ "	14"	9"
5 ft	7 ⁷ / ₈ "	9 ³ / ₄ "	15 ⁵ / ₈ "	9 ⁷ / ₈ "
6 ft	8 ³ / ₈ "	10 ³ / ₈ "	16 ⁵ / ₈ "	10 ³ / ₈ "

TABLE 4-70 MINIMUM WOOD STRINGER DIMENSIONS

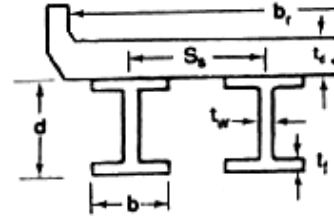
SPAN LENGTH (L) in feet	STRINGER SPACING (S _s) in feet:				
	2 ft : b x d (in)	3 ft : b x d (in)	4 ft : b x d (in)	5 ft : b x d (in)	6 ft : b x d (in)
10'	10" x 15 ¹ / ₄ "	10" x 16 ¹ / ₄ "	10" x 17 ¹ / ₄ "	10" x 17 ³ / ₄ "	10" x 18 ¹ / ₂ "
15'	10" x 17"	10" x 18 ³ / ₄ "	12" x 18 ³ / ₄ "	12" x 19 ³ / ₄ "	12" x 20 ³ / ₄ "
20'	12" x 19 ¹ / ₄ "	12" x 22"	14" x 22 ¹ / ₄ "	14" x 23 ¹ / ₂ "	14" x 24 ³ / ₄ "
25'	12" x 22 ³ / ₄ "	14" x 24 ¹ / ₄ "	14" x 26 ¹ / ₄ "	14" x 28"	16" x 27 ¹ / ₄ "
30'	14" x 24"	14" x 27 ¹ / ₂ "	16" x 28"	16" x 29 ³ / ₄ "	16" x 31"

TIMBER TRESTLE - MLC 70



b = Width of stringer (in)
 b_r = Width of roadway (ft)
 d = Depth of stringer (in)
 t_d = Deck thickness (in)
 t_f = Flange thickness (in)
 t_w = Web thickness (in)

STEEL STRINGER W/CONCRETE DECK - MLC30



b = Width of stringer (in)
 b_r = Width of roadway (ft)
 d = Depth of stringer (in)
 S_s = Stringer spacing (ft)
 t_d = Deck thickness (in)
 t_f = Flange thickness (in)
 t_w = Web thickness (in)

- STEP 1. Is the roadway width (b_r) 4.5m (14'9") or more?**
 YES: Go to step 2
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2:
- STEP 2. Is the overhead clearance 4.7m (15'6") or more?**
 YES: Go to step 3
 NO: Report and post height restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3:
- STEP 3. Measure and use the stringer spacing (S_s) (rounded up) in table 3-70 to get the table "minimum deck thickness." Measure the deck thickness (t_d). Does (t_d) equal or exceed the table "minimum deck thickness" (not including wearing treadway)?**
 YES: Go to step 4
 NO: DO NOT CROSS until bridge is approved by a qualified engineer
- STEP 4. Are the stringers made of WOOD or STEEL?**
 WOOD: Go to step 5
 STEEL: Go to step 6
- STEP 5. WOOD: Measure and use the span length (L) (rounded up) and the stringer spacing (S_s) (rounded up) in table 4-70 to get the table "minimum wood stringer dimensions." Measure the stringer dimensions (b) X (d). Do both (b) and (d) equal or exceed the table "minimum wood stringer dimensions?"**
 YES: Safe to cross class 70 traffic
 NO: DO NOT CROSS until bridge is approved by a qualified engineer
- STEP 6. STEEL: Measure stringer width (b), stringer depth (d), flange thickness (t_f), and web thickness (t_w). Do these measurements exactly equal those of a stringer in table 8?**
 YES: Take moment (m) and shear capacity (v) from table 8 and go to step 7
 NO: DO NOT CROSS until bridge is approved by a qualified engineer

