

MERCURY METALS

SPECIFICATION FOR FLOOR DECK

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PART 1 – GENERAL

1.1 – GENERAL REQUIREMENTS

1. Division 1, General Requirements, Supplementary General Requirements and Instruction to bidders are part of this specification and shall apply as if repeated here.
2. The requirements for Goods and Services Tax and Provincial Sales Tax are outlined in the General Requirements.

1.2 – SCOPE OF WORK

1. Furnish all materials, labor, equipment and services, necessary for the detailed design erection drawings, shop drawings, fabrication and erection of the complete wall and/or roof cladding as shown or called for in the tender documents.
2. Supply and install accessories where shown or called for by the tender documents.
3. Cut and reinforce penetrations through the roof deck, between 6 inch to 18 inch diameter or maximum dimension across the flutes, as shown on the architectural or structural drawings.

1.3 – SHOP DRAWINGS

1. Submit erection drawings in accordance with General Conditions.
2. Erection drawings shall show clearly the location of various deck units, section designations, finishes, quantities, fastener specifics, shear diaphragm capacities (if required) and any other information required for erection purposes.
3. Shop drawings shall be signed and sealed by a Specialty Engineer, a Registered Engineer familiar with sheet metal panels components and systems.
4. The Specialty Engineer shall submit the required documentation covering the specified work and conduct field inspections as he deems to be required to assure work is performed in accordance with the shop drawings.

1.4 – WORK NOT INCLUDED

1. Structural steel beams, joists or purlins, or other supports, for floor deck.
2. Structural framing, or reinforcement, for roof openings larger than 18 inches across flutes or areas of concentrated point loads.
3. Perimeter floor angles or supports such as wet columns, columns with top flange wind bracing, columns wider than the beam parallel to deck fluts etc. Supports to be provided by structural steel contractor and should be wide enough to provide sufficient bearing for the steel deck and long enough to allow the low flute to bear on the support.
4. Concrete fill, concrete reinforcing steel, temperature shrinkage mesh, or screed flashing.
5. Temporary shoring of steel floors units or fireproofing.
6. Shear loading or deflection calculations for steel deck diaphragms. (To be provided by Primary Structural Engineer)

1.5 – STANDARDS

1. Design composite floor deck in accordance with the latest edition of:
 - i. CAN/C.S.A. – S 136 for the Design of Cold Formed Steel Structural Members.
 - ii. Specified loads, load factors and load distributions shall be in accordance with the National Building code of Canada unless otherwise stated.
 - iii. CSSBI 12M-96 Standard for Composite Steel Deck
 - iv. CSSBI B11-89 Criteria for the Design of Composite Slabs.

1.6 – DESIGN CRITERIA

1. Design the floor deck using Limit States Design.
2. Design the composite floor deck to resist:
 - i. Live and dead loads as specified and shown on tender drawings.
3. Deflection of composite floor deck is not to exceed 1/240 of the span for the specified live loading in composite action, and 1/180 but not greater than 20mm (3/4 inch) as a floor form.
4. Where possible, span deck over four or more structural supports (3 continuous spans).
5. If shear diaphragm is required, ensure adequate shear capacity using Tri-Serives calculations for Composite Steel Deck Diaphragms.
6. The supporting structure shall provide the floor deck a minimum bearing width equal to the cladding profile depth, but not less than 1.5”.

PART 2 – PRODUCTS

2.1 MATERIALS

1. Manufacturer shall be a member of Good Standing with the Canadian Sheet Steel Building Institute (C.S.S.B.I.).
2. Fabrication from ASTM A 653M SQ (structural quality) grade 230 galvanized steel with a zinc coating of Z275 galvanized as designated by ASTM A653M.
3. Profile designation shall be Mercury _____ complete with Metallic Coating Classification _____.
4. Minimum design thickness shall be _____ mm (_____ in).
5. Trim shall be fabricated from the same material, thickness and finish as the respective wall or roof cladding.
6. E.P.T. or fire rated closures shall be provided, where indicated on the tender documents, to close off the flutes of the composite floor decking wall locations.

PART 3 – EXECUTION

3.1 STORAGE OF MATERIAL ON SITE

1. Steel sheet decking shall normally be delivered to the jobsite as required for erection, but if site storage becomes necessary, suitable storage areas shall be provided by the general contractor as close to the building site as is practicable. Preferably this storage shall be under cover.
2. When outdoor storage is unavoidable:
 - a. Use good quality covers, other than plastic, loosely shrouded over stacks and firmly anchored to prevent wind blow-off;
 - b. Tilt bundles for drainage;
 - c. Ventilate bundles but do not allow the entry of wind driven precipitation;
 - d. Block bundles off ground for effective ventilation;
 - e. Block bundles to prevent sagging;
 - f. Store away from chemically aggressive substances (e.g. salt, cement, fertilizer) away from materials that could contaminate the surface (e.g. diesel oil, paint, grease) and away from traffic.
3. Moisture can cause wet storage staining of metallic coated and pre-finished material and usually occurs as a result of:
 - g. Condensation from high humidity air and/or temperature cycling;
 - h. Wet shipping conditions;
 - i. Wind driven rain penetration (outdoor storage).

The usual progression is from water staining to unsightly white staining (dark grey to dull lack on aluminum-zinc alloy coated sheet) to red rust. On material where wet storage staining has occurred, it should be noted that, except for aesthetic considerations, a nominal amount of staining is not detrimental to the functioning of the product.

3.2 INSTALLATION

1. All erection work shall be carried out by trained erection crews all in accordance with the fabricator's and these specifications.
2. Examine and obtain all necessary measurements of previously executed work which may effect the work of this Division.
3. Report any discovered discrepancies to the Architect/Engineer so that instructions may be given for the necessary remedial work.
4. Exercise care in unpacking, moving, storing, handling and placing panels to prevent damage likely to impair the adequacy or appearance of the material in the finished structure.
5. Floor decking shall be adjusted to final position before being permanently fastened to structural supports.
6. End laps shall be located over supports. Minimum end laps shall be a minimum 50mm (2 inch) for all profiles except QL Lock-Rib which will be butted at end laps.
7. All Metallic Coated floor deck products will be secured to the structural steel by 20mm (3/4 inch) diameter arc spot welds at not more than 410mm (16 inch) centers or as specified in the shop drawings.
8. All welding shall be mechanically clinched together at not more than 500mm (24 inch) centers or welding as specified in the shop drawings.
9. All side laps shall be mechanically clinched together at not more than 600mm (24 inch) centers or welded as specified in the shop drawings.
10. Openings, and any necessary flashing, shall be provided as called for by the tender documents.
11. If additional openings not shown or called for by the tender documents are required, such openings shall be cut and reinforced (to 45mm (18 inch) maximum) by the erector, but the cost of such extra work shall be charged to the buyer.
12. Install shear studs connectors (if required) as indicated on structural drawings.

3.3 TOUCH-UP AND CLEANING

1. At completion of the work of this Division, remove any excess materials, debris and equipment pertaining to the work of this Division, from the site.

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DESIGN CRITERIA:

The properties listed in the following tables are based on one meter panel width for metric tables and one foot panel width for imperial tables. The properties of the steel profiles have been computed in accordance with CSSBI S3 - 88 " Criteria for the Design of Composite Slabs.

PRINCIPLES OF COMPOSITE Q-LOCK FLOOR CONSTRUCTION

Q -Lock Floor functions in a manner similar to a composite steel beam, employing the same essential elements; steel beam, shear connectors, and concrete slab

- 1) The Q -Lock profile acts as the steel beam.
- 2) The indentations and embossments formed into the Q -Lock profile act as mechanical connectors, transferring the horizontal shear from the concrete slab to the steel floor section, and locking the steel and concrete together preventing vertical separation.
- 3) The concrete acts as a very effective compression element or cover plate. It also fills the flute and provides a flat surface.
- 4) The Q -Lock profile is designed to carry the full dead load of the concrete. Q -Lock profiles generally function as working platforms for subcontractors prior to placing of the concrete.
- 5) After the concrete is placed and attains the proper strength, the full live load is carried by the composite steel and concrete section.

This design locks together the structural properties of both steel and concrete, resulting in a highly efficient and economical composite unit.

COMPOSITE BEAM CONSTRUCTION

The use of shear connectors welded through the low flute to the supporting beams mates the concrete and steel into an integral load bearing member resulting in reduced beam deflection, larger bay sizes, reduced building height, and less beam and girder fireproofing. Basic design procedures for composite beams are given in the design standards such as CSA / CAN Standard S16.1 "Steel Structures for Buildings - Limit States Design. Mercury QL 900 and QL LOCK-RIB have the flute average width least twice the height of the cellular steel deck, and thus allow full end welded stud values. Mercury QL BOLD-RIB will require the stud capacity be reduced due to the narrowness of the small flute; however, full shear stud capacity can be achieved by inverting the deck profile. The top surface of the top flange of the floor beams should be unpainted and free of all dirt, heavy rust, mill scale, sand, or other materials which will interfere with welding operations of the deck and shear studs.

STRUCTURAL DIAPHRAGM DESIGN

Wind forces and seismic forces require adequate horizontal bracing to properly distribute the general lateral forces to the building columns, wall or vertical bracing systems. The steel floor system, possessing the characteristics of light weight and high strength, acts as a diaphragm for stress transferring purposes and reduces, or eliminates, the necessity for horizontal bracing and at the same time contributes a minimum mass for seismic forces. Please see Mercury Metal's Shear Diaphragm Manual for Roof and Floor Decks.

SOUND TRANSMISSION LOSS AND IMPACT RATINGS

Without suspended ceiling:	STC	50
	INR	-24
With suspended ceiling:	STC	60
	INR	+ 5

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SOUND TRANSMISSION LOSS AND IMPACT RATINGS CONT'D.

Information is provided from historic data. Sound Transmission Class (STC) was conducted according to ASTM E90-66T. Impact Noise Rating (INR) was determined by the current method of assessing the impact sound insulation of floors as established by the International Organization for Standardization. Both tests were conducted with 64 mm (2 1/2 inches) of concrete cover over the floor deck.

CONCRETE CRACKING

When cracks appear in the concrete over QL floor system, the floor supporting the slab is sometimes held at fault. The reasoning advanced overlooks the fact that the same faults may appear in concrete fills over other types of supporting slabs. The cause of shrinkage cracks lies in the nature of concrete and in the mixing and placing practices that have been used. Of several volume changes that occur in hardened concrete, the most extensive is the shrinkage due to drying out. The most important single factor governing the drying shrinkage of concrete is the unit water content. The amount of shrinkage increases in proportion to the amount of mixing water. Other factors such as cement content and the size, shape, and grading of the aggregate are important, but largely because of their effect upon the amount of water required to bring the mix to a "workable" consistency. It follows that any means of reducing the amount of water required for a workable mix will reduce shrinkage. If shrinkage is kept to a minimum with a properly formulated mix, then the shrinkage that will occur can be relieved in a manner that interferes least with the usefulness of the floor. It is preferable to have fine cracks frequently spaced rather than fewer cracks of wider opening. This is accomplished by providing some sort of restraint for lateral movement in the slab, such as the use of 'welded wire mesh placed in the concrete approximately one inch from the top surface of the concrete. Such restraint causes the shrinkage stress to be relieved in small local cracks rather than accumulating over greater distances.

Recommended Minimum Shrinkage and Temperature Reinforcement

BY FORMULA

METRIC		IMPERIAL	
Concrete Cover $A \geq h - Dd$	Minimum Area of Reinforcement Required	Concrete Cover $A \geq h - Dd$	Minimum Area of Reinforcement Required
$A \geq 80$ mm	60 mm ² / m slab width	$A \geq 3.15$ "	.0283 in ² / ft slab width
80 mm < A < 150 mm	$(3A - 180)$ mm ² / m slab width	$3.15 < A < 6.0$ "	$(.0354A - .0849)$ in ² / ft slab width
$A \geq 150$ mm	$(1.8A)$ mm ² / m slab width	$A \geq 6.0$ "	$(.0212A)$ in ² / ft slab width

BY CONCRETE COVER

Concrete Cover	Minimum mesh size	Concrete Cover	Minimum mesh size
75 mm or less	152 mm x 152 mm / MW 9.1	3" or less	6" x 6" / # 10 x # 10
90 mm	152 mm x 152 mm / MW 11.1	3.5"	6" x 6" / # 9 x # 9
100 mm	152 mm x 152 mm / MW 13.3	4"	6" x 6" / # 8 x # 8
115 mm	152 mm x 152 mm / MW 18.7	4.5"	6" x 6" / # 6 x # 6
130 mm	152 mm x 152 mm / MW 18.7	5"	6" x 6" / # 6 x # 6
140 mm	152 mm x 152 mm / MW 18.7	5.5"	6" x 6" / # 6 x # 6
150 mm	152 mm x 152 mm / MW 25.8	6"	6" x 6" / # 4 x # 4

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CONCRETE CRACKING CONT'D.

Composite floor systems are generally considered in the simple span mode. Shrinkage and temperature steel reinforcement alone is not intended to resist negative bending moments. Additional reinforcement must be provided as required by a structural design if negative bending is to be resisted. For applications where a higher degree of crack control is required, the designer should refer to recognized standards of concrete practice and design such as CSA standard A23.3 " Code for the Design of Concrete Structures for Buildings".

GENERAL NOTES FOR LOAD TABLES

- 1) The loads indicated in the load tables are for super-imposed live and dead loads as used in building design. The values in the tables have been calculated by the design procedures following. In structures , or portions thereof, where live loads are maintained for lengthy periods, such as warehouses, computer rooms, libraries or other conditions, where the effect of creep must be considered. As well, where heavy line loads are maintained for a long periods of time, the additional deflection due to creep should be considered. Contact your Mercury Metals representative.
- 2) The indicated loads may be used with floor units on simple or continuous spans. Composite floor design is based on simple span analysis.
- 3) Loads indicated in the tables will not cause the composite floor to deflect more than $L / 360$.
- 4) The loads tables are presented for one, two and three span deck form conditions. As a deck form deflection has been limited to $L / 180$, but not greater than 20 mm (3/4 in). Table areas above the heavy line and shading do not require temporary shoring during concrete pour and curing. Areas below the heavy line and within the shading require temporary mid-span shoring during concrete pour and curing.
- 5) The National Building Code of Canada requires that composite floor decks must support a minimum concentrated load of 9 KN (2023 lb..) applied over an area 750 mm by 750 mm (2' - 5 1/2" by 2' - 5 1/2"). Areas marked by an "n" or " * " indicates that this span / steel thickness / concrete cover combinations cannot support the standard minimum concentrated load. Then, due consideration must be given to the maximum support steel spacing. The non-composite floor deck will have to carry the dead weight of the metal deck and concrete plus the concentrated load. This combination will reduce the allowable span for the floor deck when compared to the allowable spans for normal dead and live loads.
- 6) Steel floor deck is normally fastened to the supporting steel by arc spot welding. The thickness of the supporting steel to which the deck is attached is a factor in producing satisfactory arc spot welds. A minimum thickness of 2.5 times the adjoining deck thickness, but not less than 2.54 mm (.10 in) is recommended.
- 7) Where practical , the minimum length of bearing of steel floor deck on structural supports should be at least equal to the depth of the deck section.
- 8) Where deck sheets ends join a minimum overlap of 2" should be provided for QL 900 and QL BOLD-RIB products. Due to the bottom locking deformations, QL LOCK-RIB profile is butt joined (without any overlap).
- 9) **Heavy concentrated loads (such as forklifts), moving and vibratory loads are not recommended on a composite floor system without additional negative and transverse reinforcing.**
- 10) Concentrated punching shear conditions may require additional design checks.

