OBEX™

Spiral Fine Screen

Smith & Loveless Inc.

Above All Others.™

Smith & Loveless, Inc.®

14040 Santa Fe Trail Drive
Lenexa, Kansas 66215-1284

WASTEWATER TREATMENT SYSTEMS

OBEX™ SPIRAL FINE SCREEN

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OBEX™ SPIRAL FINE SCREEN
DESIGN SELECTION TABLE

MODEL	1.0/1.0C/ 1.0F/1.0CF		1.5/1.5C/ 1.5F/1.5CF		2.0/2.0C/ 2.0F/2.0CF		3.0/3.0C/ 3.0F/3.0CF		4.0/4.0C/ 4.0F/4.0CF		6.0/6.0C/ 6.0F/6.0CF		7.0/7.0C/ 7.0F/7.0CF	
SCREEN SIZE (MM)	**MGD**	**M^3/Hr**	**MGD**	**M^3/Hr**	**MGD**	**M^3/Hr**	**MGD**	**M^3/Hr**	**MGD**	**M^3/Hr**	**MGD**	**M^3/Hr**	**MGD**	**M^3/Hr**
WW 2.0	0.57	90.0	0.70	110.0	0.92	145.0	2.06	325.0	2.79	440.0	4.22	665.0	5.08	802.0
PS 3.0	0.63	100.0	0.82	130.0	1.17	185.0	2.08	328.0	2.91	459.0	4.78	754.0	5.64	890.0
PS 6.0	1.00	158.0	1.26	198.0	1.93	305.0	2.79	440.0	3.82	602.0	6.28	991.0	7.04	1,110.0

Note: C = Compactor, F = Flanged Box, CF = Compactor Flanged Box

SPECIFICATIONS FOR OBEX™ SPIRAL FINE SCREEN

GENERAL

The contractor shall furnish and install one Model ____ **OBEX™** Spiral Fine Screen unit in accordance with the drawings. Each **OBEX™** Spiral Fine Screening unit shall be complete with the following equipment: spiral assembly, spiral screw, screen basket, transport tube, (compaction zone), discharge section, gear motor, gear head, and auxiliary equipment as specified herein. All wetted metal parts shall be constructed of (304) (316) Stainless Steel, with the auger made of (304) (316) Stainless Steel.

CAPACITY

The **OBEX™** Spiral Fine Screening unit shall be capable of effectively removing solids up to a peak hydraulic flow rate of ____ MGD from raw wastewater.

OBEX™ SPIRAL FINE SCREEN SCREENING UNIT

The lower (submerged) portion of the screen unit shall have a U-shaped stainless steel perforated basket with ____mm openings. A shaftless screw auger, with no intermediate or underwater bearings, shall carry the collected solids off the screen and into the enclosed transport auger for gravity and compression dewatering. The **OBEX™** Spiral Fine Screen shall be self-cleaning by means of renewable brushes bolted to the shaftless screw. The shaftless screw shall operate at no higher speed than 9 rpm, to minimize wear and insure long life.

The transport auger section shall be fully enclosed and have a tapered transition inlet at the bottom and a flanged discharge at the top.

The materials of construction shall be as follows:

Hardware	Stainless Steel AISI (304) (316)
OBEX™ Spiral Fine Screen Cleaning Screen	Stainless Steel AISI (304) (316)
Screw Auger	Stainless Steel AISI (304) (316)
Screenings Chute	Stainless Steel AISI (304) (316)

The discharge chute shall have a diameter of ____ inches (mm), to allow screenings to be discharged into a bagging system or screenings dumpster.

The screw incline shall be (35) (45) degrees.

SPIRAL SCREW ASSEMBLY

The unit shall include a spiral screw that shall be shaftless except in the compaction zone (if included) and discharge section. It will be constructed of stainless steel AISI (304) (316) and shall have a minimum thickness in the transport zone of ¾" (19 mm). Plastic brushes bolted to the outer edge of the spiral screw shall clean the screen basket and transport the screenings into the transportation section of the screw assembly.

SCREEN BASKET ASSEMBLY

The unit shall include a U-shaped stainless steel basket to capture screenings material. [This basket shall be of the rounded hole type with drilled (10) (7) (6) (5) (4) (3) mm openings.] [This basket shall be of the wedge wire hole type with (3) (2) (1) (0.5) (0.25) mm openings.]

To prevent the screenings from bypassing the unit, the screen basket assembly will include full length rubber flaps which will provide a tight seal between the concrete channel walls and the screen basket.