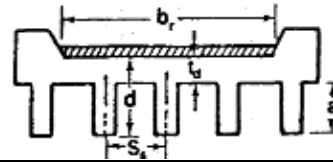
- STEP 1. Is the roadway width (b_r) 3.35m (11') or more?**
 YES: Go to step 2
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2:
- STEP 2. Is the overhead clearance 4.7m (15'6") or more?**
 YES: Go to step 3
 NO: Report and post height restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3:
- STEP 3. Is the deck thickness (t_d) between 6" and 9" (excluding asphalt and other wearing surfaces)?**
 YES: Go to step 4
 NO: DO NOT CROSS until bridge is approved by a qualified engineer
- STEP 4. Measure stringer width (b), stringer depth (d), flange thickness (t_f), and web thickness (t_w). Do these measurements exactly equal those of a stringer in table 8?**
 YES: Take moment (m) and shear capacity (v) from table 8 and go to step 5
 NO: DO NOT CROSS until bridge is approved by a qualified engineer
- STEP 5. Measure and use span length (L) (rounded up) and the stringer spacing (S_s) (rounded up) in table 6-30 to get the REQUIRED stringer moment (m) and shear capacity (v). Do both the stringer moment (m) and shear capacity (v) in table 8 equal or exceed the required (m) and (v) in table 6-30?**
 YES: Safe to cross class 30 traffic
 NO: DO NOT CROSS until bridge is approved by a qualified engineer

TABLE 6-30 STEEL STRINGER MOMENT AND SHEAR REQUIREMENTS

SPAN LENGTH (L) in feet	STRINGER SPACING (S_s) in feet:				
	4'	5'	6'	7'	8'
10': m (ft-kip)	45	52	58	63	68
v (kip)	22	22	22	22	22
15': m (ft-kip)	94	107	120	130	140
v (kip)	24	24	24	24	25
20': m (ft-kip)	148	171	191	207	225
v (kip)	27	27	27	27	28
25': m (ft-kip)	208	240	268	297	321
v (kip)	29	29	29	30	30
30': m (ft-kip)	271	318	356	391	423
v (kip)	30	31	31	32	32
35': m (ft-kip)	346	399	450	494	536
v (kip)	32	32	33	33	33
40': m (ft-kip)	421	489	550	613	665
v (kip)	33	34	34	35	35
45': m (ft-kip)	512	592	665	733	797
v (kip)	35	35	35	35	36
50': m (ft-kip)	599	694	780	862	942
v (kip)	36	36	36	36	47
55': m (ft-kip)	692	802	904	1005	1097
v (kip)	37	37	37	37	38
60': m (ft-kip)	791	925	143	1156	1264
v (kip)	38	38	38	38	39

For spans greater than 60 feet or stringer spacing over 8 feet DO NOT CROSS UNTIL APPROVED BY QUALIFIED ENGINEER

CONCRETE T-BEAM – MLC 70



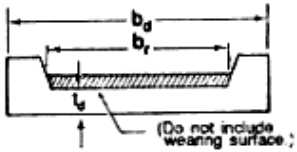
a = Apparent stringer depth (in)
 b_r = Width of roadway (ft)
 d = Depth of stringer (in)
 S_s = Stringer spacing (ft)
 t_d = Deck thickness (in)

- STEP 1. Is the roadway width (b_r) 4.5m (14'9") wide or more?**
 YES: Go to step 2.
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2
- STEP 2. Is the overhead clearance 4.7m (15'6") or more?**
 YES: Go to step 3.
 NO: Report and post height restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3.
- STEP 3. Is the deck thickness (t_d) 6" or more (excluding asphalt and other wearing surfaces)?**
 YES: Go to step 4.
 NO: STOP. DO NOT CROSS until bridge is approved for class 70 traffic by a qualified engineer.
- STEP 4. Is the stringer spacing (S_s) 8 feet or less?**
 YES: Go to step 5.
 NO: DO NOT CROSS until bridge is approved for class 70 traffic by a qualified engineer.
- STEP 5. Measure and use the span length (L) (rounded up) in table 2-70 to get the table "minimum apparent depth." Measure the apparent depth (a). Does (a) equal or exceed the table "minimum apparent depth?"**
 YES: Safe to cross class 70 traffic
 NO: DO NOT CROSS until bridge is approved for class 30 traffic by a qualified engineer.

SPAN LENGTH (L) in feet	20 ft	25 ft	30 ft	35 ft	40 ft	45 ft	50 ft	55 ft	60 ft	65 ft	70 ft	75 ft	80 ft	85 ft	90 ft	95 ft	100 ft
MINIMUM APPARENT DEPTH (a) in inches	11 in	14 in	17 in	20 in	23 in	26 in	29 in	31 in	34 in	36 in	39 in	42 in	44 in	47 in	49 in	52 in	54 in

TABLE 2-30 MINIMUM DEPTH OF STRINGER

CONCRETE SLAB - MLC 70



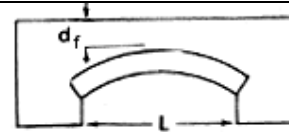
b_d = Width of slab
 b_r = Width of roadway (ft)
 t_d = Deck thickness (in)

