ALPHA Engineering Group, Inc.

173005-01 | 21

FUEL SAFE TANK FOUNDATION ANCHOR BOLTS

THESE DATA ARE BASED ON USING THE ONLY THE FOLLOWING ANCHOR BOLTS. USE OF ANY OTHER ANCHOR BOLT OR ANCHOR DESIGN WILL REQUIRE AN ENGINEERING ANALYSIS:

RAWL STUD	RAWL PLUG COMPANY
RED HEAD WEDGE ANCHOR	ITT PHILLIPS DRILL DIVISION
PARABOLT	USM CONSTRUCTION PRODUCTS DIVISION

ANCHOR BOLT CAPACITY IS BASED ON 1991 UBC EARTHQUAKE DESIGN SECTION - 2338 FOR HAZARDOUS FACILITIES IN SEISMIC ZONE 4. THE BASIC EQUATION IS:

$$V = 0.5ZIW$$

WHERE V = BASE SHEAR IN POUNDS
Z = SEISMIC ZONE FACTOR = 0.40 FOR ZONE 4
I = OCCUPANCY FACTOR = 1.25 FOR HAZARDOUS FACILITIES
W = TOTAL WEIGHT OF TANK & CONTENTS IN POUNDS

THE EQUATION BECOMES $V = 0.25W$

ANCHOR BOLT INSTALLATION PROCEDURE

NOTE: CONCRETE MUST BE CURED BEFORE SETTING THE TANK. (f'_c = 4,000 psi)

1. POSITION TANK ON FOUNDATION PAD
2. DRILL HOLES IN CONCRETE SAME DIAMETER AS ANCHOR BOLT USING THE ANCHOR BOLT HOLES IN THE TANK SADDLES AS A DRILL GUIDE.
3. TAP ANCHOR BOLT INTO HOLE.
4. TIGHTEN NUT 3-5 TURNS.

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No. 4129
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DANIEL F. HEALY
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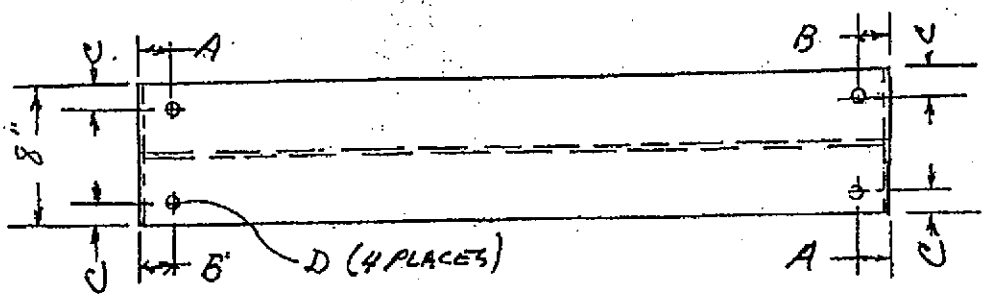
8233
REGISTERED
PROFESSIONAL ENGINEER
7/2/93

EXPIRES: 06/15/94

SUBJECT ANCHOR BOLT PATTERN FUEL SAFE TANKS BY DFH. DATE 7/8/93 SHEET 1 OF 4
CLIENT ACE TANK & EQUIPMENT CO. CK DATE

ALPHA Engineering Group, Inc.

17300501 21



TANK CAPACITY (GAL)	NUMBER OF SADDLES	WEIGHT PER SADDLE	'V' PER SADDLE	BOLTS PER SADDLE	BOLT SIZE	A	B	C	D
550	2	2.78 K	0.70 K	2	1/2"	1 13/16	0	5/8	9/16
1100	2	5.6	1.4	4	1/2"	1 13/16	1 13/16	5/8	9/16
2000	2	10.37	2.59	4	3/4"	2 1/16	8 1/16	7/8	13/16
3000	2	15.08	3.77	4	1"	2 3/8	12 3/16	1 1/8	1 1/16
4000	2	19.79	4.95	4	1 1/4"	2 5/8	16 11/16	1 3/8	1 5/16

SADDLE BASE PLATE
ANCHOR BOLT HOLE LOCATIONS
TANKS 550 – 4000 CAPACITY

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7/21/92

EXPIRES: 08/15/94

SUBJECT Anchor Bolt Pattern Fuel Safe Tanks BY D.F.H. DATE 7/8/92 SHEET 2 OF 4
CLIENT ATECO CK DATE

ALPHA Engineering Group, Inc.