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NOMENCLATURE for COMPOSITE FLOORS

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As	Cross- sectional area of steel deck (in ² / ft width)	LL	Specified live load (psf)
a	$\frac{\phi_s A_s F_y}{0.85 \phi_c f'c b} = \frac{A_s F_y}{6.8 f'c}$	LLmax	Maximum permissible uniformly distributed superimposed load (psf)
b	Unit width of compression face of composite slab (12 in)	LLd	Permissible uniformly distributed superimposed load based on limiting deflection (psf / ft width)
d	Effective slab depth (distance from extreme concrete compression fiber to centroidal axis of the full cross - section of the steel deck) (in)	LLc	Permissible uniformly distributed superimposed load based on Flexural crushing (psf / ft width)
Ec	Modulus of elasticity of concrete (psi) $E_c = \delta_c^{1.5} \times 0.043 \text{ SQRT } (f'c)$	LLs	Permissible uniformly distributed superimposed load based on shear - bond (psf / ft width)
Es	Modulus of elasticity of steel deck (29.5 x 10 ⁶ psi)	LLy	Permissible uniformly distributed superimposed load based on flexural yielding (psf / ft width)
f'c	Specified compressive strength of concrete (psi)	Mnbc	Maximum moment resulting from NBC 4.1.6.4 concentrated load criteria (lb.ft / ft width)
Fy	Specified yield strength of steel deck (psi)	Mru	Factored moment resistance an under-reinforced composite slab (lb.ft / ft width)
h	Overall thickness of composite slab (in)	P	Specified concentrated construction live load (137 lb / ft width)
hc	Thickness of concrete cover above top of steel deck (in)	R	Load resistance (psf)
Ic	Moment of inertia of composite section based on cracked section and equivalent area of concrete (in ⁴ / ft of slab width)	Sm	Section modulus of steel deck at mid-span (in ³ / ft width)
Iu	Moment of inertia of composite section based on uncracked section and equivalent area of concrete (in ⁴ / ft slab width)	Ss	Section modulus of steel deck at support (in ³ / ft width)
Id	Average moment of inertia for uncracked and cracked composite section (in ⁴ / ft slab width) (I _c + I _u) / 2	Wc	Dead load of wet concrete slab (psf / ft width)
I_{sd}	Moment of inertia of steel deck only (in ⁴ /ft slab width)	Ws	Dead load of steel deck (psf / ft width)
k	0.85 for concrete strengths f'c <= 4000 psi, and is reduced at a rate of 0.055 for each 1000 psi of concrete strength in excess of 4000 psi	W1	= W _c + W _s (psf / ft width)
k'	0.425 for concrete strengths f'c <= 4000 psi, and is reduced at a rate of 0.025 for each 1000 psi of concrete strength in excess of 4000 psi	W2	Uniformly distributed construction live load (20.9 psf / ft width)
Ku	$\text{where } \phi = \frac{\text{Square Root } (\phi \phi + (\phi \phi / 2)^2 - \phi \phi / 2)}{0.85 k f'c} = \frac{1.041 \times 10^{-5}}{k f'c}$	W4	Specified superimposed dead load (psf / ft width)
	$\phi = \frac{A_s}{b d}$	Y_{sb}	Distance from bottom of steel deck to centroidal axis of steel deck (in)
K5	Shear bond coefficient (slope of line) (lb / in)	ø_{ed}	Dead load factor 1.25
K6	Shear bond coefficient (intercept of line) (psi)	ø_{el}	Live load factor 1.50
L	Length of span (ft) lessor of a) center to center distance of supporting members b) clear distance between edges of supports plus the depth of the steel deck	Ø	Resistance factor
		Ø_s	Resistance factor for steel 0.90
		ø_c	Density of concrete (pcf)
		Ø_c	Resistance factor for concrete 0.60
		Ø_v	Resistance factor for shear-bond 0.70
		ø_p	Ponding factor 1.10
		Br	Bearing resistance of deck as a form for a bearing length equal to deck depth

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CRITERIA for STEEL DECK as a FORM

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LOADING CONDITION	GOVERNING EXPRESSION	
SINGLE SPAN		
	$\frac{0.9 F_y S_m}{12} \geq 0.125 \phi W_1 L^2 + 0.250 \phi P L$	
	$\frac{0.9 F_y S_m}{12} \geq 0.125 (\phi W_1 + \phi W_2) L^2$	
	DEFLECTION $\frac{25.75 W_1 L^4}{E_s I_{sd}}$	$\leq \frac{12 L}{180} \quad (\text{or } .75 \text{ in maximum})$
DOUBLE SPAN		
	$\frac{0.9 F_y S_m}{12} \geq 0.096 \phi W_1 L^2 + 0.203 \phi P L$	
	$\frac{0.9 F_y S_m}{12} \geq 0.096 (\phi W_1 + \phi W_2) L^2$	
	$\frac{0.9 F_y S_s}{12} \geq 0.125 \phi W_1 L^2 + 0.094 \phi P L$	
	$\frac{0.9 F_y S_s}{12} \geq 0.125 (\phi W_1 + \phi W_2) L^2$	
	DEFLECTION $\frac{10.40 W_1 L^4}{E_s I_{sd}}$	$\leq \frac{12 L}{180} \quad (\text{or } .75 \text{ in maximum})$

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CRITERIA for STEEL DECK as a FORM

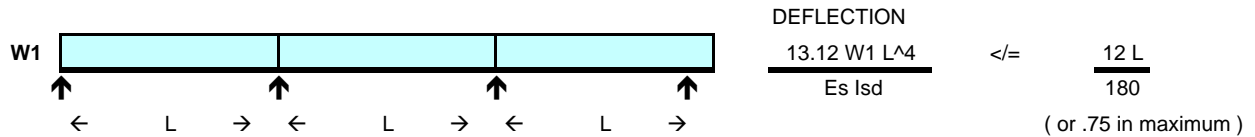
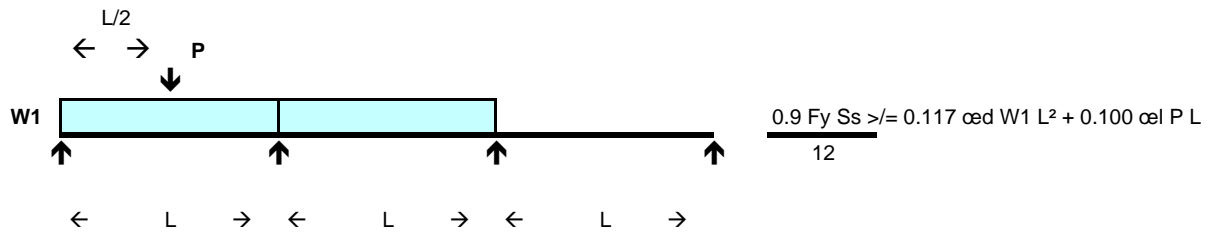
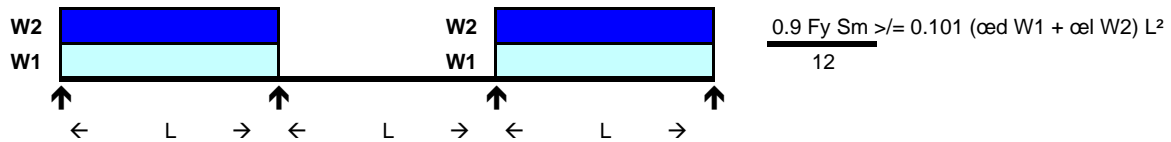
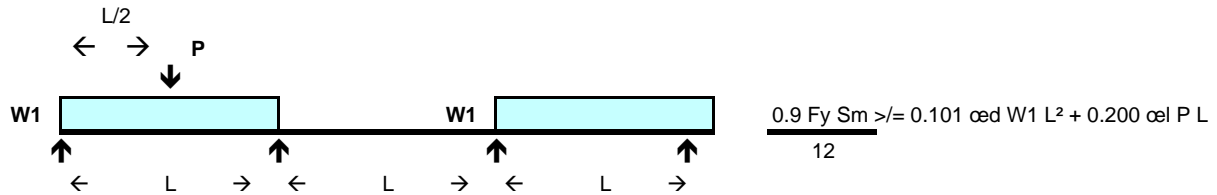
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LOADING CONDITION

GOVERNING EXPRESSION

TRIPLE SPAN



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COMPOSITE SLAB DESIGN EXPRESSIONS

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Refer to NOMENCLATURE for symbol definitions and factors assumed.
Formulae assume simple span conditions for composite configuration.

BASIS:

$$\phi R = \phi_e d W1 + \phi_e d W4 + \phi_e l LL$$

$$\frac{\phi R}{\phi_e l} - \frac{\phi_e d W1}{\phi_e l} \geq LL + \frac{\phi_e d W4}{\phi_e l}$$

$$LL_{max} \geq LL + 0.833 W4$$

1. SHEAR BOND CONTROLLING

$$LL_s = \frac{11.2 d}{L} \left[\frac{4 K5}{12 L} + K6 \right] - 0.833 W1$$

$$LL_s \geq LL + 0.833 W4$$

2. FLEXURAL YIELDING CONTROLLING FOR UNDER- REINFORCED FLOOR SLAB

$$LL_y = \frac{.40 A_s F_y}{L^2} \left[d - \frac{a}{2} \right] - 0.833 W1$$

$$LL_y \geq LL + 0.833 W4$$

3. FLEXURAL CRUSHING CONTROLLING FOR OVER-REINFORCED FLOOR SLAB

$$LL_c = \frac{2.72 k_1 f_c b d^2 K_u}{L^2} \left[1 - K_2 K_u \right] - 0.833 W1$$

$$LL_c \geq LL + 0.833 W4$$

4. DEFLECTION CONTROLLING BASED ON L / 360 LIMITATIONS ON COMPOSITE SLAB

$$LL_d = \frac{E_s l c d}{675 n L^3} \quad LL_d \geq LL + W4$$

5. NBC CONCENTRATED LOAD CONTROLLING

$$M_u = \frac{0.9 A_s F_y}{12} \left[d - \frac{a}{2} \right]$$

$$M_{bc} = \frac{1}{8} \left[\frac{3035 (2 L - d / 6) - 7587}{(2.5 + d / 6)} + 1.25 W1 L^2 \right]$$

$$M_u \geq M_{bc}$$

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a	$\frac{\phi_s A_s F_y}{0.85 \phi_c f'c b} = \frac{A_s F_y}{6.8 f'c}$	LLmax	Maximum permissible uniformly distributed superimposed load (psf)
b	Unit width of compression face of composite slab (12 in)	LLd	Permissible uniformly distributed superimposed load based on limiting deflection (psf / ft width)
d	Effective slab depth (distance from extreme concrete compression fiber to centroidal axis of the full cross - section of the steel deck) (in)	LLc	Permissible uniformly distributed superimposed load based on Flexural crushing (psf / ft width)
Ec	Modulus of elasticity of concrete (psi) $E_c = \delta_c^{1.5} \times 0.043 \text{ SQRT } (f'c)$	LLs	Permissible uniformly distributed superimposed load based on shear - bond (psf / ft width)
Es	Modulus of elasticity of steel deck (29.5 x 10 ⁶ psi)	LLy	Permissible uniformly distributed superimposed load based on flexural yielding (psf / ft width)
f'c	Specified compressive strength of concrete (psi)	Mnbc	Maximum moment resulting from NBC 4.1.6.4 concentrated load criteria (lb.ft / ft width)
Fy	Specified yield strength of steel deck (psi)	Mru	Factored moment resistance an under-reinforced composite slab (lb.ft / ft width)
h	Overall thickness of composite slab (in)	P	Specified concentrated construction live load (137 lb / ft width)
hc	Thickness of concrete cover above top of steel deck (in)	R	Load resistance (psf)
Ic	Moment of inertia of composite section based on cracked section and equivalent area of concrete (in ⁴ / ft of slab width)	Sm	Section modulus of steel deck at mid-span (in ³ / ft width)
Iu	Moment of inertia of composite section based on uncracked section and equivalent area of concrete (in ⁴ / ft slab width)	Ss	Section modulus of steel deck at support (in ³ / ft width)
I_d	Average moment of inertia for uncracked and cracked composite section (in ⁴ / ft slab width) (I _c + I _u) / 2	Wc	Dead load of wet concrete slab (psf / ft width)
I_{sd}	Moment of inertia of steel deck only (in ⁴ /ft slab width)	Ws	Dead load of steel deck (psf / ft width)
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k'	0.425 for concrete strengths f'c <= 4000 psi, and is reduced at a rate of 0.025 for each 1000 psi of concrete strength in excess of 4000 psi	W2	Uniformly distributed construction live load (20.9 psf / ft width)
Ku	$\phi = \text{Square Root} \left(\phi_s + \left(\phi_s / 2 \right)^2 - \phi_s / 2 \right)$ where $\phi = \frac{0.003 E_s}{0.85 k f'c} = \frac{1.041 \times 10^{-5}}{k f'c}$	W4	Specified superimposed dead load (psf / ft width)
	$\phi = \frac{A_s}{b d}$	Y_{sb}	Distance from bottom of steel deck to centroidal axis of steel deck (in)
K5	Shear bond coefficient (slope of line) (lb / in)	ø_{ed}	Dead load factor 1.25
K6	Shear bond coefficient (intercept of line) (psi)	ø_{el}	Live load factor 1.50
L	Length of span (ft) lessor of a) center to center distance of supporting members b) clear distance between edges of supports plus the depth of the steel deck	ø	Resistance factor
		ø_s	Resistance factor for steel 0.90
		ø_c	Density of concrete (pcf)
		ø_c	Resistance factor for concrete 0.60
		ø_v	Resistance factor for shear-bond 0.70
		ø_p	Ponding factor 1.10
		Br	Bearing resistance of deck as a form for a bearing length equal to deck depth

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CRITERIA for STEEL DECK as a FORM

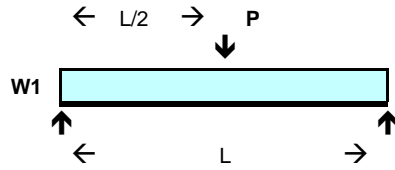
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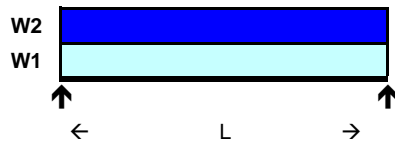
LOADING CONDITION

GOVERNING EXPRESSION

SINGLE SPAN



$$0.9 F_y S_m \geq 0.125 \alpha_d W_1 L^2 + 0.250 \alpha_e P L \times 10^3$$



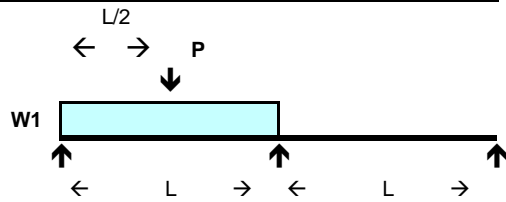
$$0.9 F_y S_m \geq 0.125 (\alpha_d W_1 + \alpha_e W_2) L^2$$



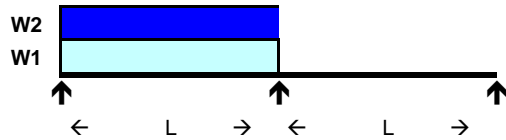
DEFLECTION

$$\frac{W_1 L^4}{69.8 E_s I_{sd}} \leq \frac{L}{180} \quad (\text{or } 20 \text{ mm maximum})$$

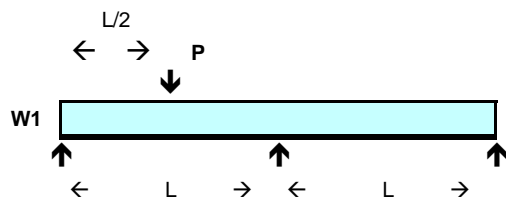
DOUBLE SPAN



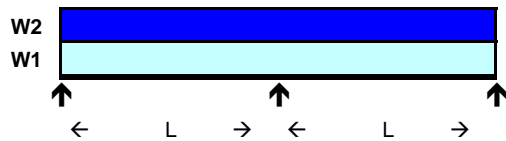
$$0.9 F_y S_m \geq 0.096 \alpha_d W_1 L^2 + 0.203 \alpha_e P L \times 10^3$$



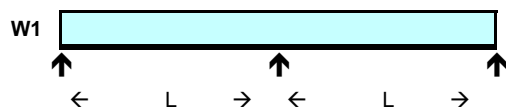
$$0.9 F_y S_m \geq 0.096 (\alpha_d W_1 + \alpha_e W_2) L^2$$



$$0.9 F_y S_s \geq 0.125 \alpha_d W_1 L^2 + 0.094 \alpha_e P L \times 10^3$$



$$0.9 F_y S_s \geq 0.125 (\alpha_d W_1 + \alpha_e W_2) L^2$$



DEFLECTION

$$\frac{W_1 L^4}{166 E_s I_{sd}} \leq \frac{L}{180} \quad (\text{or } 20 \text{ mm maximum})$$

MERCURY METALS

CRITERIA for STEEL DECK as a FORM

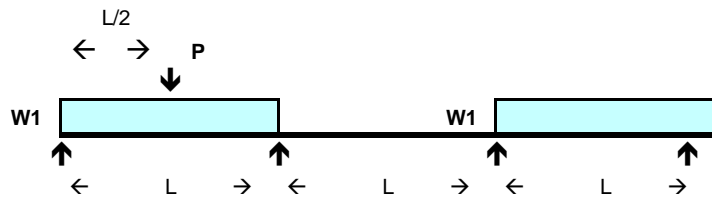
METRIC - L.S.D.

