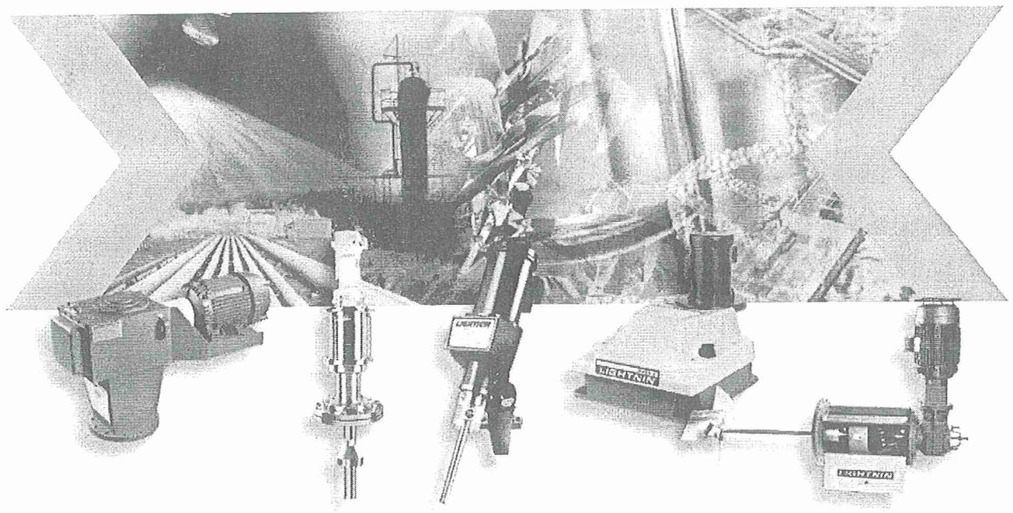
LIGHTNIN

AN SPX BRAND

APPROVAL DRAWING SUBMITTAL



Tagging:
AG-8403 Lime Slurry

AGIT. For
108620

Ship To Customer:	THE UNIVERSITY OF FLORIDA
Bill To Customer:	THE UNIVERSITY OF FLORIDA
PO Number:	1100119520
Model:	Lightnin Mixer Model X6C200
Order Number:	0001319766
Line Number:	000150

http://www.lightninmixers.com

SPX®

LIGHTNIN

AN SPX BRAND

APPROVAL DRAWING SUBMITTAL

LIGHTNIN SALES ORDER 0001319766

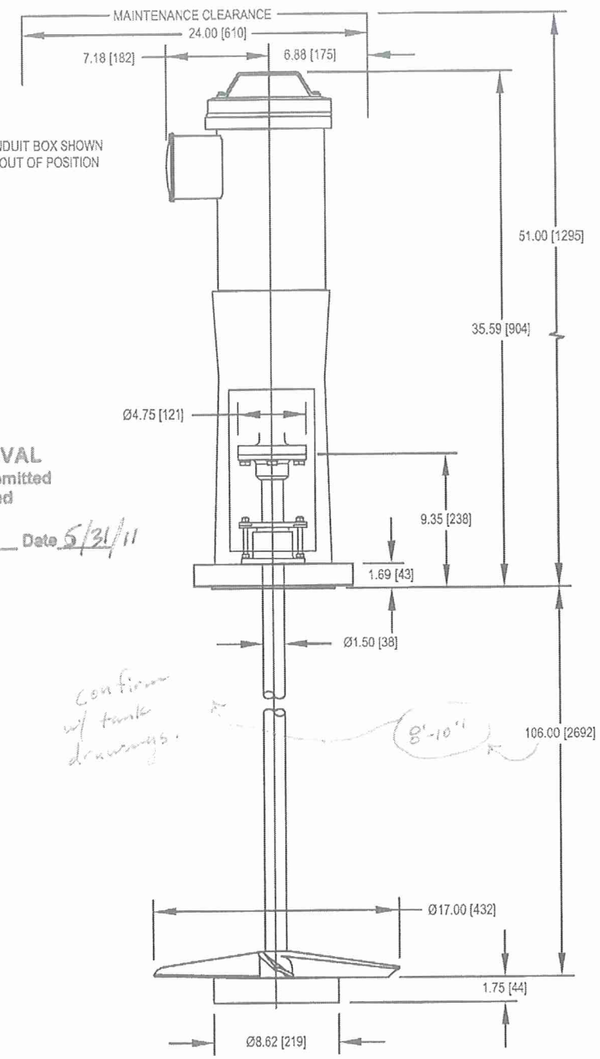
LIGHTNIN LINE ITEM 000150

Table of Contents

For
#108620

SPX®

DATE: 4/28/2011



FOR APPROVAL
Approved as Submitted
Approved as Noted
Not Approved
Name TRC Date 5/31/11

Confirm w/ tank drawings.

NOTES:

1. MOTOR DATA:
   H.P.: 2.000 R.P.M.: 1725
   VOLTS: 230/460 PHASE: 3 Hz: 60
   ENCLOSURE: TEFC DUTY: INVERTER
   IMPELLER SPEED - 280 IMPELLER TYPE - A310
2. APPROXIMATE TOTAL MIXER WEIGHT IS 288 lb [131 kg]
   WEIGHT WILL VARY WITH MOTOR CHARACTERISTICS.
3. ALL DIMENSIONS ARE IN INCHES [mm] AND ARE MAXIMUM.
4. MIXER MOUNTING DESIGN DATA:
   VERTICAL DOWNWARD LOAD: 580 LBS. [2580 N]
   TORQUE: 830 IN.-LBS. [94 N•m]
   BENDING MOMENT: 10000 IN.-LBS. [1130 N•m]
   DESIGN LOADS ARE GREATER THAN ACTUAL LOADS BY A SUITABLE FACTOR, CONSISTENT WITH CONSTRUCTION CODES AND ***LIGHTNIN*** EXPERIENCE. ***LIGHTNIN*** WARRANTIES AND GUARANTEES EXTEND FOR THOSE ITEMS FURNISHED BY IT. ALL OTHER EQUIPMENT AND DESIGNS ARE THE RESPONSIBILITY OF OTHERS.
5. UNIT IS FURNISHED WITH A STUFFING BOX.
   PACKING MATERIAL: COMBINATION 50
6. MIXER MOUNTING FLANGE DATA:
   150 LB. ANSI SERIES DRILLING
   SIZE: 6" O.D.: 11.00 BOLT CIRCLE: 9.50
   NO. OF HOLES: 8 BOLT DIA.: 0.75
   AS COMMON PRACTICE, FLANGE BOLT HOLES STRADDLE MIXER CENTERLINE.
7. MATERIAL OF IN-TANK MIXER PARTS IS 316

For #108620

LIGHTNIN®
MIXERS AND AERATORS

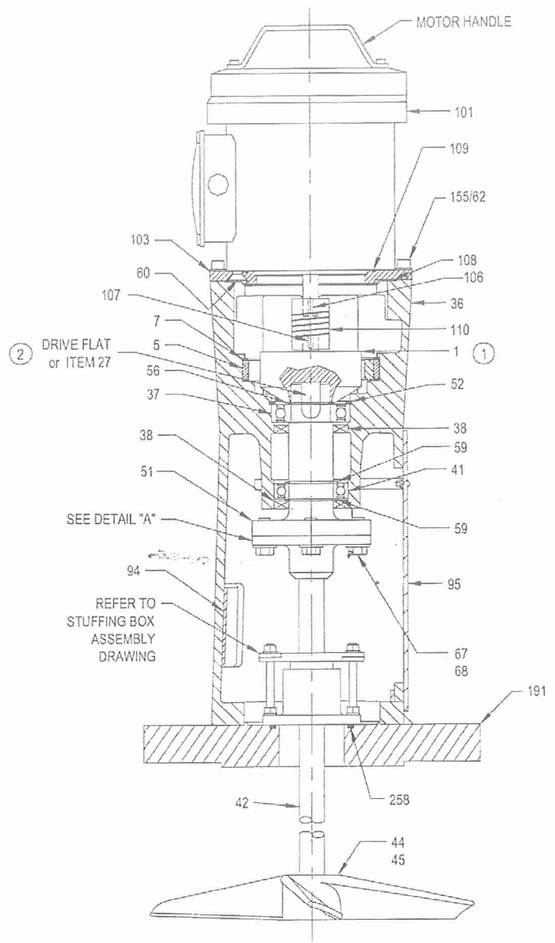
GENERAL ARRANGEMENT
FOR: ***THE UNIVERSITY OF FLORIDA***

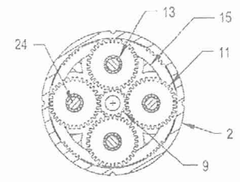
S.O. NO.: 1319766 LINE NO.: 150
CUST. P.O. NO.: 1100119520 QUANTITY: 1
TAG NO.: AG-8403 Lime Slurry RATIO: 6:1
MIXER MODEL: X6C200
SERIAL NO.: 1000002624928

ISO 9001 CERTIFIED

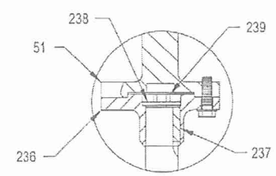
CERTIFIED BY: DATE:

DRAWING NO. 1319766000150-A





GEAR CARRIER ASSEMBLY (1) AND RING GEAR



DETAIL "A"

WHEN ORDERING PARTS, SPECIFY:
DRAWING NO., PART NAME, ITEM NO.,
AND MIXER SERIAL NUMBER.

ITEM	PART NAME
1	GEAR CARRIER ASSEMBLY
2	RING GEAR
5	RING GEAR RETAINING PIN
7	RETAINING RING
9	SUN GEAR
11	PLANET GEAR
12	THRUST WASHER (NOT SHOWN)
13	NEEDLE BEARING
15	CARRIER BODY
24	PLANET DOWEL PIN
27	KEY (2)
36	HOUSING
37	BALL BEARING
38	OIL SEAL (2)
41	BALL BEARING
42	IMPELLER SHAFT
44	IMPELLER
45	SET SCREW
51	DRIVE SHAFT
52	RETAINING RING
56	RETAINING RING
59	RETAINING RING (2)
60	FLAT HEAD SCREW
62	WASHER
67	HEX HEAD CAP SCREW
68	LOCKWASHER
94	PEDESTAL BACK GUARD
95	PEDESTAL SAFETY COVER
101	MOTOR
103	ADAPTER
106	MOTOR KEY
107	SUN GEAR KEY
108	GASKET
109	O-RING
110	DRIVE COUPLING ASSEMBLY
155	ADAPTER HARDWARE
191	FLANGE
236	REMOVABLE COUPLING
237	KEY
238	THRUST PLATE
239	HEX HEAD CAP SCREW (NYLOK)
258	O-RING

NOTES:
(1) GEAR KIT CONSISTS OF ITEMS 2, 5, 7, 108, 110 AND GEAR CARRIER ASSEMBLY ITEMS 9, 11, 12,13,15, 24, 27 & 107. KIT IS SOLD AS A SET. INDIVIDUAL ITEMS ARE NOT AVAILABLE.

(2) DRIVE FLAT FURNISHED ON X5C & X6C 75 THRU 150 ONLY. KEY (ITEM 27) FURNISHED ON X5C & X6C 200 THRU 500.