- STEP 1. Is the roadway width (b_r) 4.5m (14'9") wide or more?**
 YES: Go to step 2.
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2
- STEP 2. Is the overhead clearance 4.7m (15'6") or more ?**
 YES: Go to step 3.
 NO: Report and post height restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3
- STEP 3. Measure and use the span length (L) (rounded up) as the width of slab (b_d) (rounded down) in table 1-70 to get the table "minimum deck thickness." Measure the deck thickness (t_d). Does (t_d) equal or exceed the table "minimum deck thickness (excluding asphalt and other wearing surfaces)?"**
 YES: Safe to cross class 70 traffic
 NO: DO NOT CROSS until bridge is approved by a qualified engineer

TABLE 1-70 MINIMUM DECK THICKNESS

SPAN LENGTH (L) in feet	WIDTH OF SLAB (b_d):			
	14' 9" WIDE	18' WIDE	24' WIDE	28' WIDE
10 ft	12"	12"	11"	11"
15 ft	16"	15"	14½"	14"
20 ft	20"	18½"	18"	17"
25 ft	23"	21½"	20"	19½"
30 ft	27"	24"	22½"	22"

MASONRY ARCH BRIDGE - MLC 30



b_r = Width of roadway (ft)
 d_r = Smallest depth of bridge, roadway to top of arch (in)
 L = span length (ft)

- STEP 1. Is the roadway width (b) 3.35m (11') or more?**
 YES: Go to step 2.
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 2.
- STEP 2. Is the overhead clearance 4.7m (15'6") or more?**
 YES: Go to step 3.
 NO: Report and post width restriction. DO NOT CROSS VEHICLES EXCEEDING RESTRICTION. Go to step 3.
- STEP 3. Measure and use the span length (L) (rounded up) in table 7-30 to get the table "minimum bridge depth." Measure the smallest depth of bridge (d_r). Does (d_r) equal or exceed the table "minimum bridge depth?"**
 YES: Safe to cross class 30 traffic
 NO: DO NOT CROSS until bridge is approved for class 30 traffic by a qualified engineer.

TABLE 7-30 MINIMUM DECK THICKNESS

SPAN LENGTH (L) in feet	MINIMUM BRIDGE DEPTH in inches
10 ft	15 in
15 ft	18 in
20 ft	22 in
25 ft	25 in
30 ft	29 in
35 ft	31 in
40 ft	33 in
45 ft	36 in
50 ft	39 in
55 ft	42 in
60 ft	44 in

TABLE 8. PROPERTIES OF STEEL STRINGERS

Nominal Size	d (in)	b (in)	t _f (in)	t _w (in)	m (kip-ft)	v (kip)
W39X211*	39.250	11.750	1.438	0.75	1901	335
W37X206*	37.250	11.750	1.438	0.75	1779	335
W36X300	36.750	16.625	1.688	0.94	2670	410
W36X194	36.500	12.125	1.250	0.81	1602	340
W36X182	36.375	12.125	1.187	0.75	1500	320
W36X170	36.125	12.000	1.125	1.06	1398	300
W36X160	36.000	12.000	1.000	1.06	1307	288
W36X230	35.875	16.500	1.250	0.75	2018	332
W36X150	35.875	12.000	0.937	0.62	1215	276
W36X201*	35.375	11.750	1.438	0.75	1659	317
W33X196*	33.375	11.750	1.438	0.75	1539	297
W33X220*	33.250	15.750	1.250	0.81	1784	309
W33X141	33.250	11.500	0.937	0.62	1079	247
W33X200	33.000	15.750	1.125	0.56	978	236
W31X180	31.500	11.750	1.312	0.75	1618	285
W30X124	30.125	10.500	0.937	0.68	1425	258
W30X116	30.000	10.500	0.875	0.62	856	215
W30X108	29.875	10.500	0.750	0.56	793	207
W30X175	29.500	11.750	1.312	0.56	723	201
W27X171	27.500	11.750	1.312	0.68	1242	240
W27X102	27.125	10.000	0.812	0.68	1137	222
W27X94	26.875	10.000	0.750	0.50	643	171
W26X157*	25.500	11.750	1.250	0.50	586	162
W24X94	24.250	9.000	0.875	0.62	983	187
W24X84	24.125	9.000	0.750	0.50	534	150
W24X100	24.000	12.000	0.750	0.50	475	137
I 24X120	24.000	8.000	1.125	0.50	601	136
I 24X106	24.000	7.875	1.125	1.18	606	225
I 24X80	24.000	7.000	0.875	0.62	566	176
W24X76	23.875	9.000	0.687	0.50	420	144
W24X153*	23.625	11.750	0.250	0.43	423	128
I 24X134*	23.625	8.500	1.250	0.62	889	171
I 22X75*	22.000	7.000	0.812	0.81	681	223
W21X139*	21.625	11.750	1.187	0.50	331	132
I 21X112*	21.625	7.875	1.187	0.62	751	156
W21X73	21.250	8.250	0.750	0.75	532	188
W21X68	21.125	8.250	0.687	0.50	363	117
W21X62	21.000	8.250	0.625	0.43	338	110
I 20X85	20.000	7.125	0.937	0.37	305	102
I 21X65*	20.000	6.500	0.812	0.68	362	154
W20X134*	19.625	11.750	1.187	0.43	263	104
W18X60	18.250	7.500	0.687	0.62	667	139
I 18X86*	18.250	7.000	1.000	0.43	261	91
	18.250	7.000	1.000	0.68	350	145
I 18X55	18.125	7.500	0.625	0.37	236	85
I 18X80*	18.000	8.000	0.937	0.50	314	104
W18X50	18.000	7.500	0.562	0.37	215	78
I 18X55	18.000	6.000	0.687	0.50	214	99
I 18X122*	17.750	11.750	1.062	0.56	696	114
I 18X62*	17.750	6.875	0.750	0.37	256	79