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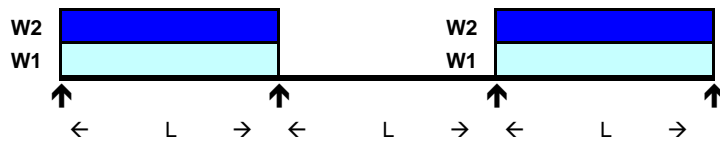
LOADING CONDITION

GOVERNING EXPRESSION

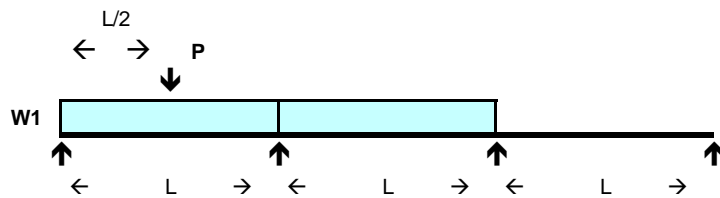
TRIPLE SPAN



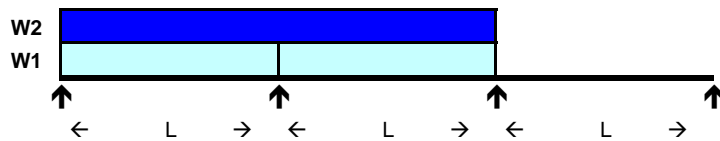
$$0.9 F_y S_m \geq 0.101 \alpha_d W_1 L^2 + 0.200 \alpha_e P L \times 10^3$$



$$0.9 F_y S_m \geq 0.101 (\alpha_d W_1 + \alpha_e W_2) L^2$$



$$0.9 F_y S_s \geq 0.117 \alpha_d W_1 L^2 + 0.100 \alpha_e P L \times 10^3$$



$$0.9 F_y S_s \geq 0.117 (\alpha_d W_1 + \alpha_e W_2) L^2$$



DEFLECTION

$$\frac{W_1 L^4}{69.8 E_s I_{sd}}$$

\leq

$$\frac{L}{180}$$

(or 20 mm maximum)

MERCURY METALS

COMPOSITE SLAB DESIGN EXPRESSIONS

METRIC - L.S.D.

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Refer to NOMENCLATURE for symbol definitions and factors assumed.
Formulae assume simple span conditions for composite configuration.

BASIS:

$$\phi R = \phi_e d W_1 + \phi_e d W_4 + \phi_e l LL$$

$$\frac{\phi R}{\phi_e l} - \frac{\phi_e d W_1}{\phi_e l} \geq LL + \frac{\phi_e d W_4}{\phi_e l}$$

$$LL_{max} \geq LL + 0.833 W_4$$

1. SHEAR BOND CONTROLLING

$$LL_s = \frac{933 d}{L} \left[\frac{4 K_5}{L} + K_6 \right] - 0.833 W_1$$

$$LL_s \geq LL + 0.833 W_4$$

2. FLEXURAL YIELDING CONTROLLING FOR UNDER- REINFORCED FLOOR SLAB

$$LL_y = \frac{4.80 A_s F_y}{L^2} \left[d - \frac{a}{2} \right] - 0.833 W_1$$

$$LL_y \geq LL + 0.833 W_4$$

3. FLEXURAL CRUSHING CONTROLLING FOR OVER-REINFORCED FLOOR SLAB

$$LL_c = \frac{2.72 k_1 f_c b d^2 K_u}{L^2} \left[1 - K_2 K_u \right] - 0.833 W_1$$

$$LL_c \geq LL + 0.833 W_4$$

4. DEFLECTION CONTROLLING BASED ON L / 360 LIMITATIONS ON COMPOSITE SLAB

$$LL_d = \frac{E_s l c d}{4.69 n L^3} \quad LL_d \geq LL + 0.833 W_4$$

5. NBC CONCENTRATED LOAD CONTROLLING

$$M_u = 0.9 A_s F_y \left[d - \frac{a}{2} \right]$$

$$M_{bc} = \frac{1}{8} \left[\frac{27 \times 10^6 (L - d) - 10.1 \times 10^9}{(750 + 2 d)} + 1.25 W_1 L^2 \right]$$

$$M_u \geq M_{bc}$$

MERCURY METALS

MODULAR RATIO n = 9

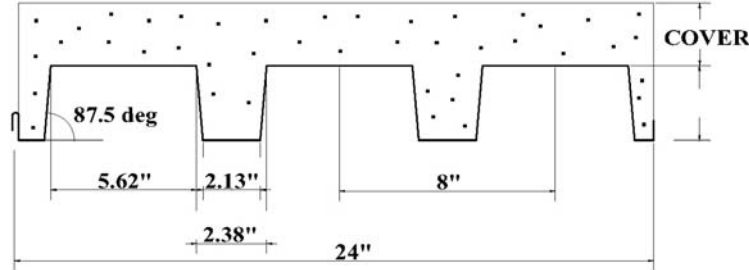
Standard Weight Concrete (2350 kg/m²)

COMPOSITE

Imperial - L.S.D.

(Z-275 Galvanized)

Mercury QL Bold-Rib



Properties for Mercury QL Bold-Rib (Z-275) (per foot width)

BASE STEEL		NONCOMPOSITE								Conc.	COMPOSITE					
THICKNESS		As	Ysb	Sm	Ss	Isd	Br	Br	Wd	Cover	ld	d	Regress. coef.		W1	VOC
GA.	THK.						(Ext)	(Int)		"A"			k5	k6		ft3/
	in	in2/ft	in	in3/ft	in3/ft	in4/ft	ib / ft	ib / ft	psf	in	in4/ft	in	kips/in	psi	psf	100 ft2
22	0.030	0.6356	1.4020	0.3660	0.3271	0.6620	735	1176	2.214	2	46.6	3.598			37.7	23.4
										2.5	60.0	4.098	617	11.6	43.9	28.3
										3	75.6	4.598			50.2	31.6
										3.5	93.4	5.098			56.4	36.5
20	0.036	0.7605	1.4492	0.4763	0.4627	0.8392	1013	1770	2.588	2	70.4	3.551			38.1	23.7
										2.5	91.4	4.051	686	12.3	44.3	27.9
										3	117.0	4.551			50.6	32.0
										3.5	147.0	5.051			56.8	36.2
18	0.048	1.0140	1.5274	0.7282	0.5649	1.2166	1679	3324	3.450	2	77.6	3.473			39.0	23.7
										2.5	101.4	3.973	686	17.4	45.2	27.9
										3	129.7	4.473			51.5	32.0
										3.5	163.2	4.973			57.7	36.2
16	0.060	1.2638	1.5957	1.0168	0.7785	1.6103	2489	5364	4.300	2	83.8	3.404			39.8	23.4
										2.5	109.4	3.904	686	20.3	46.0	27.9
										3	140.0	4.404			52.3	32.0
										3.5	176.2	4.904			58.5	36.2

Mercury QL BOLD RIB Load Table Notes

- 1) The loads indicated in the tables are for superimposed specified live and dead loads. The weights of steel deck, wet concrete and 20.9 psf uniformly distributed construction load or a 137 lb / ft transverse live load have been included within the load tables.
- 2) The coloured areas below the heavy line indicates that mid-span shoring is required for the concrete pour and curing period.
- 3) The (*) indicates that limitations of Article 4.1.6.10 of the N.B.C. (2,023 lb. applied over an area 2' - 5½" square) is exceeded.
- 4) The load tables are based on the design of ONE-WAY composite slabs, in the direction of the flutes, carrying uniformly distributed loads on simple span basis.
- 5) Composite load capacities are dependent on the material finish of the steel floor form.
- 6) Load values are based on Normal Weight Concrete (density of 145 pcf) with a minimum compressive strength of 2900 psi.
- 7) No additional reinforcing is required for the slab thickness shown on these tables. For temperature steel recommendations see the Mercury Engineering Notes.
- 8) Properties and loads are based on A653 structural quantify Grade 33 steel with a minimum yield stress of 33 ksi and a maximum stress under Factored loads of 29.7 ksi.
- 9) The load table has not been limited. However, heavy loads above 200 psf or in structures, or portions thereof, where live loads are maintained for lengthy periods, such as warehouses, computer rooms, libraries or other conditions, where the effect of creep must be considered, contact Mercury.
- 10) Heavy concentrated loads, moving and vibratory loads are not recommended on a composite floor system without additional negative and transverse reinforcing.
- 11) K5 and K6 values have been derived by matching existing load tables. (xx) denotes value using K values and equati

MERCURY METALS

MODULAR RATIO n = 9

Standard Weight Concrete (2350 kg/m²)

COMPOSITE

Imperial - L.S.D.

(Z-275 Galvanized)

Mercury QL Bold-Rib

Specified Load Tables - psf (3 span form)

Span ft	2" Concrete Cover Depth "A"				2.5" Concrete Cover Depth "A"				3" Concrete Cover Depth "A"				3.5" Concrete Cover Depth "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
6.0	288	291	300	310	320	322	328	335	354	356	360	365.0	391	391	393	396
6.5	266	269	277	287	295	297	303	310	327	329	332	336	361	361	363	366
7.0	228	250	258	266	274	276	281	287	304	305	308	312	335	335	337	340
7.5	194	233	240	249	238	258	263	268	276	285	288	292	297	313	315	317
8.0	166	203	225	233	204	242	246	252	221	267	270	273	233	294	295	297
8.5	143	176	212	219	167	215	232	237	176	244	254	257	241	260	278	280
9.0	124	153	200	207	163	185	219	224	203	199	240	243	225	208	262	264
9.5	111	133	187	196	143	153	207	212	179	161	227	230	211	212	248	250
10.0	97	117	165	186	126	126	197	201	159	182	216	219	196	200	236	238
10.5	(89)	99	146	177	111	135	178	192	142	170	193	208	(124)	188	202	226
11.0	(81)	(89)	130	168	(91)	120	153	183	(101)	152	162	199	(111)	178	179	216
11.5	(73)	(81)	115	151	(81)	107	130	175	(91)	136	157	190	(100)	(112)	170	207
12.0	(66)	(73)	103	135	(74)	(83)	133	164	(83)	(92)	149	177	(91)	(102)	161	184
12.5	(60)	(67)	(80)	122	(67)	(75)	119	143	(75)	(84)	142	151	(82)	(92)	153	155

Specified Load Tables - psf (2 span form)

Span ft	2" Concrete Cover Depth "A"				2.5" Concrete Cover Depth "A"				3" Concrete Cover Depth "A"				3.5" Concrete Cover Depth "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
6.0	288	291	300	310	320	322	328	335	354	356	360	365.0	391	391	393	396
6.5	266	269	277	287	295	297	303	310	327	329	332	336	361	361	363	366
7.0	228	250	258	266	274	276	281	287	304	305	308	312	335	335	337	340
7.5	194	233	240	249	238	258	263	268	276	285	288	292	297	313	315	317
8.0	166	203	225	233	204	242	246	252	221	267	270	273	233	294	295	297
8.5	143	176	212	219	167	215	232	237	176	244	254	257	241	260	278	280
9.0	124	153	200	207	163	185	219	224	203	199	240	243	225	208	262	264
9.5	111	133	187	196	143	153	207	212	179	161	227	230	211	212	248	250
10.0	97	117	165	186	126	126	197	201	159	182	216	219	196	200	236	238
10.5	(89)	99	146	177	111	135	178	192	142	170	193	208	(124)	188	202	226
11.0	(81)	(89)	130	168	(91)	120	153	183	(101)	152	162	199	(111)	178	179	216
11.5	(73)	(81)	115	151	(81)	107	130	175	(91)	136	157	190	(100)	(112)	170	207
12.0	(66)	(73)	103	135	(74)	(83)	133	164	(83)	(92)	149	177	(91)	(102)	161	184
12.5	(60)	(67)	(80)	122	(67)	(75)	119	143	(75)	(84)	142	151	(82)	(92)	153	155

Specified Load Tables - psf (1 span form)

Span ft	2" Concrete Cover Depth "A"				2.5" Concrete Cover Depth "A"				3" Concrete Cover Depth "A"				3.5" Concrete Cover Depth "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
6.0	288	291	300	310	320	322	328	335	354	356	360	365.0	391	391	393	396
6.5	266	269	277	287	295	297	303	310	327	329	332	336	361	361	363	366
7.0	228	250	258	266	274	276	281	287	304	305	308	312	335	335	337	340
7.5	194	233	240	249	238	258	263	268	276	285	288	292	297	313	315	317
8.0	166	203	225	233	204	242	246	252	221	267	270	273	233	294	295	297
8.5	143	176	212	219	167	215	232	237	176	244	254	257	241	260	278	280
9.0	124	153	200	207	163	185	219	224	203	199	240	243	225	208	262	264
9.5	111	133	187	196	143	153	207	212	179	161	227	230	211	212	248	250
10.0	97	117	165	186	126	126	197	201	159	182	216	219	196	200	236	238
10.5	(89)	99	146	177	111	135	178	192	142	170	193	208	(124)	188	202	226
11.0	(81)	(89)	130	168	(91)	120	153	183	(101)	152	162	199	(111)	178	179	216
11.5	(73)	(81)	115	151	(81)	107	130	175	(91)	136	157	190	(100)	(112)	170	207
12.0	(66)	(73)	103	135	(74)	(83)	133	164	(83)	(92)	149	177	(91)	(102)	161	184
12.5	(60)	(67)	(80)	122	(67)	(75)	119	143	(75)	(84)	142	151	(82)	(92)	153	155

Coloured areas below heavy line indicate shoring at mid-span required.