For #108620

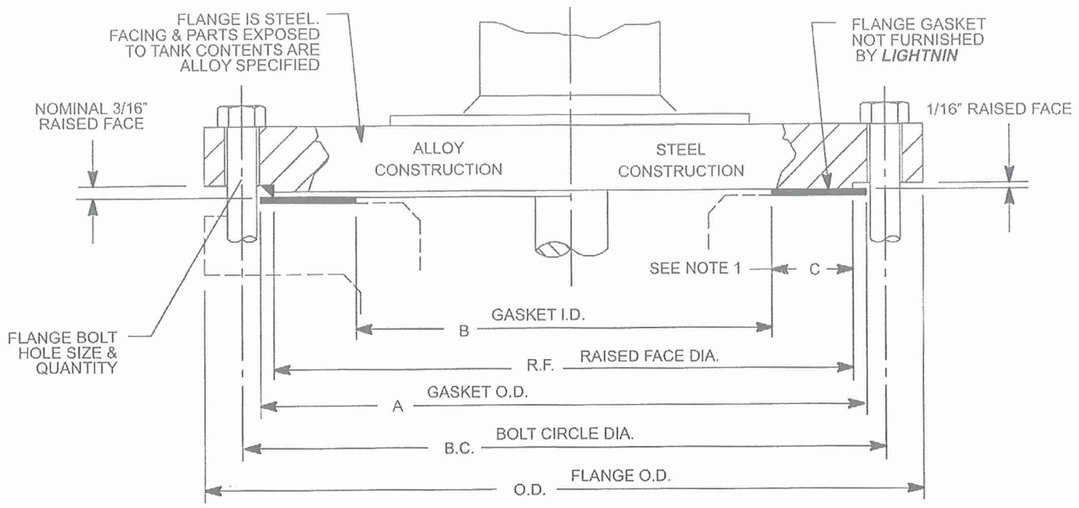
ISO 9001 CERTIFIED

LIGHTNIN®
MIXERS AND AERATORS

ASSEMBLY DRAWING

X5C75 THRU X5C500
X6C75 THRU X6C500
GEAR DRIVE ECL
WITH ELECTRIC MOTOR

DRAWING NO. L-17989C



NOTES:

1. GASKETS MUST BE SEATED BETWEEN THE RAISED FACES OF THE MIXER AND TANK FLANGE TO EFFECTIVELY SEAL AGAINST PRESSURE, VAPOR LEAKS AND/OR PRODUCT CONTAMINATION. DIMENSION "C" IS THE MINIMUM GASKET CONTACT AREA FOR 150 LB. RAISED FACES.
2. THE STANDARD RING GASKET OUTSIDE DIAMETER EXTENDS TO THE INNER EGDES OF THE FLANGE BOLTS, WHICH ACT AS CENTERING DEVICES.
3. FULL FACE ANSI GASKETS ARE GASKETS WHICH EXTEND TO THE O.D. OF THE FLANGE. FLANGE BOLT CLEARANCE HOLES MUST BE DRILLED IN THIS FULL FACE TYPE GASKET. SEE TABLE FOR HOLE SIZE AND BOLT CIRCLE.
4. GASKETS CAN ALSO BE MADE EQUAL TO THE RAISED FACE (R.F.) DIAMETER WITH THE SAME I.D. AS SHOWN IN THE TABLE (DIM. "B")
5. GASKET MATERIAL AND THICKNESS ARE THE RESPONSIBILITY OF THE USER. THEY MUST BE PRODUCT COMPATIBLE AND SUITABLE FOR ALL SERVICE CONDITIONS.
6. GASKET STYLES OTHER THAN FLAT FACE RING GASKETS ARE AVAILABLE, BUT ARE USUALLY MORE EXPENSIVE. GASKETS FOR FLANGES WITH RATINGS IN EXCESS OF 150 LBS. ARE NOT SHOWN DUE TO VARIABLE DESIGN CONDITIONS ENCOUNTERED. SPECIFICATIONS FOR OTHER THAN RING GASKETS AND HIGHER PRESSURE DESIGNS CAN BE FOUND IN ASME UNFIRED PRESSURE VESSEL CODES OR ANSI STANDARDS.

(2)

For # 108620

ANSI 150 LB. FLANGE DATA						ANSI RING GASKET DATA			
NOM. SIZE	O.D.	R.F.	B.C.	HOLE QUAN.	HOLE DIA.	A (O.D.)	B (I.D.)	WIDTH	C MIN.
5	10.0	7.31	8.50	8	.88	7.750	5.562	1.094	.88
6	11.0	8.50	9.50	8	.88	8.750	6.625	1.062	.94
8	13.5	10.62	11.75	8	.88	11.000	8.625	1.188	1.00
10	16.0	12.75	14.25	12	1.00	13.375	10.750	1.312	1.00
12	19.0	15.00	17.00	12	1.00	16.125	12.750	1.688	1.12
14	21.0	16.25	18.75	12	1.13	17.750	14.000	1.875	1.12
16	23.5	18.50	21.25	16	1.13	20.250	16.000	2.125	1.25
18	25.0	21.00	22.75	16	1.25	21.625	18.000	1.812	1.50
20	27.5	23.00	25.00	20	1.25	23.875	20.000	1.937	1.50
24	32.0	27.25	29.50	20	1.38	28.250	24.000	2.125	1.62