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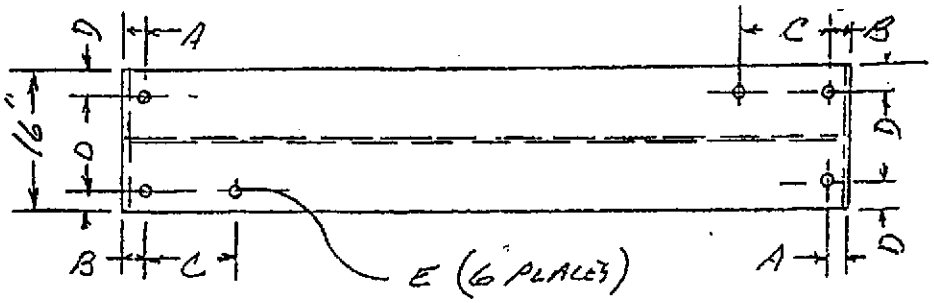
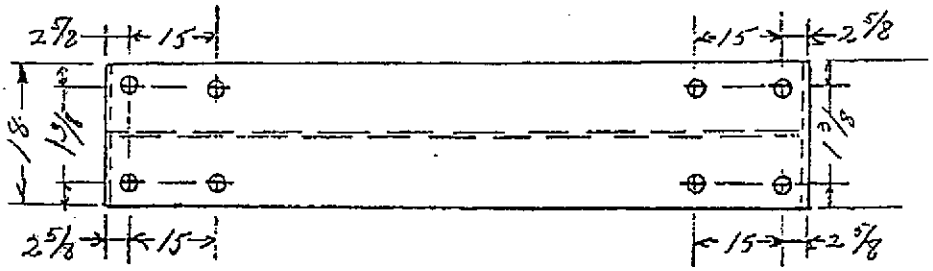


TANK CAPACITY GAL	# SADDLES	WEIGHT PER SADDLE	'V' PER SADDLE	BOLTS PER SADDLE	BOLT SIZE	A	B	C	D	E
6,000	2	26.97 K	6.74 K	6	1 1/4	9 3/4	2 5/8	15	1 3/8"	1 5/16
8,000	3	26.39 K	6.60 K	6	1	2 3/8	2 5/8	12	1 1/8	1 1/16
10,000	3	32.85 K	8.21 K	6	1 1/4	9 3/4	2 5/8	15	1 3/8	1 5/16
12,000	4	29.36 K	7.34 K	6	1 1/4	9 3/4	2 5/8	15	1 3/8	1 5/16

ANCHOR BOLT PATTERN TANKS 6,000 - 12,000 GAL. CAP.



TANK CAPACITY GAL	# SADDLES	WEIGHT PER SADDLE	'V' PER SADDLE	BOLTS PER SADDLE	BOLT SIZE
15,000	3	48.87	12.22	8	1 1/4
20,000	4	48.45	12.12	8	1 1/4

ANCHOR BOLT PATTERN

15,000 - 20,000 GAL. CAPACITY TANKS

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EXPIRES: 06/15/94

SUBJECT ANCHOR BOLT PATTERN FUEL SAFE TANK BY DFH DATE 7/9/93 SHEET 3 OF 4

CLIENT ATECO CK DATE

ALPHA Engineering Group, Inc.

1730050121

MINIMUM EMBEDMENT

BOLT SIZE	EMBEDMENT	MINIMUM SLAB THICKNESS *
1/2"	2 1/4"	4"
3/4"	3 3/8	5"
1"	4 1/2	6"
1 1/4"	5 1/2	7"

* BASED ON 1 1/4" MINIMUM COVER OF ANCHOR BOLTS. SITE CONDITIONS MAY REQUIRE A THICKER SLAB.