03/00

MERCURY METALS

MODULAR RATIO n = 9

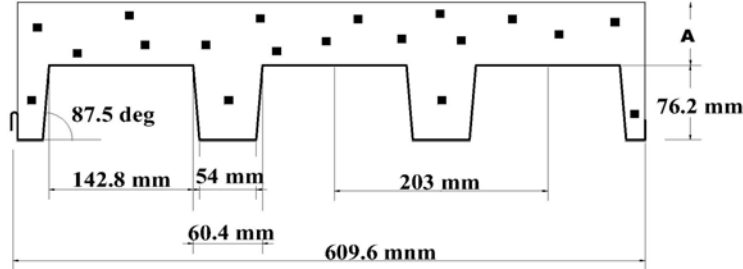
Standard Weight Concrete (2350 kg/m³)

COMPOSITE

Metric - L.S.D.

(Z-275 Galvanized)

Mercury QL Bold-Rib



Properties for Mercury QL Bold-Rib (Z-275) (Per meter width)

BASE STEEL		NONCOMPOSITE								Conc.	COMPOSITE					
THICKNESS		As	Ysb	Sm	Ss	Isd	Br	Br	Wd	Cover	ld	d	Regress. coef.		W1	VOC
GA.	THK.			x10 ³	x10 ³	x10 ³	(Ext)	(Int)		"A"	x10 ⁶	mm	k5	k6		m3/
	mm	mm ² /m	mm	mm ³ /m	mm ³ /m	mm ⁴ /m	kN / m	kN / m	kPa	mm	mm ⁴ /m	mm	N / mm	Mpa	kPa	10m ²
22	0.76	1002	35.7	19.676	24.875	904	10.7	17.2	0.1060	50	64.4	90.4			1.72	0.7125
										65	88.1	105.4	(108)	(0.08)	2.07	0.8625
										75	107.0	115.4			2.30	0.9625
										90	140.3	130.4			2.66	1.1125
20	0.91	1200	36.8	25.605	30.371	1146	14.8	25.8	0.1239	50	93.6	89.2			1.72	0.7125
										65	128.1	104.2	(120)	(0.085)	2.08	0.8625
										75	155.6	114.2			2.31	0.9625
										90	203.9	129.2			2.67	1.1125
18	1.22	1596	38.8	39.148	41.856	1661	24.5	48.5	0.1652	50	103.7	87.2			1.74	0.7125
										65	142.1	102.2	(120)	(0.12)	2.09	0.8625
										75	172.6	112.2			2.33	0.9625
										90	226.3	127.2			2.68	1.1125
16	1.52	1990	40.5	54.67	51.923	2199	36.3	78.2	0.2059	50	111.8	85.5			1.75	0.7125
										65	153.2	100.5	(120)	(0.14)	2.11	0.8625
										75	186.2	110.5			2.34	0.9625
										90	244.3	125.5			2.70	1.1125

Mercury QL Bold-Rib Load Table Notes

- The loads indicated in the tables are for superimposed specified live and dead loads. The weights of steel deck, wet concrete and 1.0 kPa uniformly distributed construction load or a 2.0 kN / m transverse live load have been included within the load tables.
- The coloured areas below the heavy line indicates that mid-span shoring is required for the concrete pour and curing period.
- The (*) indicates that limitations of Article 4.1.6.10 of the N.B.C. (9 kN applied over an area 750 mm x 750 mm) is exceeded.
- The load tables are based on the design of ONE-WAY composite slabs, in the direction of the flutes, carrying uniformly distributed loads on simple span basis.
- Composite load capacities are dependent on the material finish of the steel floor form.
- Load values are based on Normal Weight Concrete (density of 2350 kg / m³) with a minimum compressive strength of 20 Mpa.
- No additional reinforcing is required for the slab thickness shown on these tables. For temperature steel recommendations see the Mercury Engineering Notes.
- Properties and loads are based on A653M structural quantify Grade 230 steel with a minimum yield stress of 230 Mpa and a maximum stress under Factored loads of 207 Mpa.
- The load table has not been limited. However, heavy loads above 10 kPa or in structures, or portions thereof, where live loads are maintained for lengthy periods, such as warehouses, computer rooms, libraries or other conditions, where the effect of creep must be considered, contact Mercury.
- Heavy concentrated loads, moving and vibratory loads are not recommended on a composite floor system without additional negative and transverse reinforcing.
- K5 and K6 values have been derived by matching existing load tables. (xx) denotes value using K values and equati

MERCURY METALS

MODULAR RATIO n = 9

Standard Weight Concrete (2350 kg/m³)

COMPOSITE

Metric - L.S.D.

(Z-275 Galvanized)

Mercury QL Bold-Rib

Specified Load Tables - kPa (kN/m²) (3 span form)

Span m	50 mm Conc. Cover Depth "A"				65 mm Conc. Cover Depth "A"				75 mm Conc. Cover Depth "A"				90 mm Conc. Cover Depth "A"			
	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52
1.6	(17.0)	(18.6)	19.9	(20.4)	(19.8)	(21.6)	(23.3)	(24.0)	(21.6)	(23.7)	(25.4)	(26.4)	(24.4)	(26.7)	(28.9)	(29.9)
1.8	(13.6)	(14.8)	(16.0)	(16.5)	(15.8)	(17.2)	(18.7)	(19.4)	(17.2)	(18.9)	(20.5)	(21.3)	(19.4)	(21.3)	(23.2)	(24.2)
2.0	(11.1)	(12.1)	(13.2)	(13.7)	(12.8)	(14.1)	(15.4)	(16.6)	(14.0)	(15.4)	(16.9)	(17.6)	(15.8)	(17.3)	(19.1)	(20.0)
2.2	10.10	11.5	11.9	12.3	12.7	13.0	13.2	13.5	14.0	14.0	14.2	14.4	15.7	15.7	15.8	15.9
2.4	8.17	9.96	10.9	11.3	10.4	11.9	12.1	12.4	11.1	12.9	13.0	13.2	11.9	14.4	14.5	14.6
2.6	6.70	8.23	10.1	10.4	7.94	10.4	11.2	11.4	8.3	11.5	12.0	12.2	11.6	12.3	13.4	13.5
2.8	5.54	6.85	9.35	9.68	7.65	8.36	10.4	10.6	9.1	8.79	11.2	11.3	10.6	9.14	12.4	12.5
3.0	(4.87)	5.75	8.10	9.03	(5.62)	6.48	9.69	9.89	(6.12)	8.63	10.4	10.6	9.81	9.81	11.6	11.7
3.2	(4.24)	4.75	6.90	8.47	(4.88)	6.67	8.69	9.27	(5.31)	7.96	9.20	9.90	(5.96)	9.09	9.71	10.9
3.4	(3.71)	(4.10)	5.91	7.69	(4.27)	(4.74)	7.02	8.72	(4.64)	6.88	7.29	9.31	(5.20)	8.46	8.50	10.3
3.6	(3.26)	(3.61)	5.08	6.66	(3.74)	(4.17)	5.62	8.24	(4.06)	(4.54)	7.21	8.80	(4.55)	(5.09)	3.50	9.42
3.8	(2.87)	(3.19)	4.32	5.79	(3.29)	(3.68)	5.92	6.98	(3.57)	(4.00)	6.75	7.26	(3.99)	(4.48)	7.42	7.49
4.0	(2.53)	(2.83)	(3.43)	5.05	(2.90)	(3.25)	5.17	5.74	(3.14)	(3.53)	6.21	6.46	(3.50)	(3.92)	(4.89)	7.03

Specified Load Tables - kPa (kN/m²) (2 span form)

Span m	50 mm Conc. Cover Depth "A"				65 mm Conc. Cover Depth "A"				75 mm Conc. Cover Depth "A"				90 mm Conc. Cover Depth "A"			
	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52
1.6	(17.0)	(18.6)	19.9	(20.4)	(19.8)	(21.6)	(23.3)	(24.0)	(21.6)	(23.7)	(25.4)	(26.4)	(24.4)	(26.7)	(28.9)	(29.9)
1.8	(13.6)	(14.8)	(16.0)	(16.5)	(15.8)	(17.2)	(18.7)	(19.4)	(17.2)	(18.9)	(20.5)	(21.3)	(19.4)	(21.3)	(23.2)	(24.2)
2.0	(11.1)	(12.1)	(13.2)	(13.7)	(12.8)	(14.1)	(15.4)	(16.6)	(14.0)	(15.4)	(16.9)	(17.6)	(15.8)	(17.3)	(19.1)	(20.0)
2.2	10.10	11.5	11.9	12.3	12.7	13.0	13.2	13.5	14	14.0	14.2	14.4	15.7	15.7	15.8	15.9
2.4	8.17	9.96	10.9	11.3	10.4	11.9	12.1	12.4	11.1	12.9	13.0	13.2	11.9	14.4	14.5	14.6
2.6	6.70	8.23	10.1	10.4	7.94	10.4	11.2	11.4	8.3	11.5	12.0	12.2	11.6	12.3	13.4	13.5
2.8	5.54	6.85	9.35	9.68	7.65	8.36	10.4	10.6	9.1	8.79	11.2	11.3	10.6	9.14	12.4	12.5
3.0	(4.87)	5.75	8.10	9.03	(5.62)	6.48	9.69	9.89	(6.12)	8.63	10.4	10.6	9.81	9.81	11.6	11.7
3.2	(4.24)	4.75	6.90	8.47	(4.88)	6.67	8.69	9.27	(5.31)	7.96	9.20	9.90	(5.96)	9.09	9.71	10.9
3.4	(3.71)	(4.10)	5.91	7.69	(4.27)	(4.74)	7.02	8.72	(4.64)	6.88	7.29	9.31	(5.20)	8.46	8.5	10.3
3.6	(3.26)	(3.61)	5.08	6.66	(3.74)	(4.17)	5.62	8.24	(4.06)	(4.54)	7.21	8.80	(4.55)	(5.09)	7.93	9.42
3.8	(2.87)	(3.19)	4.32	5.79	(3.29)	(3.68)	5.92	6.98	(3.57)	(4.00)	6.75	7.26	(3.99)	(4.48)	7.42	7.49
4.0	(2.53)	(2.83)	(3.43)	5.05	(2.90)	(3.25)	5.17	5.74	(3.14)	(3.53)	6.21	6.46	(3.50)	(3.92)	(4.89)	7.03

Specified Load Tables - kPa (kN/m²) (1 span form)

Span m	50 mm Conc. Cover Depth "A"				65 mm Conc. Cover Depth "A"				75 mm Conc. Cover Depth "A"				90 mm Conc. Cover Depth "A"			
	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52
1.6	(17.0)	(18.6)	19.9	(20.4)	(19.8)	(21.6)	(23.3)	(24.0)	(21.6)	(23.7)	(25.4)	(26.4)	(24.4)	(26.7)	(28.9)	(29.9)
1.8	(13.6)	(14.8)	(16.0)	(16.5)	(15.8)	(17.2)	(18.7)	(19.4)	(17.2)	(18.9)	(20.5)	(21.3)	(19.4)	(21.3)	(23.2)	(24.2)
2.0	(11.1)	(12.1)	(13.2)	(13.7)	(12.8)	(14.1)	(15.4)	(16.6)	(14.0)	(15.4)	(16.9)	(17.6)	(15.8)	(17.3)	(19.1)	(20.0)
2.2	10.10	11.5	11.9	12.3	12.7	13.0	13.2	13.5	14.0	14.0	14.2	14.4	15.7	15.7	15.8	15.9
2.4	8.17	9.96	10.9	11.3	10.4	11.9	12.1	12.4	11.1	12.9	13.0	13.2	11.9	14.4	14.5	14.6
2.6	6.70	8.23	10.1	10.4	7.94	10.4	11.2	11.4	8.3	11.5	12.0	12.2	11.6	12.3	13.4	13.5
2.8	5.54	6.85	9.35	9.68	7.65	8.36	10.4	10.6	9.1	8.79	11.2	11.3	10.6	9.14	12.4	12.5
3.0	(4.87)	5.75	8.10	9.03	(5.62)	6.48	9.69	9.89	(6.12)	8.63	10.4	10.6	9.81	9.81	11.6	11.7
3.2	(4.24)	4.75	6.90	8.47	(4.88)	6.67	8.69	9.27	(5.31)	7.96	9.20	9.90	(5.96)	9.09	9.71	10.9
3.4	(3.71)	(4.10)	5.91	7.69	(4.27)	(4.74)	7.02	8.72	(4.64)	6.88	7.29	9.31	(5.20)	8.46	8.50	10.3
3.6	(3.26)	(3.61)	5.08	6.66	(3.74)	(4.17)	5.62	8.24	(4.06)	(4.54)	7.21	8.80	(4.55)	(5.09)	7.93	9.42
3.8	(2.87)	(3.19)	4.32	5.79	(3.29)	(3.68)	5.92	6.98	(3.57)	(4.00)	6.75	7.26	(3.99)	(4.48)	7.42	7.49
4.0	(2.53)	(2.83)	(3.43)	5.05	(2.90)	(3.25)	5.17	5.74	(3.14)	(3.53)	6.21	6.46	(3.50)	(3.92)	(4.89)	7.03

Coloured areas below heavy line indicate shoring at mid-span required.