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LIGHTNIN

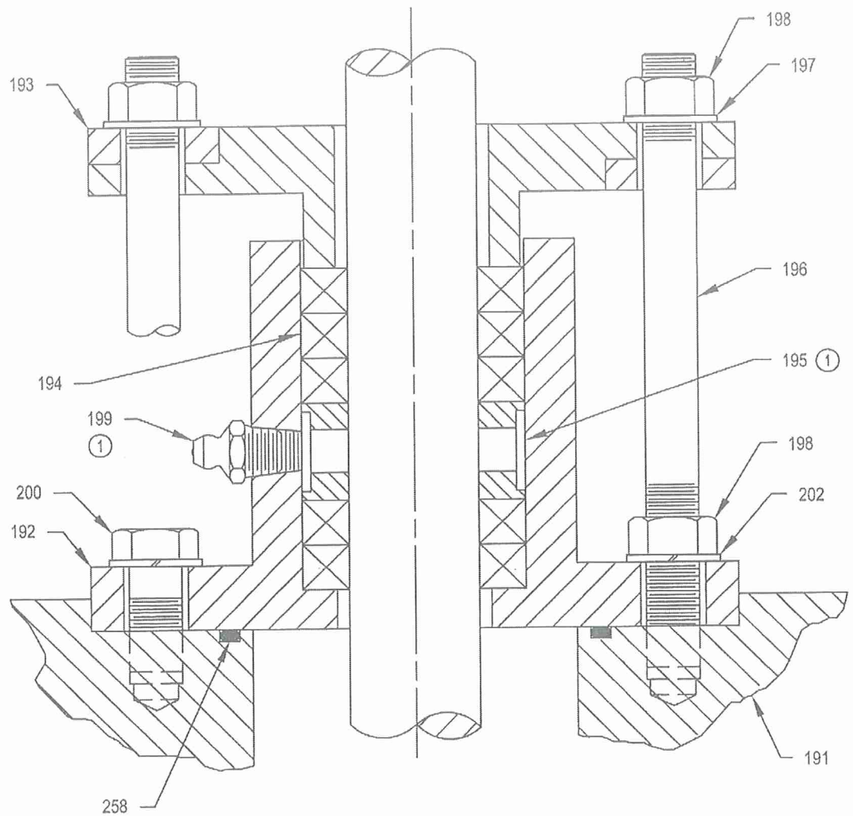
MIXERS AND AERATORS

OUTLINE DIMENSIONS IN INCHES

150 LB. ANSI STANDARD FLANGE & GASKET PROPORTIONS

Certified By _____ Date _____

DRAWING NO. DS–E–571B



WHEN ORDERING PARTS, SPECIFY:
DRAWING NUMBER, PART NAME, ITEM NUMBER,
UNIT MODEL & SERIAL NUMBER

ITEM	PART NAME
258	SEALING RING
202	LOCKWASHER
200	HEX HEAD CAP SCREW
199	LUBRICANT FITTING (1)
198	HEX NUT
197	WASHER
196	GLAND STUD
195	LANTERN RING (1)
194	PACKING
193	SPLIT PACKING GLAND
192	STUFFING BOX HUB
191	FLANGE ASSEMBLY

For #10820

NOTE:
(1) FURNISH ONLY WITH LUBRICATED STUFFING BOX.

STANDARD 5 RING STUFFING BOX			
MODEL	SHAFT DIA.	VESSEL PRESSURE	MAXIMUM TEMPERATURE
X1C	1.00	60 PSIG	300° F.
	1.25		
	1.50		
X5C & X6C	1.00	150 PSIG	300° F.
	1.25		
	1.50		