TABLE 8. PROPERTIES OF STEEL STRINGERS (Cont'd)

Nominal Size	d (in)	b (in)	t _f (in)	t _w (in)	m (kip-ft)	v (kip)
I 18X77*	17.750	6.625	0.937	0.62	302	128
W16X112*	16.750	11.750	1.000	0.56	483	107
I 16X70*	16.750	6.500	0.937	0.62	256	115
W16X50	16.250	7.125	0.625	0.37	194	74
W16X45	16.125	7.000	0.562	0.37	175	67
W16X64	16.000	8.500	0.687	0.43	251	84
W16X40	16.000	7.000	0.500	0.31	156	59
I 16X50*	16.000	6.000	0.687	0.43	166	83
W16X36	15.875	7.000	0.437	0.31	136	58
W16X110*	15.750	11.750	1.000	0.56	371	100
I 16X62*	15.750	6.125	0.875	0.56	215	101
I 16X45*	15.750	5.375	0.625	0.43	161	82
W15X103*	15.000	11.750	0.937	0.56	396	95
I 15X56	15.000	5.875	0.812	0.50	186	87
I 15X43	15.000	5.500	0.625	0.43	142	73
W14X101*	14.250	11.750	0.937	0.56	369	90
I 14X40*	14.250	5.375	0.375	0.37	128	65
I 14X51 *	14.125	5.625	0.750	0.50	161	82
I 14X70*	14.000	8.000	0.937	0.43	219	69
I 14X57*	14.000	6.000	0.875	0.50	164	80
W14X34	14.000	6.750	0.437	0.31	117	48
W14X30	13.875	6.750	0.375	0.25	101	46
W14X92*	13.875	11.750	0.875	0.50	319	76
I 14X46*	13.375	5.375	0.687	0.50	135	78
I 13X35*	13.000	5.000	0.625	0.37	91	57
I 13X41*	12.625	5.125	0.687	0.56	116	82
W12X36	12.250	6.625	0.562	0.31	111	44
I 12X65*	12.000	8.000	0.937	0.43	195	58
W12X57	12.000	6.500	0.375	1.25	82	35
I 12X50	12.000	5.500	0.687	0.68	121	96
I 12X32	12.000	5.000	0.562	0.37	87	49
I 12X34*	11.250	4.750	0.625	0.43	87	57
W11X76*	11.000	11.000	0.812	0.50	217	61
I 10X29*	10.625	4.750	0.562	0.31	72	38
W10X25	10.125	5.750	0.437	0.25	63	30
I 10X40	10.000	6.000	0.687	0.37	99	42
I 10X35	10.000	5.000	0.500	0.62	70	69
I 10X25	10.000	4.625	0.500	0.31	59	36
W10X21	9.875	5.750	0.312	0.25	52	28
W10X59*	9.250	9.500	0.687	0.43	142	44
I 9X25*	9.500	4.500	0.500	0.31	55	34
I 9X50*	9.000	7.000	0.812	0.37	110	35
I 8X30*	8.000	6.000	0.625	0.31	70	27
I 8X28*	8.000	5.000	0.562	0.31	53	28
W8X31	8.000	8.000	0.437	0.31	66	26
W8X44*	7.875	7.875	0.625	0.75	87	32
W7X35*	7.125	7.125	0.562	0.37	62	29
W6X31*	6.250	6.250	0.562	0.37	48	24

*THESE NOMINAL SIZES HAVE NO U.S. EQUIVALENT.