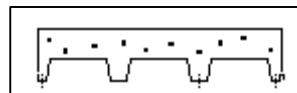
IMPERIAL - "Q" SHEAR VALUES & "F" FLEXIBILITY FACTORS for

MERCURY BOLD - RIB

Coverage - 24 inches

3 TRANSVERSE WELDS/UNIT/SUPPORT

CONCRETE STRENGTH - 3000 PSI
CONCRETE WEIGHT - 145 PSF



Q IN LBS./FT (ALLOWABLE SHEAR)
F IN X x 10⁻⁶ IN/LB

		CONCRETE COVER 2.5 INCHES OVER DECK				CONCRETE COVER 3.0 INCHES OVER DECK				CONCRETE COVER 3.5 INCHES OVER DECK				CONCRETE COVER 4.0 INCHES OVER DECK			
DECK	THK	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598
SPAN	GA	22	20	18	16	22	20	18	16	22	20	18	16	22	20	18	16
8.0	Q	1870	1898	1972	2061	2109	2137	2211	2300	2348	2376	2450	2539	2587	2615	2689	2778
	F	1.00	0.90	0.75	0.64	0.89	0.80	0.67	0.58	0.80	0.72	0.60	0.52	0.72	0.65	0.55	0.48
9.0	Q	1837	1858	1918	1994	2076	2097	2158	2233	2315	2336	2397	2472	2554	2575	2636	2711
	F	1.02	0.92	0.77	0.66	0.9	0.82	0.69	0.59	0.81	0.73	0.62	0.54	0.73	0.66	0.56	0.49
10.0	Q	1810	1826	1876	1941	2049	2065	2115	2180	2288	2304	2354	2419	2527	2543	2593	2658
	F	1.03	0.94	0.79	0.68	0.91	0.83	0.70	0.61	0.82	0.74	0.63	0.55	0.74	0.67	0.57	0.50
11.0	Q	1788	1799	1841	1897	2027	2038	2080	2136	2267	2278	2319	2375	2506	2517	2558	2614
	F	1.05	0.95	0.80	0.70	0.92	0.84	0.71	0.62	0.83	0.75	0.64	0.56	0.75	0.68	0.58	0.51
12.0	Q	1770	1778	1812	1861	2009	2017	2051	2100	2248	2256	2290	2339	2487	2495	2529	2578
	F	1.06	0.96	0.82	0.71	0.93	0.85	0.72	0.63	0.83	0.76	0.65	0.57	0.75	0.69	0.59	0.51
13.0	Q	1755	1759	1787	1830	1994	1998	2026	2069	2233	2237	2265	2308	2472	2476	2504	2547
	F	1.07	0.97	0.83	0.72	0.94	0.86	0.73	0.64	0.84	0.76	0.65	0.57	0.76	0.69	0.59	0.52
14.0	Q	1742	1743	1766	1803	1981	1982	2005	2042	2220	2221	2244	2282	2459	2460	2483	2521
	F	1.08	0.98	0.84	0.73	0.95	0.86	0.74	0.65	0.84	0.77	0.66	0.58	0.76	0.69	0.6	0.53

4 TRANSVERSE WELDS/UNIT/SUPPORT

CONCRETE STRENGTH - 3000 PSI
CONCRETE WEIGHT - 145 PSF



Q IN LBS./FT (ALLOWABLE SHEAR)
F IN X x 10⁻⁶ IN/LB

		CONCRETE COVER 2.5 INCHES OVER DECK				CONCRETE COVER 3.0 INCHES OVER DECK				CONCRETE COVER 3.5 INCHES OVER DECK				CONCRETE COVER 4.0 INCHES OVER DECK			
DECK	THK	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598
SPAN	GA	22	20	18	16	22	20	18	16	22	20	18	16	22	20	18	16
8.0	Q	1937	1978	2079	2195	2177	2217	2319	2434	2416	2456	2558	2673	2655	2696	2797	2912
	F	0.97	0.86	0.71	0.60	0.86	0.77	0.64	0.54	0.78	0.70	0.58	0.50	0.71	0.63	0.53	0.45
9.0	Q	1897	1929	2014	2114	2136	2168	2253	2353	2375	2408	2492	2592	2614	2647	2731	2831
	F	0.99	0.89	0.74	0.63	0.88	0.79	0.66	0.56	0.79	0.71	0.59	0.51	0.72	0.65	0.54	0.47
10.0	Q	1864	1890	1962	2048	2103	2129	2201	2287	2342	2368	2440	2526	2581	2607	2679	2765
	F	1.00	0.90	0.75	0.65	0.89	0.80	0.67	0.58	0.80	0.72	0.61	0.52	0.73	0.66	0.55	0.48
11.0	Q	1837	1858	1919	1995	2076	2097	2158	2234	2315	2336	2397	2473	2555	2575	2636	2712
	F	1.02	0.92	0.77	0.66	0.90	0.82	0.69	0.59	0.81	0.73	0.62	0.54	0.73	0.66	0.56	0.49
12.0	Q	1815	1831	1884	1950	2054	2070	2123	2189	2293	2310	2362	2428	2532	2549	2601	2667
	F	1.03	0.93	0.79	0.68	0.91	0.83	0.70	0.60	0.82	0.74	0.63	0.55	0.74	0.67	0.57	0.50
13.0	Q	1796	1809	1853	1913	2035	2048	2092	2152	2274	2287	2332	2391	2513	2526	2571	2630
	F	1.04	0.95	0.80	0.69	0.92	0.84	0.71	0.62	0.82	0.75	0.64	0.55	0.75	0.68	0.58	0.50
14.0	Q	1780	1789	1828	1880	2019	2028	2067	2119	2258	2268	2306	2358	2497	2507	2545	2598
	F	1.05	0.96	0.81	0.7	0.93	0.84	0.72	0.62	0.83	0.75	0.64	0.56	0.75	0.68	0.58	0.51

MERCURY METALS

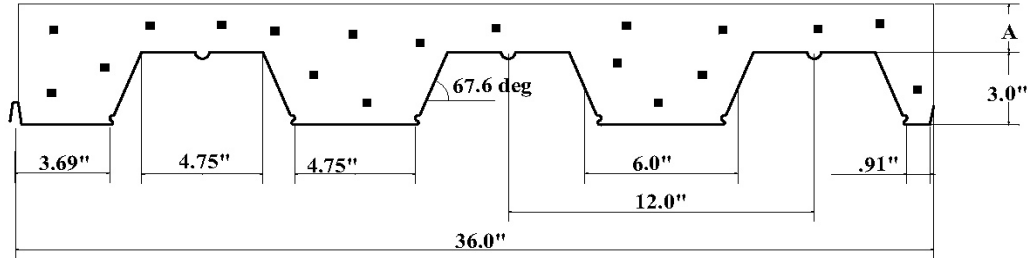
MODULAR RATIO n = 9

Standard Weight Concrete (145 PCF)

COMPOSITE

Imperial - L.S.D. (Z-275 Galvanized)

Mercury QL Lock-Rib



Properties for Mercury QL Lock-Rib (Z-275) (per foot width)

BASE STEEL THICKNESS		NONCOMPOSITE								Conc. Cover "A"	COMPOSITE					
GA.	THK. in	As in2/ft	Ysb in	Sm in3/ft	Ss in3/ft	Isd in4/ft	Br (Ext) ib / ft	Br (Int) ib / ft	Wd psf	ld in4/ft	d in	Regress. coef. k5 kips/in	k6 psi	W1 psf	VOC ft3/100 ft2	
22	0.030	0.5140	1.399	0.4706	0.3305	0.8213	426	678	1.748	2.0	71.8	3.6	852	7.98	45.3	29.0
										2.5	93.9	4.1	852	7.98	51.5	33.2
										3.0	120.0	4.6	954	7.98	57.7	37.4
										3.5	150.7	5.1	954	7.98	64.0	41.5
20	0.036	0.6150	1.445	0.6097	0.4237	1.0010	589	1025	2.092	2.0	75.6	3.6	1172	4.50	45.6	29.0
										2.5	98.6	4.1	1172	4.50	51.8	33.2
										3.0	126.1	4.6	1314	4.49	58.1	37.4
										3.5	158.3	5.1	1246	4.50	64.3	41.5
18	0.048	0.8160	1.472	0.8485	0.6297	1.3243	983	1938	2.776	2.0	30.1	3.5	1600	2.9	46.3	29.0
										2.5	44.7	4.0	1600	2.9	52.5	33.2
										3.0	86.2	4.5	1715	2.9	58.8	37.4
										3.5	147.0	5.0	1886	2.9	65.0	41.5
16	0.060	1.0150	1.472	1.0615	1.0622	1.6573	1463	3143	3.454	2.0	90.7	3.5	1915	2.9	47.0	29.0
										2.5	117.9	4.0	2029	2.9	53.2	33.2
										3.0	150.3	4.5	2029	2.9	59.4	37.4
										3.5	188.1	5.0	2029	2.9	65.7	41.5

Mercury QL LOCK RIB Load Table Notes

- 1) The loads indicated in the tables are for superimposed specified live and dead loads. The weights of steel deck, wet concrete and 20.9 psf uniformly distributed construction load or a 137 lb / ft transverse live load have been included within the load tables.
- 2) The coloured areas below the heavy line indicates that mid-span shoring is required for the concrete pour and curing period.
- 3) The (*) indicates that limitations of Article 4.1.6.10 of the N.B.C. (2,023 lb. applied over an area 2' - 5½" square) is exceeded.
- 4) The load tables are based on the design of ONE-WAY composite slabs, in the direction of the flutes, carrying uniformly distributed loads on simple span basis.
- 5) Composite load capacities are dependent on the material finish of the steel floor form.
- 6) Load values are based on Normal Weight Concrete (density of 145 pcf) with a minimum compressive strength of 2900 psi.
- 7) No additional reinforcing is required for the slab thickness shown on these tables. For temperature steel recommendations see the Mercury Engineering Notes.
- 8) Properties and loads are based on A653 structural quantify Grade 33 steel with a minimum yield stress of 33 ksi and a maximum stress under Factored loads of 29.7 ksi.
- 9) The load table has not been limited. However, heavy loads above 200 psf or in structures, or portions thereof, where live loads are maintained for lengthy periods, such as warehouses, computer rooms, libraries or other conditions, where the effect of creep must be considered, contact Mercury.
- 10) Heavy concentrated loads, moving and vibratory loads are not recommended on a composite floor system without additional negative and transverse reinforcing.
- 11) K5 and K6 values have been derived by matching existing load tables. (xx) denotes value using K value and equations.

MERCURY METALS

MODULAR RATIO n = 9

Standard Weight Concrete (145 PCF)

COMPOSITE

Imperial - L.S.D. (Z-275 Galvanized)

Mercury QL Lock-Rib

Specified Load Tables - psf (3 span form)

Span ft	2.0 in Conc. Cover "A"				2.5 in Conc. Cover "A"				3.0 in Conc. Cover "A"				3.5 in Conc. Cover "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
7.5	209	262	351	424	238	299	401	515	298	379	485	579	330	398	596	644
8.0	181	227	305	369	207	259	348	448	259	329	422	504	287	345	519	560
8.5	159	198	267	323	181	226	305	398	227	288	369	442	252	302	455	491
9.0	139	174	234	285	159	198	268	347	200	253	325	390	222	265	401	433
9.5	123	153	207	252	140	175	237	307	177	223	288	346	196	234	355	384
10.0	109	135	184	225	124	155	210	274	157	198	256	308	174	207	316	342
10.5	97	120	164	201	110	137	187	245	140	176	228	276	155	184	282	306
11.0	86	107	146	180	98	122	167	220	125	157	204	247	138	164	253	275
11.5	77	95	131	162	88	109	150	198	112	141	183	223	124	146	228	247
12.0	69	85	118	146	78	97	134	179	100	126	165	201	111	131	205	223
12.5	61	76	106	132	70	87	121	162	90	113	148	182	100	117	186	202
13.0	55	68	95	119	63	78	109	146	81	102	134	165	89	105	168	183
13.5	49*	61	86	108	56	69	98	133	72	91	121	150	80	94	152	166
14.0	44*	54	77	98	50	62	89	121	65	82	110	136	72	85	138	151

Specified Load Tables - psf (2 span form)

Span ft	2.0 in Conc. Cover "A"				2.5 in Conc. Cover "A"				3.0 in Conc. Cover "A"				3.5 in Conc. Cover "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
7.5	209	262	351	424	238	299	401	515	298	379	485	579	330	398	596	644
8.0	181	227	305	369	207	259	348	448	259	329	422	504	287	345	519	560
8.5	159	198	267	323	181	226	305	398	227	288	369	442	252	302	455	491
9.0	139	174	234	285	159	198	268	347	200	253	325	390	222	265	401	433
9.5	123	153	207	252	140	175	237	307	177	223	288	346	196	234	355	384
10.0	109	135	184	225	124	155	210	274	157	198	256	308	174	207	316	342
10.5	97	120	164	201	110	137	187	245	140	176	228	276	155	184	282	306
11.0	86	107	146	180	98	122	167	220	125	157	204	247	138	164	253	275
11.5	77	95	131	162	88	109	150	198	112	141	183	223	124	146	228	247
12.0	69	85	118	146	78	97	134	179	100	126	165	201	111	131	205	223
12.5	61	76	106	132	70	87	121	162	90	113	148	182	100	117	186	202
13.0	55	68	95	119	63	78	109	146	81	102	134	165	89	105	168	183
13.5	49*	61	86	108	56	69	98	133	72	91	121	150	80	94	152	166
14.0	44*	54	77	98	50	62	89	121	65	82	110	136	72	85	138	151

Specified Load Tables - psf (1 span form)

Span ft	2.0 in Conc. Cover "A"				2.5 in Conc. Cover "A"				3.0 in Conc. Cover "A"				3.5 in Conc. Cover "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
7.5	209	262	351	424	238	299	401	515	298	379	485	579	330	398	596	644
8.0	181	227	305	369	207	259	348	448	259	329	422	504	287	345	519	560
8.5	159	198	267	323	181	226	305	398	227	288	369	442	252	302	455	491
9.0	139	174	234	285	159	198	268	347	200	253	325	390	222	265	401	433
9.5	123	153	207	252	140	175	237	307	177	223	288	346	196	234	355	384
10.0	109	135	184	225	124	155	210	274	157	198	256	308	174	207	316	342
10.5	97	120	164	201	110	137	187	245	140	176	228	276	155	184	282	306
11.0	86	107	146	180	98	122	167	220	125	157	204	247	138	164	253	275
11.5	77	95	131	162	88	109	150	198	112	141	183	223	124	146	228	247
12.0	69	85	118	146	78	97	134	179	100	126	165	201	111	131	205	223
12.5	61	76	106	132	70	87	121	162	90	113	148	182	100	117	186	202
13.0	55	68	95	119	63	78	109	146	81	102	134	165	89	105	168	183
13.5	49*	61	86	108	56	69	98	133	72	91	121	150	80	94	152	166
14.0	44*	54	77	98	50	62	89	121	65	82	110	136	72	85	138	151

Coloured areas below heavy line indicate shoring at mid-span required.

03/00

MERCURY METALS

MODULAR RATIO $n = 9$

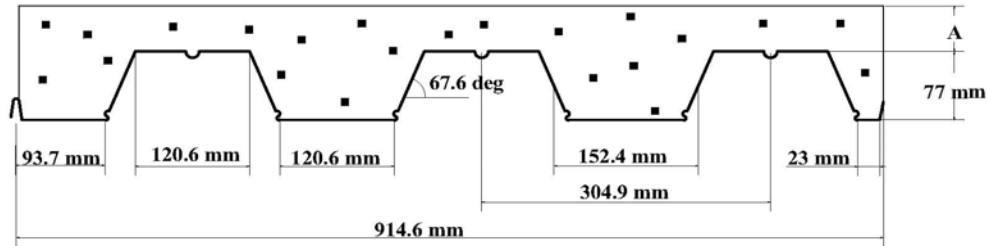
Standard Weight Concrete (2350 kg/m³)

COMPOSITE

Metric - L.S.D.