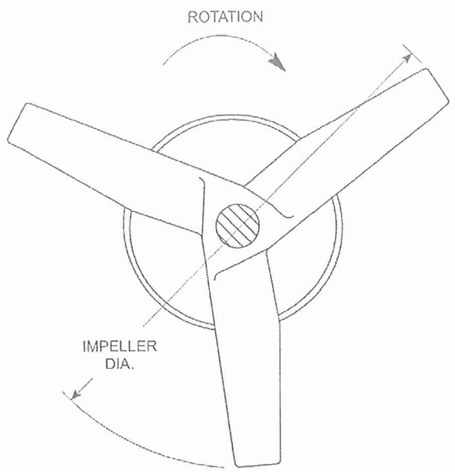
LIGHTNIN®
MIXERS AND AERATORS

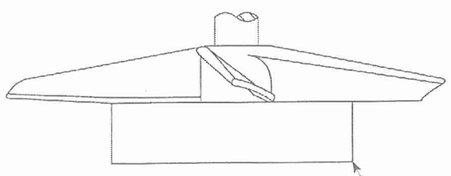
ASSEMBLY DRAWING

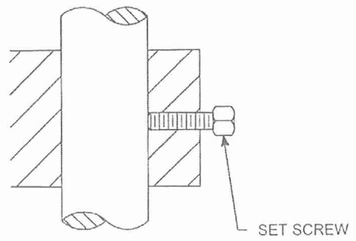
STUFFING BOX ASSEMBLY

ISO 9001 CERTIFIED

DRAWING NO. L-17003E







For
108620

WHEN ORDERING PARTS, SPECIFY:
DRAWING NUMBER, PART NAME, ITEM
NUMBER AND SERIAL NUMBER

LIGHTNIN®
MIXERS AND AERATORS

ISO 9001
CERTIFIED

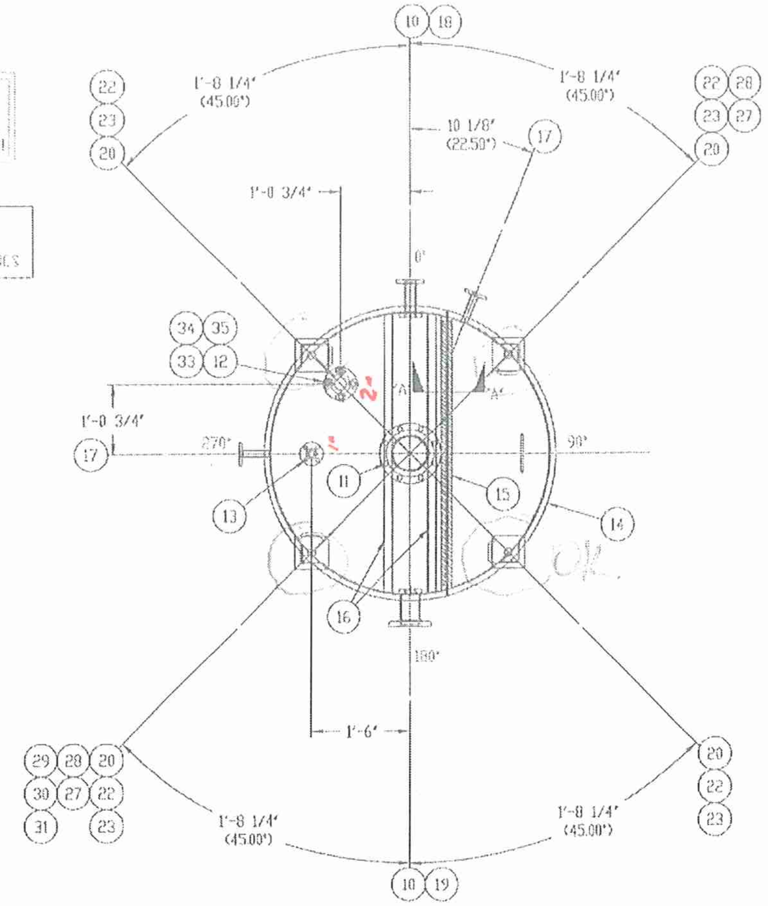
ASSEMBLY DRAWING

A310
AXIAL FLOW IMPELLER

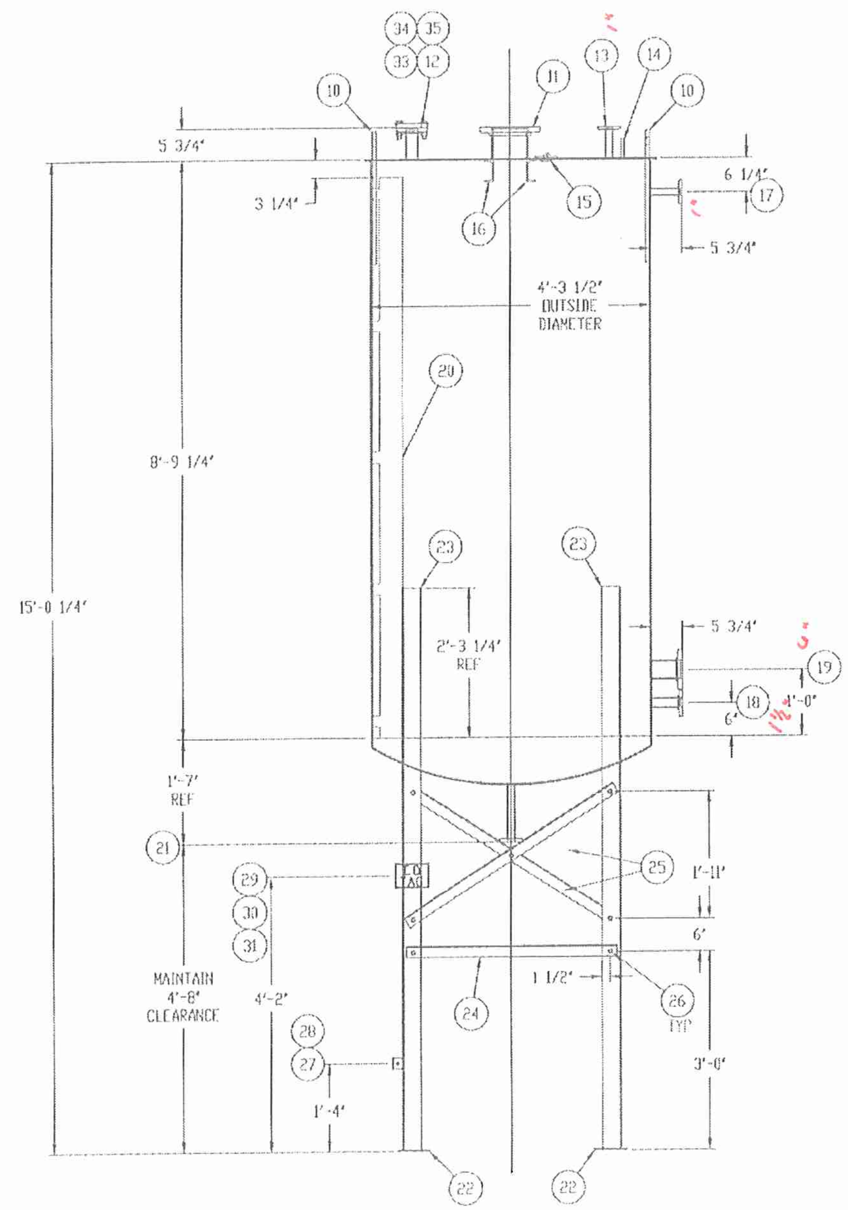
DRAWING NO. L–16701B

CUSTOMER NOTE:
ACCESSORIES SHIPPED ATTACHED BEYOND THIS SHIPPING WINDOW WILL REQUIRE ADDITIONAL SHIPPING COSTS!

