FAIRFIELD BRIDGES
JPC # 23446-014

LIFTING INSERT DESIGN CALCULATIONS
(WORK W/ CARRARA SHOP DWGS)

SOUTH ROAD BRIDGE $f'_{cu} = 6000$ PSI & $f'_c = 8000$ PSI

WT OF SLAB 16.76^T

THERE ARE 4 LIFT POINTS AND ASSUMING A 60° SLING ANGLE W/ THE HORIZONTAL,

DESIGN LOAD @ EACH LIFT POINT

$$= \frac{16.76 \times 2}{4 \times 0.866} = 9.7^k$$

FROM ATTACHED PRODUCT LITERATURE

USE $8^T \times 10''$ S.L. SWL (4:1 S.F.) = 4:1 = 16^k; MODIFY IF REQUIRED BY EDGE DISTANCE FACTOR PER PCI GUIDELINES FOR HEADED STUDS

$$C_{es} = \frac{d_e}{l_e} = \frac{14''}{10''} = 1.4 \text{ BUT } \leq 1.0$$

WHERE d_e = EDGE DISTANCE TO ℄ LIFTER (EST ≈ 14")

l_e = LENGTH OF LIFTER = 10"

OR SWL FOR $8^T \times 10''$ S.L.

IS $16^k > 9.7^k$, OK.

ERM BROOK ROAD BRIDGE $f'_{ci} = 6000$ PSI & $f'_c = 8000$ PSI

WT OF SLAB = 27.73^T

THERE ARE 4 LIFT POINTS AND ASSUME A 60° SLING ANGLE W/ THE HORIZONTAL

DESIGN LOAD @ EACH LIFT POINT

$$= \frac{27.73 \times 2}{4 \times 0.866} = 16.0^k$$

FROM ATTACHED PRODUCT LITERATURE

USE $8^T \times 13\frac{3}{4}''$ S.L., SWL(4:1 S.F.) = 4:1 = 14^k; MODIFY

IF REQD BY EDGE DISTANCE FACTOR PER PCI GUIDELINES FOR HEADED STUDS

$$C_{es} = \frac{d_e}{l_e} = \frac{14}{13\frac{3}{4}} = 1.0 \text{ BUT } \leq 1.0$$

WHERE d_e = EDGE DISTANCE TO ℄ LIFTER (EST = 14")

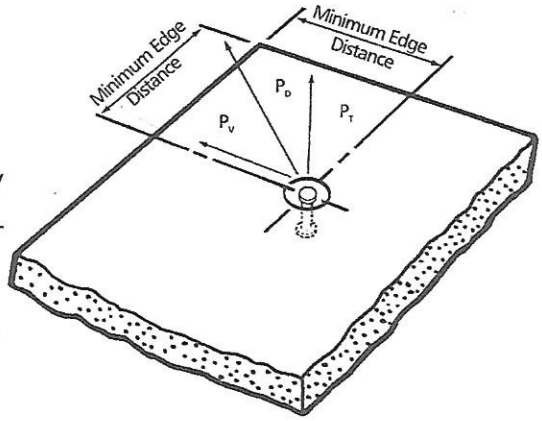
l_e = LENGTH OF LIFTER = $13\frac{3}{4}''$

OR SWL FOR $8^T \times 13\frac{3}{4}''$ S.L.

IS $16^k = 16.0^k$, O.K.

P-52 Swift Lift® Anchor Tensile and Shear Capacity

When anchors are used in the face of thin concrete elements



The following table lists the P-52 Swift Lift Anchors that are currently manufactured. Other sizes and lengths are available on special order. However, the sizes and lengths of anchors shown will handle the majority of flat precast concrete elements.

When the P-52 Swift Lift Anchor is properly embedded in normal weight concrete, the tabulated working loads are applicable for any direction of load. This applies even if the direction of load is parallel to the axis of the anchor, perpendicular to it or at any other angle.

Minimum distance between anchors is twice the minimum edge distance.

It is critical to remember that in order to obtain the safe working loads listed in the table below, the normal weight concrete must have obtained the minimum concrete strength shown, prior to initial load application.

Swift Lift Anchor Ton x Length	Safe Working Load	Minimum Concrete Strength	Minimum Edge Distance
1 ton x 2-5/8"	1,700 lbs.	3,500 psi	8"
1 ton x 3-3/8"	2,000 lbs.	2,200 psi	10"
1 ton x 4-3/8"	2,000 lbs.	1,600 psi	10"
1 ton x 8"	2,000 lbs.	1,600 psi	10"
1 ton x 9-1/2"	2,000 lbs.	1,600 psi	10"
2 ton x 2-3/4"	2,100 lbs.	3,500 psi	8"
2 ton x 3-3/8"	2,900 lbs.	3,500 psi	10"
2 ton x 5-1/2"	4,000 lbs.	1,600 psi	13"
2 ton x 6"	4,000 lbs.	1,600 psi	13"
2 ton x 6-3/4"	4,000 lbs.	1,600 psi	13"
2 ton x 11"	4,000 lbs.	1,600 psi	14"
4 ton x 3-3/4"	4,000 lbs.	3,500 psi	12"
4 ton x 4-1/4"	4,900 lbs.	3,500 psi	13"
4 ton x 4-3/4"	5,800 lbs.	3,500 psi	14"
4 ton x 5-1/2"	7,400 lbs.	3,500 psi	17"
4 ton x 5-3/4"	7,900 lbs.	3,500 psi	17"
4 ton x 7-1/8"	8,000 lbs.	1,800 psi	20"
4 ton x 9-1/2"	8,000 lbs.	1,600 psi	17"
4 ton x 14"	8,000 lbs.	1,600 psi	18"
4 ton x 19"	8,000 lbs.	1,600 psi	20"
8 ton x 4-3/4"	6,400 lbs.	3,500 psi	16"
8 ton x 6-3/4"	11,200 lbs.	3,500 psi	21"
8 ton x 10"	16,000 lbs.	3,500 psi	19"
8 ton x 13-3/8"	16,000 lbs.	1,600 psi	23"
8 ton x 26-3/4"	16,000 lbs.	1,600 psi	27"
20 ton x 10"	25,000 lbs.	3,500 psi	24"
20 ton x 19-3/4"	40,000 lbs.	3,500 psi	31"

Safe Working Loads provide a factor of safety of approximately 4 to1 in normal weight concrete. Safe Working Load is based on anchor setback from face of concrete "X" dimension, as shown on page 26.