(Z-275 Galvanized)

Mercury QL Lock-Rib



Properties for Mercury QL Lock-Rib (Z-275) (Per meter width)

BASE STEEL		NONCOMPOSITE								Conc.	COMPOSITE					
THICKNESS		As	Ysb	Sm	Ss	Isd	Br	Br	Wd	Cover	ld	d	Regress. coef.		W1	VOC
GA.	THK.			x10 ³	x10 ³	x10 ³	(Ext)	(Int)		"A"	x10 ⁶	mm	k5	k6		m3/
	mm	mm2/m	mm	mm3/m	mm3/m	mm4/m	kN / m	kN / m	kPa	mm	mm4/m	mm	N / mm	Mpa	kPa	10m2
22	0.76	1087	35.5	25.300	17.770	1122	6.223	9.893	0.0638	50	98.1	91.5	149	0.055	2.15	0.885
										65	134.2	106.5	205	0.031	2.51	1.035
										75	162.7	116.5	280	0.02	2.74	1.135
										90	212.7	131.5	335	0.02	3.10	1.285
20	0.91	1301.2	36.7	32.780	22.780	1367	8.598	14.949	0.0916	50	103.2	90.3	205	0.055	2.17	0.885
										65	141.0	105.3	205	0.031	2.52	1.035
										75	170.9	115.3	230	0.031	2.76	1.135
										90	223.3	130.3	218	0.031	3.11	1.285
18	1.22	1726.9	37.4	45.620	33.857	1808	14.342	28.268	0.1621	50	113.6	89.6	280	0.02	2.19	0.885
										65	154.9	104.6	280	0.02	2.55	1.035
										75	187.5	114.6	300	0.02	2.78	1.135
										90	244.6	129.6	300	0.02	3.14	1.285
16	1.52	2148.4	37.4	57.071	57.071	2263	21.338	45.832	0.2521	50	123.9	89.6	335	0.02	2.22	0.885
										65	168.5	104.6	355	0.02	2.58	1.035
										75	203.7	114.6	355	0.02	2.81	1.135
										90	265.3	129.6	355	0.02	3.16	1.285

Mercury QL LOCK RIB Load Table Notes

- The loads indicated in the tables are for superimposed specified live and dead loads. The weights of steel deck, wet concrete and 1.0 kPa uniformly distributed construction load or a 2.0 kN / m transverse live load have been included within the load tables.
- The coloured areas below the heavy line indicates that mid-span shoring is required for the concrete pour and curing period.
- The (*) indicates that limitations of Article 4.1.6.10 of the N.B.C. (9 kN applied over an area 750 mm x 750 mm) is exceeded.
- The load tables are based on the design of ONE-WAY composite slabs, in the direction of the flutes, carrying uniformly distributed loads on simple span basis.
- Composite load capacities are dependent on the material finish of the steel floor form.
- Load values are based on Normal Weight Concrete (density of 2350 kg / m³) with a minimum compressive strength of 20 Mpa.
- No additional reinforcing is required for the slab thickness shown on these tables. For temperature steel recommendations see the Mercury Engineering Notes.
- Properties and loads are based on A653M structural quantify Grade 230 steel with a minimum yield stress of 230 Mpa and a maximum stress under Factored loads of 207 Mpa.
- The load table has not been limited. However, heavy loads above 10 kPa or in structures, or portions thereof, where live loads are maintained for lengthy periods, such as warehouses, computer rooms, libraries or other conditions, where the effect of creep must be considered, contact Mercury.
- Heavy concentrated loads, moving and vibratory loads are not recommended on a composite floor system without additional negative and transverse reinforcing.
- K5 and K6 values have been derived by matching existing load tables. (xx) denotes value using K value and equati

MERCURY METALS

MODULAR RATIO n = 9

Standard Weight Concrete (2350 kg/m³)

COMPOSITE

Metric - L.S.D.

(Z-275 Galvanized)

Mercury QL Lock-Rib

Specified Load Tables - kPa (kN/m²) (3 span form)

Span m	50 mm Conc. Cover "A"				65 mm Conc. Cover "A"				75 mm Conc. Cover "A"				90 mm Conc. Cover "A"			
	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52
1.8	16.5	21.0	28.0	33.7	19.2	24.5	32.7	41.7	23.4	30.1	38.5	45.7	26.5	32.2	43.5	51.7
2.0	13.3	16.8	22.4	27.0	15.4	19.6	29.2	33.5	18.9	24.1	30.8	36.7	21.3	25.8	34.9	41.5
2.2	10.9	13.7	18.3	22.1	12.6	15.9	21.4	27.4	15.4	19.7	25.2	30.0	17.4	21.0	28.5	33.9
2.4	8.99	11.28	15.1	18.3	10.5	13.2	17.7	22.7	12.8	16.3	20.9	24.9	14.5	17.4	23.6	28.2
2.6	7.54	9.42	12.7	15.4	8.77	11.0	14.8	19.1	10.8	13.6	17.5	20.9	12.1	14.5	19.8	23.7
2.8	6.37	7.94	10.7	13.0	7.41	9.26	12.5	16.2	9.11	11.5	14.8	17.8	10.3	12.3	16.8	20.1
3.0	5.42	6.74	9.13	11.2	6.31	7.87	10.7	13.9	7.77	9.81	12.7	15.2	8.77	10.5	14.3	17.3
3.2	4.64	5.76	7.84	9.61	5.40	6.72	9.16	12.0	6.67	8.41	10.9	13.2	7.53	8.94	12.3	14.9
3.4	3.99	3.40	6.76	8.33	4.64	5.77	7.91	10.4	5.75	7.25	9.41	11.4	6.49	7.69	10.7	12.9
3.6	3.43	4.25	5.86	7.26	4.00	4.92	6.85	9.09	4.98	6.27	8.18	9.97	5.62	6.64	9.25	11.3
3.8	2.96	3.67	5.10	6.35	3.45	4.28	5.96	7.97	4.32	5.44	7.13	8.80	4.87	5.74	8.07	9.89
4.0	2.56*	3.17	4.44	5.57	2.98	3.70	5.20	7.00	3.75	4.72	6.24	7.68	4.23	4.98	7.06	8.70
4.2	2.21*	2.73	3.98	4.90	2.57	3.19	4.19	6.18	3.25	4.11	5.46	6.78	3.67	4.32	6.19	7.67
4.4	1.90*	2.36*	3.39	4.32	2.21	2.75	3.66	5.46	2.82	3.57	4.79	5.99	3.19	3.48	5.43	6.78

Specified Load Tables - kPa (kN/m²) (2 span form)

Span m	50 mm Conc. Cover "A"				65 mm Conc. Cover "A"				75 mm Conc. Cover "A"				90 mm Conc. Cover "A"			
	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52
1.8	16.5	21.0	28.0	33.7	19.2	24.5	32.7	41.7	23.4	30.1	38.5	45.7	26.5	32.2	43.5	51.7
2.0	13.3	16.8	22.4	27.0	15.4	19.6	29.2	33.5	18.9	24.1	30.8	36.7	21.3	25.8	34.9	41.5
2.2	10.9	13.7	18.3	22.1	12.6	15.9	21.4	27.4	15.4	19.7	25.2	30.0	17.4	21.0	28.5	33.9
2.4	8.99	11.28	15.1	18.3	10.5	13.2	17.7	22.7	12.8	16.3	20.9	24.9	14.5	17.4	23.6	28.2
2.6	7.54	9.42	12.7	15.4	8.77	11.0	14.8	19.1	10.8	13.6	17.5	20.9	12.1	14.5	19.8	23.7
2.8	6.37	7.94	10.7	13.0	7.41	9.26	12.5	16.2	9.11	11.5	14.8	17.8	10.3	12.3	16.8	20.1
3.0	5.42	6.74	9.13	11.2	6.31	7.87	10.7	13.9	7.77	9.81	12.7	15.2	8.77	10.5	14.3	17.3
3.2	4.64	5.76	7.84	9.61	5.40	6.72	9.16	12.0	6.67	8.41	10.9	13.2	7.53	8.94	12.3	14.9
3.4	3.99	3.40	6.76	8.33	4.64	5.77	7.91	10.4	5.75	7.25	9.41	11.4	6.49	7.69	10.7	12.9
3.6	3.43	4.25	5.86	7.26	4.00	4.92	6.85	9.09	4.98	6.27	8.18	9.97	5.62	6.64	9.25	11.3
3.8	2.96	3.67	5.10	6.35	3.45	4.28	5.96	7.97	4.32	5.44	7.13	8.80	4.87	5.74	8.07	9.89
4.0	2.56*	3.17	4.44	5.57	2.98	3.70	5.20	7.00	3.75	4.72	6.24	7.68	4.23	4.98	7.06	8.70
4.2	2.21*	2.73	3.98	4.90	2.57	3.19	4.19	6.18	3.25	4.11	5.46	6.78	3.67	4.32	6.19	7.67
4.4	1.90*	2.36*	3.39	4.32	2.21	2.75	3.66	5.46	2.82	3.57	4.79	5.99	3.19	3.48	5.43	6.78

Specified Load Tables - kPa (kN/m²) (1 span form)

Span m	50 mm Conc. Cover "A"				65 mm Conc. Cover "A"				75 mm Conc. Cover "A"				90 mm Conc. Cover "A"			
	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52
1.8	16.5	21.0	28.0	33.7	19.2	24.5	32.7	41.7	23.4	30.1	38.5	45.7	26.5	32.2	43.5	51.7
2.0	13.3	16.8	22.4	27.0	15.4	19.6	29.2	33.5	18.9	24.1	30.8	36.7	21.3	25.8	34.9	41.5
2.2	10.9	13.7	18.3	22.1	12.6	15.9	21.4	27.4	15.4	19.7	25.2	30.0	17.4	21.0	28.5	33.9
2.4	8.99	11.28	15.1	18.3	10.5	13.2	17.7	22.7	12.8	16.3	20.9	24.9	14.5	17.4	23.6	28.2
2.6	7.54	9.42	12.7	15.4	8.77	11.0	14.8	19.1	10.8	13.6	17.5	20.9	12.1	14.5	19.8	23.7
2.8	6.37	7.94	10.7	13.0	7.41	9.26	12.5	16.2	9.11	11.5	14.8	17.8	10.3	12.3	16.8	20.1
3.0	5.42	6.74	9.13	11.2	6.31	7.87	10.7	13.9	7.77	9.81	12.7	15.2	8.77	10.5	14.3	17.3
3.2	4.64	5.76	7.84	9.61	5.40	6.72	9.16	12.0	6.67	8.41	10.9	13.2	7.53	8.94	12.3	14.9
3.4	3.99	3.40	6.76	8.33	4.64	5.77	7.91	10.4	5.75	7.25	9.41	11.4	6.49	7.69	10.7	12.9
3.6	3.43	4.25	5.86	7.26	4.00	4.92	6.85	9.09	4.98	6.27	8.18	9.97	5.62	6.64	9.25	11.3
3.8	2.96	3.67	5.10	6.35	3.45	4.28	5.96	7.97	4.32	5.44	7.13	8.80	4.87	5.74	8.07	9.89
4.0	2.56*	3.17	4.44	5.57	2.98	3.70	5.20	7.00	3.75	4.72	6.24	7.68	4.23	4.98	7.06	8.70
4.2	2.21*	2.73	3.98	4.90	2.57	3.19	4.19	6.18	3.25	4.11	5.46	6.78	3.67	4.32	6.19	7.67
4.4	1.90*	2.36*	3.39	4.32	2.21	2.75	3.66	5.46	2.82	3.57	4.79	5.99	3.19	3.48	5.43	6.78

Coloured areas below heavy line indicate shoring at mid-span require

4 TRANSVERSE WELDS/UNIT/SUPPORT

CONCRETE STRENGTH - 3000 PSI
 CONCRETE WEIGHT - 145 PSF



Q IN LBS./FT (ALLOWABLE SHEAR)
 F IN X x 10⁻⁶ IN/LB

		CONCRETE COVER 2.5 INCHES OVER DECK				CONCRETE COVER 3.0 INCHES OVER DECK				CONCRETE COVER 3.5 INCHES OVER DECK				CONCRETE COVER 4.0 INCHES OVER DECK			
DECK	THK	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598
SPAN	GA	22	20	18	16	22	20	18	16	22	20	18	16	22	20	18	16
8.0	Q	1919	1955	2046	2153	2158	2194	2285	2392	2397	2433	2525	2631	2636	2672	2764	2870
	F	0.45	0.41	0.34	0.29	0.40	0.36	0.30	0.26	0.36	0.33	0.27	0.23	0.33	0.30	0.25	0.21
9.0	Q	1880	1909	1985	2076	2119	2148	2224	2315	2358	2387	2463	2554	2598	2626	2702	2793
	F	0.46	0.42	0.35	0.3	0.41	0.37	0.31	0.27	0.37	0.33	0.28	0.24	0.33	0.3	0.25	0.22
10.0	Q	1850	1872	1936	2015	2089	2111	2175	2254	2328	2350	2414	2493	2567	2589	2653	2732
	F	0.47	0.42	0.35	0.31	0.42	0.38	0.32	0.27	0.37	0.34	0.28	0.25	0.34	0.31	0.26	0.22
11.0	Q	1825	1842	1896	1965	2064	2081	2135	2204	2303	2320	2374	2443	2542	2559	2613	2682
	F	0.48	0.43	0.36	0.31	0.42	0.38	0.32	0.28	0.38	0.34	0.29	0.25	0.34	0.31	0.26	0.23
12.0	Q	1804	1817	1862	1923	2043	2056	2101	2162	2282	2295	2341	2401	2521	2534	2580	2640
	F	0.48	0.44	0.37	0.32	0.43	0.39	0.33	0.28	0.38	0.35	0.29	0.26	0.34	0.31	0.27	0.23
13.0	Q	1786	1795	1834	1887	2025	2035	2073	2127	2264	2274	2312	2366	2503	2513	2551	2605
	F	0.49	0.44	0.37	0.33	0.43	0.39	0.33	0.29	0.38	0.35	0.30	0.26	0.35	0.32	0.27	0.24
14.0	Q	1771	1777	1810	1857	2010	2016	2049	2096	2249	2255	2288	2335	2488	2494	2527	2574
	F	0.49	0.45	0.38	0.33	0.43	0.39	0.34	0.29	0.39	0.35	0.3	0.26	0.35	0.32	0.27	0.24

MERCURY METALS

MODULAR RATIO n = 9

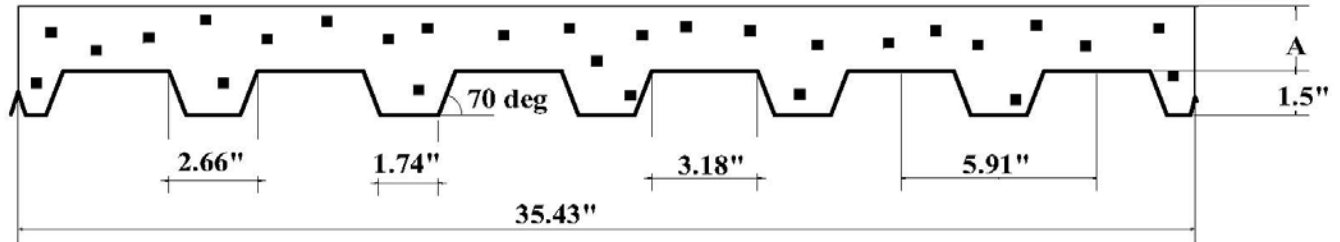
Standard Weight Concrete (145 pcf)

COMPOSITE

Imperial - L.S.D.