SHIP NOTE:
2" 150# FLANGE BOM #12 TO BE INSTALL ON CENTERLINES

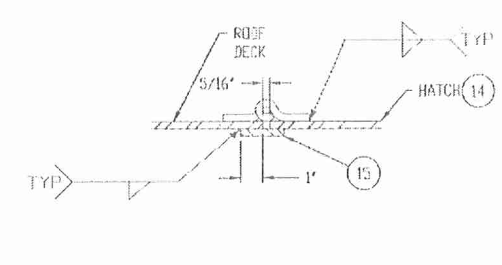


PLAN VIEW
SCALE 3/4" = 1'-0"

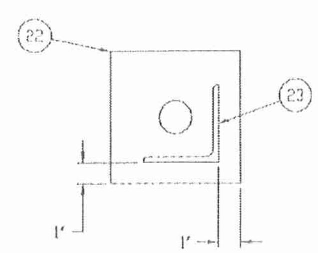


FOR ANCHOR BOLT LAYOUT SEE DRAWING

ELEVATION VIEW
SCALE 3/4" = 1'-0"



SECTION "A-A"



DETAIL "B3"
BASE PLATE TO LEG DETAIL

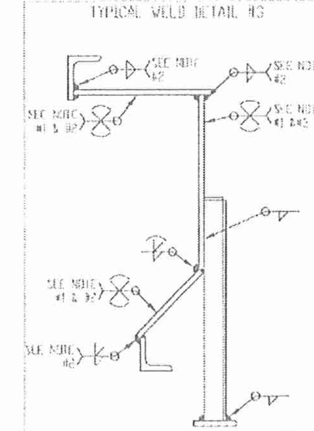
FOR APPROVAL
✓ Approved as Submitted
__ Approved as Noted
__ Not Approved
Name TDK Date 4/26/11

BILL OF MATERIALS 000								
R	SEQ	QTY	UM	PART NUMBER	AT	LO	SC	DESCRIPTION	CODE

R	SEQ	QTY	UM	PART NUMBER	AT	LO	SC	DESCRIPTION	CODE
	1	1.00	EA	158731-1/1	X			ROOF DECK - 1/4" PL 72" X 152" SA 516-70 (25 SHEET)	
	2	1.00	EA	158731-2/2	X			HOPPER - DISHED HEAD (SA516-70)	
	3	1.00	EA	158731-1/3	X			CYLINDER 1 - 1/4" PL 72" X 162" (SA516-70)	
	4	1.00	EA	158731-1/4	X			CYLINDER 3 - 1/4" PL 72" X 120" (SA516-70) (.62 SHEETS)	
	10	2.00	EA	223.00561	X			LIFT LUG,3/4 X 4" FB (HRS) MAX TANK WEIGHT = 16,000#	HRS
	11	1.00	EA	135.30401	X		X	FLANGE,6"-150# RFSO (RAISED FACE SLIP ON) A=5 3/4" PROJ	HRS
	12	1.00	EA	135.30201	X		X	FLANGE,2"-150# RFSO (RAISED FACE SLIP ON) STL + A=5 3/4"PROJ	HRS
	13	1.00	EA	135.30101	X		X	FLANGE,1"-150# RFSO (RAISED FACE SLIP ON) + A=5 3/4" PROJ	HRS
	14	1.00	EA	158731-2/14	X			ACCESS COVER - SEE DETAIL "B3" (SA516-70)	
	15	1.00	EA	158731-1/15	X			ACCESS OPENING STIFFENER - FB 1/4"X2"X4'-2 1/4" (HRS)	
	16	2.00	EA	158731-1/16	X			ROOF STIFFENERS - C4X5.4X4'-2 1/2" LONG (HRS)	
	17	2.00	EA	135.30101	X		X	FLANGE 1"-150# RFSO (RAISED FACE SLIP ON) + A=5 3/4" PROJ	HRS
	18	1.00	EA	135.30151	X		X	FLANGE,1 1/2"-150# RFSO (RAISED FACE SLIP ON) + A=5 3/4"PROJ	HRS
	19	1.00	EA	135.30301	X		X	FLANGE 3"-150# RFSO (RAISED FACE SLIP ON) + A=5 3/4" PROJ	HRS
	20	4.00	EA	158731-3/20	X			INTERIOR BAFFLES - SEE DETAIL "A3" (HRS)	
	21	1.00	EA	135.30101	X		X	FLANGE,1"-150# RFSO (RAISED FACE SLIP ON) + A= 10 1/4" PROJ	HRS
	22	4.00	EA	158731-3/22	X			BASE PLATE - SEE DETAIL "C3" (HRS)	
	23	4.00	EA	158731-1/23	X			TANK LEG - L3 1/2 X 3 1/2 X 1/4 X 9'-6" LONG (HRS)	
	24	4.00	EA	223.2037.2016	X			BRACE,L-L2 X 2 X 3/16 A=3'-2 9/16" B= 9/16"	A36
	25	8.00	EA	223.2082.2016	X			BRACE,X,2 X 2 X 3/16 A=3'-9 5/16" B= 9/16"	A36
	26	28.00	EA	213.0104	X			BRACE BOLT,1/2" X 1 1/2" W/NUT AND LOCKWASHER	ZP
	27	2.00	EA	223.0059	X			GROUNDING LUG,2" SQ W/ 9/16" DIA HOLE (CENTERED)	A36
	28	2.00	EA	9001767	X			DECAL,DANGER,GROUNDING LUG "DO NOT USE FOR LIFTING"(2 1/2X4)	MISC
	29	1.00	EA	9010329?	X			I.D. TAG, ALUMINUM (FOR INDUSTRIAL TANKS)	ALUM
	30	1.00	EA	223.0319.7	X			I.D. TAG, BRACKET ASSY (GALV.)	GALV
	31	1.00	EA	223.00163	X			I.D. MOUNTING PLATE, 10 GA 4 1/2" X 8"	HRS
	32	3.00	EA	201.0161		X		PAINT, 16OZ AEROSOL SHERWIN WILLIAMS TO MATCH #B67-R5/B67-V5	MISC
	33	1.00	EA	125.0207	X			FLANGE,2"-150# RFBF (RAISED FACE BLIND FLANGE) STL	
	34	1.00	EA	130.0200	X			GASKET,2"-150# 1/8"BLK. NEOPR	MISC
	35	4.00	EA	153.1012.111	X			BOLT BAG,5/8" HHCS X 3" LG W/ 1 FLAT, 1 LOCK, 1 NUT	ZP