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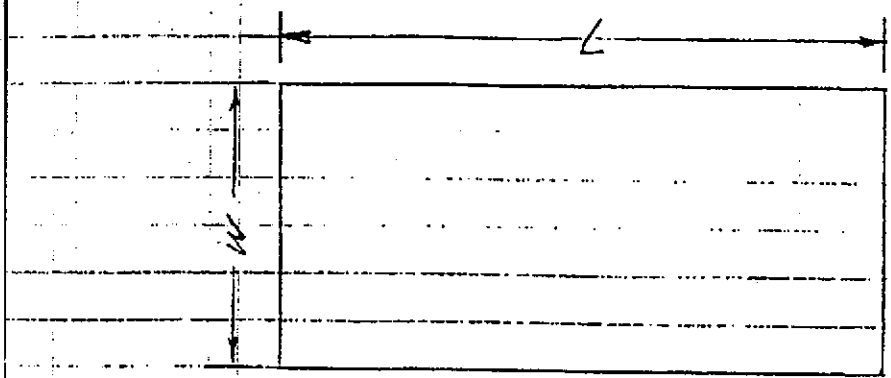
EXPIRES: 06/15/94

SUBJECT ANCHOR BOLT PATTERN FOR 50FT TANK BY DFH DATE 7/10/92 SHEET 4 OF 4
CLIENT ATECO CK DATE

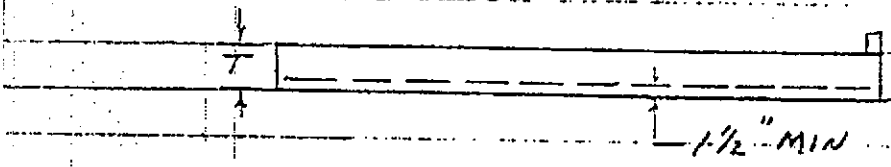
T M L / STERN ENGINEERS SEATTLE, WASHINGTON	WORKSHEET	Job. No. 707-01 By: D.F.H Date: 6-5-91

PROJECT: FUEL SAFE TANK FOUNDATION SLAB.



CONCRETE
f'_c = 4,000 psi
Stone aggregate

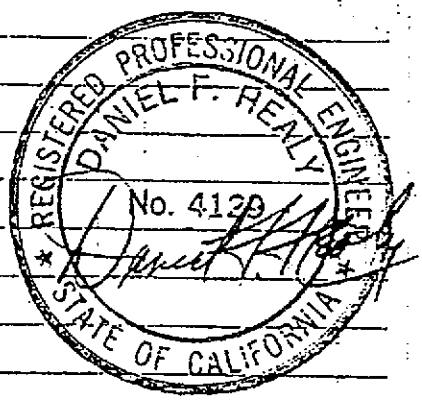
REINFORCING
WIRE FABRIC
4 GA. WIRE 4X4

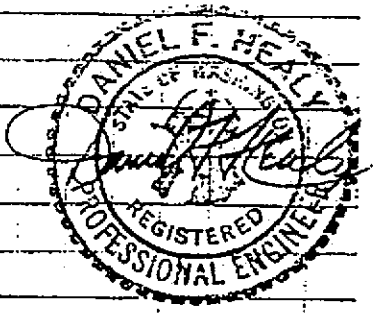


6X6 CURB ALL AROUND
OPTIONAL

NOTE: THESE DIMENSIONS BASED ON ALLOWABLE SOIL BEARING PRESSURE OF 1500 psf. (ALLUVIAL SOILS).