(Z-275 Galvanized)

Mercury QL 900



Properties for Mercury QL 900 (Z-275) (per foot width)

BASE STEEL		NONCOMPOSITE								Conc.	COMPOSITE					
THICKNESS		As	Ysb	Sm	Ss	Isd	Br	Br	Wd	Cover	ld	d	Regress. coef.		W1	VOC
GA.	THK.						(Ext)	(Int)		"A"			k5	k6		ft3/
	in	in2/ft	in	in3/ft	in3/ft	in4/ft	ib / ft	ib / ft	psf	in	in4/ft	in	kips/in	psi	psf	100 ft2
22	0.030	0.4734	0.8622	0.1830	0.1797	0.1589	781	1439	1.768	2	25.2	3.277			34.3	21.8
										2.5	37.4	3.787	754.4	18.415	40.6	26.0
										3.5	72.6	4.797			53.1	34.3
										4.5	124.7	5.807			65.5	42.6
20	0.036	0.5669	0.8661	0.2232	0.2288	0.1985	1103	2069	2.087	2	26.9	3.237			34.7	21.8
										2.5	40.0	3.747	1188.7	15.66	40.9	26.0
										3.5	77.4	4.757			53.4	34.3
										4.5	132.6	5.767			65.9	42.6
18	0.048	0.7540	0.8740	0.3032	0.3088	0.2695	1960	3652	2.717	2	30.1	3.157			35.3	21.8
										2.5	44.7	3.667	2052	10.005	41.6	26.0
										3.5	86.2	4.677			54.1	34.3
										4.5	147.0	5.687			66.5	42.6
16	0.060	0.9402	0.8779	0.3813	0.3813	0.3354	3069	5680	3.365	2	32.9	3.079			36.0	21.8
										2.5	48.7	3.589	2166	4.350	42.2	26.0
										3.5	93.8	4.599			54.7	34.3
										4.5	159.7	5.609			67.2	42.6

Mercury QL 900 Load Table Notes

- The loads indicated in the tables are for superimposed specified live and dead loads. The weights of steel deck, wet concrete and 20.9 psf uniformly distributed construction load or a 137 lb / ft transverse live load have been included within the load tables.
- The coloured areas below the heavy line indicates that mid-span shoring is required for the concrete pour and curing period.
- The (*) indicates that limitations of Article 4.1.6.10 of the N.B.C. (2,023 lb. applied over an area 2' - 5½" square) is exceeded.
- The load tables are based on the design of ONE-WAY composite slabs, in the direction of the flutes, carrying uniformly distributed loads on simple span basis.
- Composite load capacities are dependent on the material finish of the steel floor form.
- Load values are based on Normal Weight Concrete (density of 145 pcf) with a minimum compressive strength of 2900 psi.
- No additional reinforcing is required for the slab thickness shown on these tables. For temperature steel recommendations see the Mercury Engineering Notes.
- Properties and loads are based on A653 structural quantify Grade 33 steel with a minimum yield stress of 33 ksi and a maximum stress under Factored loads of 29.7 ksi.
- The load table has not been limited. However, heavy loads above 200 psf or in structures, or portions thereof, where live loads are maintained for lengthy periods, such as warehouses, computer rooms, libraries or other conditions, where the effect of creep must be considered, contact Mercury.
- Heavy concentrated loads, moving and vibratory loads are not recommended on a composite floor system without additional negative and transverse reinforcing.
- Governing mode is indicated on the tables as follows: shear-bond - no mark, steel yielding - y, concrete crushing - c and compc deflection - d

MERCURY METALS

MODULAR RATIO n = 9

Standard Weight Concrete (145 pcf)

COMPOSITE

Imperial - L.S.D.

(Z-275 Galvanized)

Mercury QL 900

Specified Load Tables - psf (3 span form)

Span ft	2 in Conc. Cover "A"				2.5 in Conc. Cover "A"				3.5 in Conc. Cover "A"				4.5 in Conc. Cover "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
4.0	571	816	1250y	1326	679	971	1548	1579	896	1282	2043	2085	1113	1592	2593	2592
4.5	458	650	981y	1044	546	774	1224	1244	720	1021	1616	1643	894	1269	2009	2042
5.0	377	530	789y	843	448	631	992	1004	592	833	1310	1326	735	1035	1628	1649
5.5	315	441	647y	693	375	525	814y	826	495	693	1082	1091	616	861	1345	1357
6.0	268	372	539y	580	319	443	678y	691	421	585	909	913	523	727	1130	1135
6.5	230	318	455y	491	274	379	573y	585	362	501	773	773	450	622	961	962
7.0	200	275	388y	420	239	328	489y	501	315	433	665	663	391	538	827	824
7.5	176	240	334y	364	209	286	422y	433	276	378	578	573	343	740	718	713
8.0	155	211	283d	310	185	251	366y	378	244	332	506	500	303	413	629	622
8.5	138	187	236d	259d	164	223	321y	332	217	294	446	439	270	366	555	546
9.0	123	166	199d	218d	147	198	282y	293	194	262	396	388	241	326	492	482
9.5	111	149	169d	185d	132	178	250y	260	174	235	353	344	217	292	439	429
10.0	100*	129d	145d	159d	119	160	215d	232	157	211	316y	307	196	263	394	283
10.5	90*	112d	125d	137d	108	144	186d	203d	142	191	282y	276	117	237	355	343

Specified Load Tables - psf (2 span form)

Span ft	2 in Conc. Cover "A"				2.5 in Conc. Cover "A"				3.5 in Conc. Cover "A"				4.5 in Conc. Cover "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
4.0	571	816	1250y	1326	679	971	1548	1579	896	1282	2043	2085.0	1113	1592	2593	2592
4.5	458	650	981y	1044	546	774	1224	1244	720	1021	1616	1643	894	1269	2009	2042
5.0	377	530	789y	843	448	631	992	1004	592	833	1310	1326	735	1035	1628	1649
5.5	315	441	647y	693	375	525	814y	826	495	693	1082	1091	616	861	1345	1357
6.0	268	372	539y	580	319	443	678y	691	421	585	909	913	523	727	1130	1135
6.5	230	318	455y	491	274	379	573y	585	362	501	773	773	450	622	961	962
7.0	200	275	388y	420	239	326	489y	501	315	433	665	663	391	538	827	824
7.5	176	240	334y	364	209	286	422y	433	276	378	578	573	343	740	718	713
8.0	155	211	283d	310	185	251	366y	378	244	332	506	500	303	413	629	622
8.5	138	187	236d	259d	164	223	321y	332	217	294	446	439	270	366	555	546
9.0	123	166	199d	218d	147	198	282y	293	194	262	396	388	241	326	492	482
9.5	111	149	169d	185d	132	176	250y	260	174	235	353	344	217	292	439	429
10.0	100*	129d	145d	159d	119	160	215d	232	157	211	316y	307	196	263	394	283
10.5	90*	112d	125d	137d	108	144	186d	203d	142	191	282y	276	177	237	355	343

Specified Load Tables - psf (1 span form)

Span ft	2 in Conc. Cover "A"				2.5 in Conc. Cover "A"				3.5 in Conc. Cover "A"				4.5 in Conc. Cover "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
4.0	571	816	1250y	1326	679	971	1548	1579	896	1282	2043	2085.0	1113	1592	2593	2592
4.5	458	650	981y	1044	546	774	1224	1244	720	1021	1616	1643	894	1269	2009	2042
5.0	377	530	789y	843	448	631	992	1004	592	833	1310	1326	735	1035	1628	1649
5.5	315	441	647y	693	375	525	814y	826	495	693	1082	1091	616	861	1345	1357
6.0	268	372	539y	580	319	443	678y	691	421	585	909	913	523	727	1130	1135
6.5	230	318	455y	491	274	379	573y	585	362	501	773	773	450	622	961	962
7.0	200	275	388y	420	239	328	489y	501	315	433	665	663	391	538	827	824
7.5	176	204	334y	364	209	286	422y	433	276	378	578	573	343	740	718	713
8.0	155	211	283d	310	185	251	366y	378	244	332	506	500	303	413	629	622
8.5	138	187	236d	259d	164	223	321y	332	217	294	446	439	270	366	555	546
9.0	123	166	199d	218d	147	198	282y	293	194	262	396	388	241	326	492	482
9.5	111	149	169d	185d	132	178	250y	260	174	235	353	344	217	292	439	429
10.0	100*	129d	145d	159d	119	160	215d	232	157	211	316y	307	196	263	394	283
10.5	90*	112d	125d	137d	108	144	186d	203d	142	191	282y	276	177	237	355	343

Coloured areas below heavy line indicate shoring at mid-span require

03/00

MERCURY METALS

MODULAR RATIO n = 9

Standard Weight Concrete (145 pcf)

COMPOSITE

Imperial - L.S.D.

(Z-275 Galvanized)

Mercury QL 900

Specified Load Tables - psf (3 span form)

Span ft	2 in Conc. Cover "A"				2.5 in Conc. Cover "A"				3.5 in Conc. Cover "A"				4.5 in Conc. Cover "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
4.0	571	816	1250y	1326	679	971	1548	1579	896	1282	2043	2085	1113	1592	2593	2592
4.5	458	650	981y	1044	546	774	1224	1244	720	1021	1616	1643	894	1269	2009	2042
5.0	377	530	789y	843	448	631	992	1004	592	833	1310	1326	735	1035	1628	1649
5.5	315	441	647y	693	375	525	814y	826	495	693	1082	1091	616	861	1345	1357
6.0	268	372	539y	580	319	443	678y	691	421	585	909	913	523	727	1130	1135
6.5	230	318	455y	491	274	379	573y	585	362	501	773	773	450	622	961	962
7.0	200	275	388y	420	239	328	489y	501	315	433	665	663	391	538	827	824
7.5	176	240	334y	364	209	286	422y	433	276	378	578	573	343	740	718	713
8.0	155	211	283d	310	185	251	366y	378	244	332	506	500	303	413	629	622
8.5	138	187	236d	259d	164	223	321y	332	217	294	446	439	270	366	555	546
9.0	123	166	199d	218d	147	198	282y	293	194	262	396	388	241	326	492	482
9.5	111	149	169d	185d	132	178	250y	260	174	235	353	344	217	292	439	429
10.0	100*	129d	145d	159d	119	160	215d	232	157	211	316y	307	196	263	394	283
10.5	90*	112d	125d	137d	108	144	186d	203d	142	191	282y	276	117	237	355	343

Specified Load Tables - psf (2 span form)

Span ft	2 in Conc. Cover "A"				2.5 in Conc. Cover "A"				3.5 in Conc. Cover "A"				4.5 in Conc. Cover "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
4.0	571	816	1250y	1326	679	971	1548	1579	896	1282	2043	2085.0	1113	1592	2593	2592
4.5	458	650	981y	1044	546	774	1224	1244	720	1021	1616	1643	894	1269	2009	2042
5.0	377	530	789y	843	448	631	992	1004	592	833	1310	1326	735	1035	1628	1649
5.5	315	441	647y	693	375	525	814y	826	495	693	1082	1091	616	861	1345	1357
6.0	268	372	539y	580	319	443	678y	691	421	585	909	913	523	727	1130	1135
6.5	230	318	455y	491	274	379	573y	585	362	501	773	773	450	622	961	962
7.0	200	275	388y	420	239	326	489y	501	315	433	665	663	391	538	827	824
7.5	176	240	334y	364	209	286	422y	433	276	378	578	573	343	740	718	713
8.0	155	211	283d	310	185	251	366y	378	244	332	506	500	303	413	629	622
8.5	138	187	236d	259d	164	223	321y	332	217	294	446	439	270	366	555	546
9.0	123	166	199d	218d	147	198	282y	293	194	262	396	388	241	326	492	482
9.5	111	149	169d	185d	132	176	250y	260	174	235	353	344	217	292	439	429
10.0	100*	129d	145d	159d	119	160	215d	232	157	211	316y	307	196	263	394	283
10.5	90*	112d	125d	137d	108	144	186d	203d	142	191	282y	276	177	237	355	343

Specified Load Tables - psf (1 span form)

Span ft	2 in Conc. Cover "A"				2.5 in Conc. Cover "A"				3.5 in Conc. Cover "A"				4.5 in Conc. Cover "A"			
	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060	0.030	0.036	0.048	0.060
4.0	571	816	1250y	1326	679	971	1548	1579	896	1282	2043	2085.0	1113	1592	2593	2592
4.5	458	650	981y	1044	546	774	1224	1244	720	1021	1616	1643	894	1269	2009	2042
5.0	377	530	789y	843	448	631	992	1004	592	833	1310	1326	735	1035	1628	1649
5.5	315	441	647y	693	375	525	814y	826	495	693	1082	1091	616	861	1345	1357
6.0	268	372	539y	580	319	443	678y	691	421	585	909	913	523	727	1130	1135
6.5	230	318	455y	491	274	379	573y	585	362	501	773	773	450	622	961	962
7.0	200	275	388y	420	239	328	489y	501	315	433	665	663	391	538	827	824
7.5	176	204	334y	364	209	286	422y	433	276	378	578	573	343	740	718	713
8.0	155	211	283d	310	185	251	366y	378	244	332	506	500	303	413	629	622
8.5	138	187	236d	259d	164	223	321y	332	217	294	446	439	270	366	555	546
9.0	123	166	199d	218d	147	198	282y	293	194	262	396	388	241	326	492	482
9.5	111	149	169d	185d	132	178	250y	260	174	235	353	344	217	292	439	429
10.0	100*	129d	145d	159d	119	160	215d	232	157	211	316y	307	196	263	394	283
10.5	90*	112d	125d	137d	108	144	186d	203d	142	191	282y	276	177	237	355	343

Coloured areas below heavy line indicate shoring at mid-span required.

03/00

MERCURY METALS

MODULAR RATIO n = 9

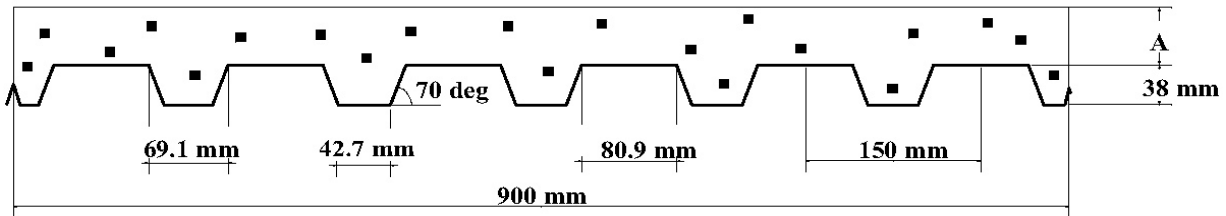
Standard Weight Concrete (2350 kg/m³)

COMPOSITE

Metric - L.S.D.

(Z-275 Galvanized)

Mercury QL 900



Properties for Mercury QL 900 (Z-275) (Per meter width)

BASE STEEL		NONCOMPOSITE								Conc.	COMPOSITE					
THICKNESS		As	Ysb	Sm	Ss	Isd	Br	Br	Wd	Cover	ld	d	Regress. coef.		W1	VOC
GA.	THK.			x10 ³	x10 ³	x10 ³	(Ext)	(Int)		A"	x10 ⁶	mm	k5	k6		m3/
	mm	mm2/m	mm	mm3/m	mm3/m	mm4/m	kN / m	kN / m	kPa	mm	mm4/m	mm	N / mm	Mpa	kPa	10m2
22	0.76	1002	21.9	9.84	9.66	217	11.4	21.1	0.0846	52	35.6	79.3			1.64	0.673
										72	64.6	99.4	132	0.127	2.10	0.873
										92	106.0	119.7			2.56	1.073
										112	162.0	140.0			3.02	1.273
20	0.91	1200	22.0	12.00	12.30	271	16.1	30.2	0.0999	52	38.2	77.1			1.65	0.673
										72	69.0	97.2	208	0.108	2.11	0.873
										92	113.0	117.5			2.57	1.073
										112	173.0	137.8			3.03	1.273
18	1.22	1596	22.2	16.30	16.60	368	28.6	53.3	0.1300	52	42.7	72.8			1.68	0.673
										72	77.1	92.9	359	0.069	2.14	0.873
										92	126.0	113.2			2.60	1.073
										112	191.0	133.5			3.06	1.273
16	1.52	1990	22.3	20.50	20.50	458	44.8	82.9	0.1610	52	46.7	68.6			1.71	0.673
										72	84.2	88.7	379	0.030	2.17	0.873
										92	137.0	109.0			2.63	1.073
										112	208.0	129.3			3.09	1.273

Mercury QL 900 Load Table Notes

- The loads indicated in the tables are for superimposed specified live and dead loads. The weights of steel deck, wet concrete and 1.0 kPa uniformly distributed construction load or a 2.0 kN / m transverse live load have been included within the load tables.
- The coloured areas below the heavy line indicates that mid-span shoring is required for the concrete pour and curing period.
- The (*) indicates that limitations of Article 4.1.6.10 of the N.B.C. (9 kN applied over an area 750 mm x 750 mm) is exceeded.
- The load tables are based on the design of ONE-WAY composite slabs, in the direction of the flutes, carrying uniformly distributed loads on simple span basis.
- Composite load capacities are dependent on the material finish of the steel floor form.
- Load values are based on Normal Weight Concrete (density of 2350 kg / m³) with a minimum compressive strength of 20 Mpa.
- No additional reinforcing is required for the slab thickness shown on these tables. For temperature steel recommendations see the Mercury Engineering Notes.
- Properties and loads are based on A653M structural quantify Grade 230 steel with a minimum yield stress of 230 Mpa and a maximum stress under Factored loads of 207 Mpa.
- The load table has not been limited. However, heavy loads above 10 kPa or in structures, or portions thereof, where live loads are maintained for lengthy periods, such as warehouses, computer rooms, libraries or other conditions, where the effect of creep must be considered, contact Mercury.
- Heavy concentrated loads, moving and vibratory loads are not recommended on a composite floor system without additional negative and transverse reinforcing.
- Governing mode is indicated on the tables as follows: shear-bond - no mark, steel yielding - y, concrete crushing - c and composite deflection - d.