AGITATOR DESIGN LOADS:
560 LB AXIAL DOWN
830 IN LB TORQUE
10,030 IN LB BENDING

TYPICAL WELD DETAIL #3



MANUFACTURING TOLERANCES PER ES531

NOTE #1: JOINT CONSTRUCTION MAY BE DOUBLE BUTT OR GROOVE WELDED DEPENDING ON THICKNESS AND MATERIAL. REFER TO WPS SPECIFICATION FOR PROPER JOINT DESIGN.

NOTE #2: SHELL JOINTS REQUIRE BACK GOUGING OF ROOT PASS & 100% PENETRATION.

QUOTE #: 141-70071-02
MATERIAL TYPE: LIME SLURRY TANK

INTERIOR NOTES:	EXTERIOR NOTES:
CLEANING/BLASTING CLASS #0 "NO" BLASTING REQUIRED. REMOVE ALL DIRT, DEBRIS, OIL, WELD SMOKE AND CHEMICAL CONTAMINATION.	CLEANING/BLASTING CLASS #1 "COMMERCIAL BLAST" PER SPEC. "SSPC SP6-63" WHICH EQUALS "N.A.C.E. NO. 3".
GRINDING CLASS #5 WELD SPATTER AND SLAG IS REMOVED USING A "WIRE BRUSH". EXCESSIVE WELD CROWN AT STARTS AND STOPS IS REMOVED. WELDS ARE GROUND TO A FLUSH "140-150" GRIT FINISH.	GRINDING CLASS #1 WELD SPATTER AND SLAG IS REMOVED USING A "WIRE BRUSH". EXCESSIVE WELD CROWN AT STARTS AND STOPS IS REMOVED.
INSPECTION CLASS #1 VISUAL (100%) TEST PROCEDURE PER IMP #101.	INSPECTION CLASS #1 VISUAL (100%) TEST PROCEDURE PER IMP #101.

EXTERIOR FINISH

COATS	MFG.	PRODUCT DESCRIPTION	COLOR	MILS DFT PER COAT	MILS DFT TOTAL
1	SHERWIN WILLIAMS	RECOATABLE EPOXY PRIMER B67-R5/B67-V5	RED	4.0 TO 6.0	4.0 TO 6.0
				TOTAL =	4.0 TO 6.0

INTERIOR FINISH: (PLAIN)
SEE CLEANING NOTE

DESIGN NOTES:	IBC-2006	
.2 SECOND SPECTRAL RESPONSE	12.1	%
1 SECOND SPECTRAL RESPONSE	5.9	%
SEISMIC SITE CLASS	D	
SEISMIC IMP. FACTOR	1.0	
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE (ELFP)		
MAX WIND SPEED	100	MPH (EXP. C)
WIND IMPORTANCE FACTOR	1.0	
MAX DECK LIVE LOAD	30	PSF
MAX MATERIAL DENSITY	75	LBS/FT³
MAX INTERNAL PRESSURE	1.00	PSI
MAX INTERNAL VACUUM	0.217	PSI
CAPACITY	129	CUBIC FEET
SHIPPING WEIGHT	2,100	LBS
OPERATING WEIGHT	10,700	LBS
TEMPERATURE	200	°F
MIN DESIGN METAL TEMPERATURE	-20	°F
SPECIFIC GRAVITY	1.2	

FOUNDATION LOADS:		
OVERTURN MOMENT	9,730	FT-LBS
HORIZONTAL SHEAR	1,330	LBS.
MAXIMUM LOAD PER COLUMN	4,800	LBS.
MAXIMUM UPLIFT PER COLUMN	1,730	LBS.
RECOMMENDED BOLT DIA.	3/4"	A-36

1/16" CORROSION ALLOWANCE ON SHELL/HEADS AND NOZZLES

SHIPPING NOTES:
COVER ALL OPENINGS WITH SHIPPING COVERS. CAUTION: DO NOT SEAL TANK COMPLETELY. CHANGES IN TEMP OR ATMOSPHERIC PRESSURE MAY CAUSE DAMAGE TO TANK.

TANK GAUGE SCHEDULE

TOP DECK	(ES)		1/4"	SA 516-70	
BOTTOM CONE		DISHED CONE		SA 516-70	
1ST CYL.	72"	0F	1/4"	SA 516-70	CIRC.
2ND CYL.	35"	1F	1/4"	SA 516-70	CIRC.

CUTTING SCHEDULE

L. RAD 2'-2 3/4" S. RAD 3 1/8" CIRC 14'-0 1/16"

INSTALLATION/CONTRACTOR NOTES:
[illegible]

Approval Stamp :
☐ Release for Fabrication
☐ Approved as Noted
☐ Resubmit
Date:
By:

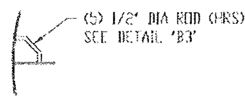
REV	BY	DATE	DESCRIPTION
1	AT	4-14-11	CHANGES FOR CUSTOMER'S REQUEST

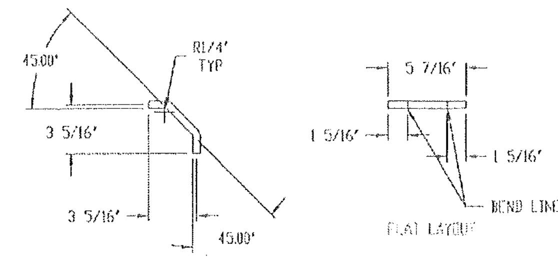
IMPERIAL INDUSTRIES INCORPORATED
IMPERIAL-CALUMET DIVISION OF WAUSAU TILE, INC.