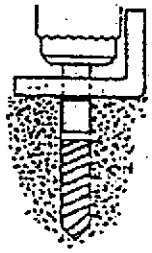
TANK PART Nº	L	W	T
AC 00550 N3 F1	9'-5"	7'-3"	6"
AC 01100 N3 F1	15'-4"	7'-3"	7"
AC 01100 N3 F9	15'-4"	7'-3"	7"
AC 02000 N3 F1	15'-4"	8'-8"	7"
AC 02000 N3 F9	15'-4"	8'-8"	8"
AC 04000 N3 F1	20'-4"	9'-8"	11"
AC 06000 N3 F1	20'-4"	11'-4"	9"
AC 08000 N3 F1	25'-4"	11'-4"	8"
AC 10000 N3 F1	31'-4"	11'-4"	9"
AC 12000 N3 F1	36'-4"	11'-4"	9"
AC 15000 N3 F1	29'-4"	13'-3"	15"
AC 20000 N3 F1	38'-4"	13'-3"	15"



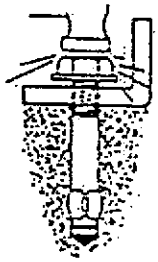


FAST, SIMPLE INSTALLATION

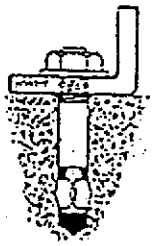
1. Drill hole same diameter as bolt. Use fixture for template.

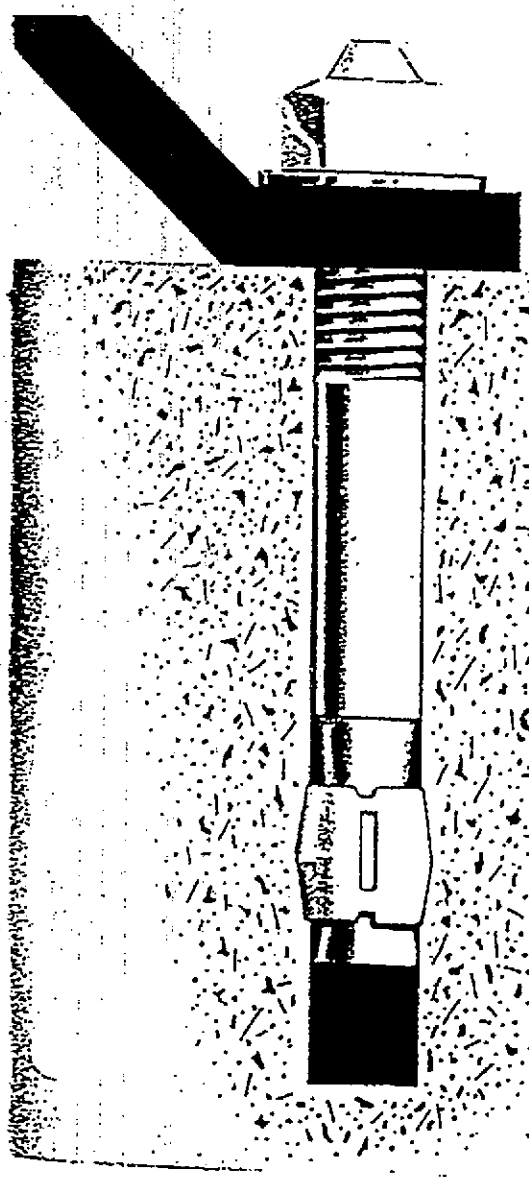


2. Tap Parabolt into hole through fixture to be fastened.



3. Tighten nut approximately 3 turns. Installation is complete.





Advantages of PARABOLT over other concrete anchoring systems

PARABOLT

- Rockwell Hardness, C-scale 25-30.
- Zinc plated for corrosion resistance to Federal Specifications QQ-Z-325.
- Tensile strength, 132,300 p.s.i. (mean).
- Yield, 100,000 p.s.i.
- A true drop-in anchor.
- Hole size is bolt size. No need to drill an oversize hole—minimum volume of concrete removed.
- Fixture serves as template. No need to move machinery. Alignment assured.
- Nothing else to buy. Nuts and washers provided.
- Clip bites into concrete instantly.
- Working load can be applied immediately.
- One piece stainless steel clip: Type 304 (18-8), provides 360° contact with concrete. Resists corrosion.