MERCURY METALS

MODULAR RATIO n = 9

Standard Weight Concrete (2350 kg/m³)

COMPOSITE

Metric - L.S.D.

(Z-275 Galvanized)

Mercury QL 900

Specified Load Tables - kPa (kN/m²) (3 span form)

Span m	52 mm Conc. Cover "A"				72 mm Conc. Cover "A"				92 mm Conc. Cover "A"				112 mm Conc. Cover "A"			
	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52
1.2	28.6	41.0	63.2y	66.7	37.1	53.1	84.6	86.4	45.5	65.1	103.9	106.0	53.9	77.2	123.2	125.8
1.4	21.5	30.4	46.2y	48.8	27.8	39.4	62.3	63.2	34.2	48.4	76.5	77.7	40.5	57.3	90.7	92.1
1.6	16.8	23.5	34.9y	37.2	21.7	30.4	47.7	48.2	26.6	37.4	58.6	59.2	31.6	44.3	69.4	70.2
1.8	13.5	18.7	27.3y	29.2	17.4	24.2	37.6	37.8	21.4	29.8	46.2	46.5	25.4	35.3	54.8	55.1
2.0	11.0	15.2	21.8y	23.5	14.3	19.7	30.4	30.4	17.6	24.2	37.4	37.4	20.8	28.7	44.3	44.3
2.2	9.22	12.6	17.8y	19.2	11.9	16.4	24.9y	24.9	14.7	20.1	30.8	30.6	17.4	23.8	36.5	36.3
2.4	7.81	10.6	14.7y	16.0	10.1	13.8	20.7y	20.7	12.4	16.9	25.8	25.5	14.7	20.1	30.6	30.2
2.6	6.69	9.05	11.6d	12.7d	8.66	11.7	17.4y	17.5	10.6	14.4	21.8	21.5	12.6	17.1	25.9	25.5
2.8	5.78	7.79	9.31d	10.2d	7.49	10.1	14.7y	14.9	9.2	12.4	18.7	18.3	10.9	14.7	22.2	21.2
3.0	5.04	6.76	7.57d	8.26d	6.53	8.76	12.6y	12.8	8.02	10.8	16.2	15.7	9.52	12.8	19.2	18.7
3.2	4.42*	5.58d	6.24d	6.81d	5.73	7.66	10.8y	11.1	7.04	9.41	14.0y	13.6	8.35	11.2	16.7	16.2
3.4	3.90*	4.65*	5.20d	5.67d	5.05	6.74	9.40y	9.63	6.21	8.28	12.2y	11.9	7.37	9.82	14.6	14.1
3.6	3.45*	3.92*	4.38d	4.78d	4.48	5.95	7.92d	8.43	5.50	7.32	10.6y	10.4	6.53	8.68	12.9	12.3
3.8	3.07*	3.33*	3.72d	4.06d	3.98*	5.28	6.73d	7.34d	4.90	6.50	9.30y	9.13	5.81	7.71	11.4y	10.8

Specified Load Tables - kPa (kN/m²) (2 span form)

Span m	52 mm Conc. Cover "A"				72 mm Conc. Cover "A"				92 mm Conc. Cover "A"				112 mm Conc. Cover "A"			
	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52
1.2	28.6	41.0	63.2y	66.7	37.1	53.1	84.6	86.4	45.5	65.1	103.9	106.0	53.9	77.2	123.2	125.8
1.4	21.5	30.4	46.1y	48.8	27.8	39.4	62.3	63.2	34.2	48.4	76.5	77.7	40.5	57.3	90.7	92.1
1.6	16.8	23.5	34.9y	37.2	21.7	30.4	47.7	48.2	26.6	37.4	58.6	59.2	31.6	44.3	69.4	70.2
1.8	13.5	18.7	27.3y	29.2	17.4	24.2	37.6	37.8	21.4	29.8	46.2	46.5	25.4	35.3	54.8	55.1
2.0	11.0	15.2	21.8y	23.5	14.3	19.7	30.4	30.4	17.6	24.2	37.4	37.4	20.8	28.7	44.3	44.3
2.2	9.22	12.6	17.8y	19.2	11.9	16.4	24.9y	24.9	14.7	20.1	30.8	30.6	17.4	23.8	36.5	36.3
2.4	7.81	10.6	14.7y	16.0	10.1	13.8	20.7y	20.7	12.4	16.9	25.8	25.5	14.7	20.1	30.6	30.2
2.6	6.69	9.05	11.6d	12.6d	8.66	11.7	17.4y	17.5	10.6	14.4	21.8	21.5	12.6	17.1	25.9	25.5
2.8	5.78	7.79	9.31d	10.2d	7.49	10.1	14.7y	14.9	9.2	12.4	18.7	18.3	10.9	14.7	22.2	21.2
3.0	5.04	6.76	7.57d	8.26d	6.53	8.76	12.6y	12.8	8.02	10.8	16.2	15.7	9.52	12.8	19.2	18.7
3.2	4.42*	5.58d	6.24d	6.81d	5.73	7.66	10.8y	11.1	7.04	9.41	14.0y	13.6	8.35	11.2	16.7	16.2
3.4	3.90*	4.65*	5.20d	5.67d	5.05	6.74	9.40y	9.63	6.21	8.28	12.2y	11.9	7.37	9.82	14.6	14.1
3.6	3.45*	3.92*	4.38d	4.78d	4.48	5.95	7.92d	8.43	5.50	7.32	10.6y	10.4	6.53	8.68	12.9	12.3
3.8	3.07*	3.33*	3.72d	4.06d	3.98*	5.28	6.73d	7.34d	4.90	6.50	9.30y	9.13	5.81	7.71	11.4y	10.8

Specified Load Tables - kPa (kN/m²) (1 span form)

Span m	52 mm Conc. Cover "A"				72 mm Conc. Cover "A"				92 mm Conc. Cover "A"				112 mm Conc. Cover "A"			
	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52	0.76	0.91	1.22	1.52
1.2	28.6	41.0	63.2y	66.7	37.1	53.1	84.6	86.4	45.5	65.1	103.9	106.0	53.9	77.2	123.17	125.8
1.4	21.5	30.4	46.1y	48.8	27.8	39.4	62.3	63.2	34.2	48.4	76.5	77.7	40.5	57.3	90.7	92.1
1.6	16.8	23.5	34.9y	37.2	21.7	30.4	47.7	48.2	26.6	37.4	58.6	59.2	31.6	44.3	69.4	70.2
1.8	13.5	18.7	27.3y	29.2	17.4	24.2	37.6	37.8	21.4	29.8	46.2	46.5	25.4	35.3	54.8	55.1
2.0	11.0	15.2	21.8y	23.5	14.3	19.7	30.4	30.4	17.6	24.2	37.4	37.4	20.8	28.7	44.3	44.3
2.2	9.22	12.6	17.8y	19.2	11.9	16.4	24.7y	24.9	14.7	20.1	30.8	30.6	17.4	23.8	36.5	36.3
2.4	7.81	10.6	14.7y	16.0	10.1	13.8	20.7y	20.7	12.4	16.9	25.8	25.5	14.7	20.1	30.6	30.2
2.6	6.69	9.05	11.6d	12.69d	8.66	11.7	17.4y	17.5	10.6	14.4	21.8	21.5	12.6	17.1	25.9	25.5
2.8	5.78	7.79	9.31d	10.16d	7.49	10.1	14.7y	14.9	9.20	12.4	18.7	18.3	10.9	14.7	22.2	21.2
3.0	5.04	6.76	7.57d	8.26d	6.53	8.76	12.6y	12.8	8.02	10.8	16.2	15.7	9.52	12.8	19.2	18.7
3.2	4.42*	5.58d	6.24d	6.81d	5.73	7.66	10.8y	11.1	7.04	9.41	14.0y	13.6	8.35	11.2	16.7	16.2
3.4	3.90*	4.65*	5.20d	5.67d	5.05	6.74	9.40y	9.63	6.21	8.28	12.2y	11.9	7.37	9.82	14.6	14.1
3.6	3.45*	3.92*	4.38d	4.78d	4.48	5.95	7.92d	8.43	5.50	7.32	10.6y	10.4	6.53	8.68	12.9	12.3
3.8	3.07*	3.33*	3.72d	4.06d	3.98*	5.28	6.73d	7.34d	4.90	6.50	9.30y	9.13	5.81	7.71	11.4y	10.8

Coloured areas below heavy line indicate shoring at mid-span required.

03/00

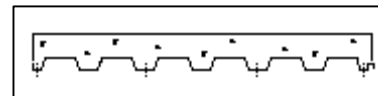
IMPERIAL - "Q" SHEAR VALUES & "F" FLEXIBILITY FACTORS for

MERCURY QL 900

Coverage - 35.43 inches

4 TRANSVERSE WELDS/UNIT/SUPPORT

CONCRETE STRENGTH - 3000 PSI
CONCRETE WEIGHT - 145 PSF

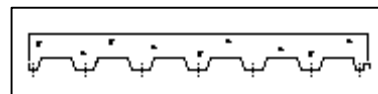


Q IN LBS./FT (ALLOWABLE SHEAR)
F IN X x 10⁻⁶ IN/LB

		CONCRETE COVER 2.5 INCHES OVER DECK				CONCRETE COVER 3.0 INCHES OVER DECK				CONCRETE COVER 3.5 INCHES OVER DECK				CONCRETE COVER 4.0 INCHES OVER DECK			
DECK	THK	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598
SPAN	GA	22	20	18	16	22	20	18	16	22	20	18	16	22	20	18	16
4.0	Q	2322	2440	2697	2968	2561	2680	2936	3207	2800	2919	3175	3446	3039	3158	3414	3685
	F	0.37	0.32	0.25	0.20	0.33	0.29	0.23	0.19	0.30	0.27	0.21	0.17	0.28	0.25	0.20	0.16
5.0	Q	2171	2259	2455	2666	2410	2498	2694	2905	2649	2737	2934	3144	2888	2977	3173	3383
	F	0.39	0.34	0.27	0.23	0.35	0.31	0.25	0.21	0.32	0.28	0.23	0.19	0.30	0.26	0.21	0.18
6.0	Q	2070	2139	2294	246+5	2309	2378	2533	2704	2548	2617	2773	29843	2788	2856	3012	3182
	F	0.41	0.36	0.29	0.24	0.37	0.33	0.27	0.22	0.33	0.30	0.24	0.20	0.31	0.27	0.22	0.19
7.0	Q	1998	2052	2179	2321	2237	2291	2418	2560	2477	2530	2658	2799	2716	2770	2897	3038
	F	0.43	0.38	0.31	0.26	0.38	0.34	0.28	0.24	0.34	0.31	0.25	0.22	0.31	0.28	0.23	0.20
8.0	Q	1944	1988	2093	2213	2184	2227	2332	2452	2423	2466	2571	2691	2662	2705	2810	2930
	F	0.44	0.39	0.32	0.27	0.39	0.35	0.29	0.25	0.35	0.32	0.26	0.22	0.32	0.29	0.24	0.21
9.0	Q	1903	1937	2026	2129	2142	2176	2265	2368	2381	2415	2504	2607	2620	2655	2743	2846
	F	0.45	0.40	0.33	0.28	0.40	0.36	0.30	0.25	0.36	0.32	0.27	0.23	0.33	0.29	0.25	0.21
10.0	Q	1869	1897	1972	2062	2108	2136	2211	2301	2347	2375	2450	2540	2586	2614	2690	2779
	F	0.46	0.41	0.34	0.29	0.4	0.36	0.3	0.26	0.36	0.33	0.28	0.24	0.33	0.3	0.25	0.22

7 TRANSVERSE WELDS/UNIT/SUPPORT

CONCRETE STRENGTH - 3000 PSI
CONCRETE WEIGHT - 145 PSF



Q IN LBS./FT (ALLOWABLE SHEAR)
F IN X x 10⁻⁶ IN/LB

		CONCRETE COVER 2.5 INCHES OVER DECK				CONCRETE COVER 3.0 INCHES OVER DECK				CONCRETE COVER 3.5 INCHES OVER DECK				CONCRETE COVER 4.0 INCHES OVER DECK			
DECK	THK	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598	.0295	.0358	.0474	.0598
SPAN	GA	22	20	18	16	22	20	18	16	22	20	18	16	22	20	18	16
4.0	Q	2626	2805	3183	3575	2865	3044	3422	3814	3104	3283	3661	4054	3343	3522	3900	4293
	F	0.32	0.28	0.21	0.17	0.30	0.26	0.20	0.16	0.27	0.24	0.18	0.15	0.26	0.22	0.17	0.14
5.0	Q	2414	2551	2844	3152	2653	2790	3083	3391	2892	3029	3322	3630	3131	3268	3561	3869
	F	0.35	0.31	0.24	0.19	0.32	0.28	0.22	0.18	0.29	0.26	0.2	0.17	0.27	0.24	0.19	0.16
6.0	Q	2273	2382	2618	2870	2512	2621	2857	3109	2751	2860	3097	3348	2990	3099	3336	3587
	F	0.38	0.33	0.26	0.21	0.34	0.30	0.24	0.19	0.31	0.27	0.22	0.18	0.29	0.25	0.20	0.17
7.0	Q	2172	2261	2457	2668	2411	2500	2696	2907	2650	27389	2935	3146	2889	2978	3174	3385
	F	0.39	0.34	0.27	0.23	0.35	0.31	0.25	0.21	0.32	0.28	0.23	0.19	0.30	0.26	0.21	0.18
8.0	Q	2096	2170	2336	2517	2335	2409	2575	2756	2575	2648	2814	2995	2814	2887	3053	3234
	F	0.41	0.36	0.29	0.24	0.37	0.32	0.26	0.22	0.33	0.29	0.24	0.20	0.30	0.27	0.22	0.19
9.0	Q	2038	2099	2242	2399	2277	2338	2481	2638	2516	2577	2720	2877	2755	2817	2959	3116
	F	0.42	0.37	0.30	0.25	0.37	0.33	0.27	0.23	0.34	0.30	0.25	0.21	0.31	0.28	0.23	0.19
10.0	Q	1991	2043	2167	2305	2230	2282	2406	2544	2469	2521	2645	2783	2708	2760	2884	3022
	F	0.43	0.38	0.31	0.26	0.38	0.34	0.28	0.24	0.35	0.31	0.25	0.22	0.31	0.28	0.23	0.20