DRAWN BY: A. THONS DATE: 4-11-11 SCALE: 3/4" = 1'-0"
SHEET: 1

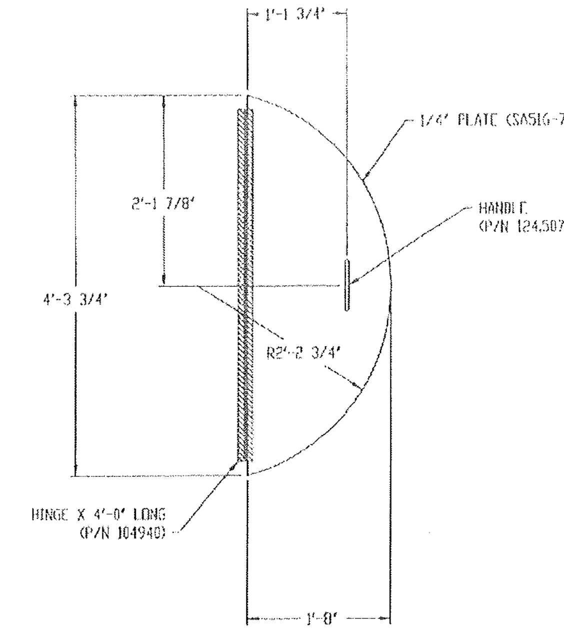
TS-8403 LIME SLURRY TANK
(1) 365-LB HEAD 60° 4'-3 1/2" DIA X 15'-0 1/4"
APACHE STAINLESS - BEAVER DAM, WI
GAINESVILLE, FL
DRAWING NUMBER: I-158731-1

#108620





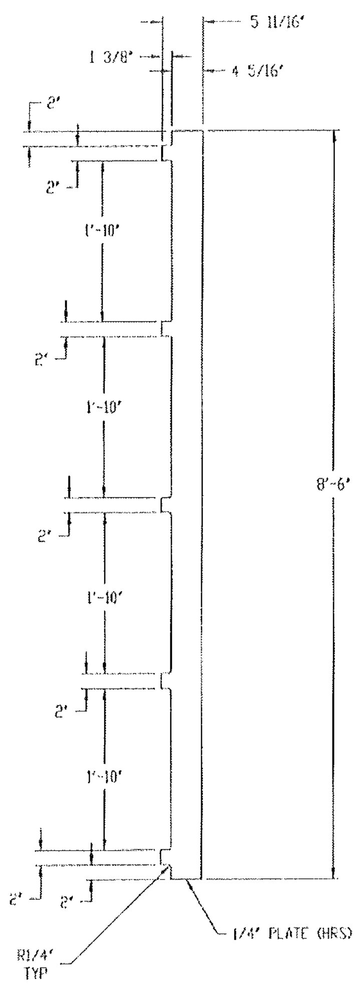
DETAIL 'B3'
SUPPORT BAR

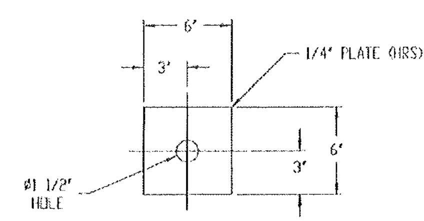


FOR APPROVAL
✓ Approved as Submitted
__ Approved as Noted
__ Not Approved
Name TPK Date 4/26/11

DETAIL 'D3'
ACCESS COVER

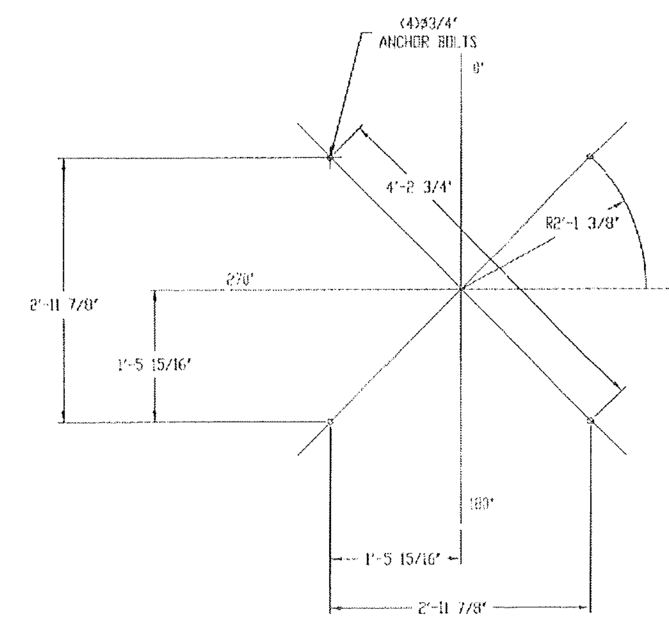
(14)





DETAIL 'C2'
BASE PLATE

(22)



DETAIL 'A2'
INTERIOR BAFFLE

(20)

DETAIL 'E2'
ANCHOR BOLT LAYOUT

1	AT	4-14-11	UPDATED TITLE BLOCK
REV	BY	DATE	DESCRIPTION

IMPERIAL INDUSTRIES INCORPORATED

DRAWN BY	A. THERS	DATE	4-11-11	SCALE	
				SHEETS	1

12,000 GAL. SLURRY TANK

DWG. NUMBER 159731-3