TRANSPORT TUBE

A transport tube shall be included to allow for the movement of the captured screenings from the screen basket. This tube shall also allow for the screenings to be raised to a sufficient height for discharge up and out of the channel for discharge. Anti-wear bars will also be included and be of the bolted, sliding bar style.

[The final section of the transport tube shall be used for gravity and compression dewatering.] [A washing system in this zone will be included along with drainage area and discharge hose to allow wash waster to flow downstream of screw.]

DRIVE

The shaftless screw and transport auger shall be driven by a _____ hp (____kW) gear motor located at the discharge end of the unit. The drive shall be a parallel shaft, helical gear reducer. The motor shall be (TEFC) (Class 1, Division 1 rated) **[DESIGNER: SELECT AS REQUIRED]** 3-phase, ____ Hertz, ____ volt with a 1.15 Service Factor, NEMA Design B with class F insulation. The screw speed shall be 9 RPM or less. The drive shall be mounted on a plate at the discharge end and the plate shall be bolted to the flanges on the trough.

PIVOT FOOT

A telescopic supporting foot shall be provided to allow for the unit to be removed from the channel and allow for maintenance operations to be performed.

OPTIONAL ACCESSORIES

- **Compactor:** Compactor section located at the discharge end of the auger shall provide up to 40% reduction in screenings volume. A drainage tube shall be connected from the compaction area and discharge back into the trough.

- **Discharge Chute**: Discharge chute shall be provided in (stainless steel) (PVC) (Vinyl hose).

- **Bagger System:** Bagging system shall be provided at the discharge end of the chute to collect screenings and bag them for disposal. The system shall consist of a continuous poly bag mounted in a frame. Poly bags shall be water-proof and provide no additional drainage of the screenings.

- **Spray Wash Systems:** Spray wash systems to be provided in (screen area) (transport tube) (compaction area). The system shall consist of a solenoid valve and spray header mounted to the screen. Water requirements are a minimum of 15 GPM (0.95 lps) at 35 psi (2.3 Bar).

MANUFACTURING QUALITY

The Manufacturer shall have on staff registered engineers, both in process and design. This would be for providing current capabilities in these areas as well as future capabilities after the equipment is installed and operating, for the best long term interest of the Owner.

SUMMARY

External structure: Stainless steel AISI304L
Screw: High tensile strength carbon steel
Bolts: AISI304

INSTALLATION AND OPERATING INSTRUCTIONS

Installation and operation shall be in accordance with instructions provided by the Manufacturer.

MANUFACTURER'S INSURANCE

ALL EQUIPMENT MANUFACTURERS, either direct or subcontractors to the general or mechanical contractors, SHALL HAVE in effect at TIME OF BID, CONTRACT AWARD, CONTRACT PERFORMANCE, and WARRANTY TERM, PRODUCT AND COMPREHENSIVE LIABILITY INSURANCE, INCLUDING SUDDEN AND ACCIDENTAL POLLUTION COVERAGE, in the amount of FIVE MILLION DOLLARS ($5,000,000) through an insurance company with a minimum rating of A+ (SUPERIOR) XV according to the BEST'S INSURANCE REPORTS. All policies must be written on an OCCURRENCE BASIS. Policies written on a CLAIMS MADE BASIS are not acceptable. The CERTIFICATE OF INSURANCE attesting to the specified coverage issued by the responsible carrier naming the ENGINEER OF RECORD and the OWNER as ADDITIONAL INSURED, must be presented to the named additional insured prior to contract award. A FAILURE TO COMPLY with this requirement BY THE BIDDER will require DISQUALIFICATION of the BID and CONTRACT AWARD.

STARTUP

The Manufacturer shall provide the services of a Factory-trained representative for a period of 2 days on-site to assist with the initial startup, and to instruct the Owner's operating personnel in the operation and maintenance of the equipment.

WARRANTY

The Manufacturer of the equipment shall warrant for one (1) year from date of startup, not to exceed eighteen (18) months from date of shipment, that all equipment he provides will be free from defects in material and workmanship.

In the event a component fails to perform as specified, or is proven defective in service during the warranty period, the Manufacturer shall repair or replace, at his discretion, such defective part.

The repair or replacement of those items normally consumed in service such as bags, seals, grease, light bulbs, etc., shall be considered as part of routine maintenance and upkeep.

It is not intended that the Manufacturer assume responsibility for contingent liabilities or consequential damages of any nature resulting from defects in design, material, workmanship or delays in delivery, replacement or otherwise.

ENGINEERING DATA

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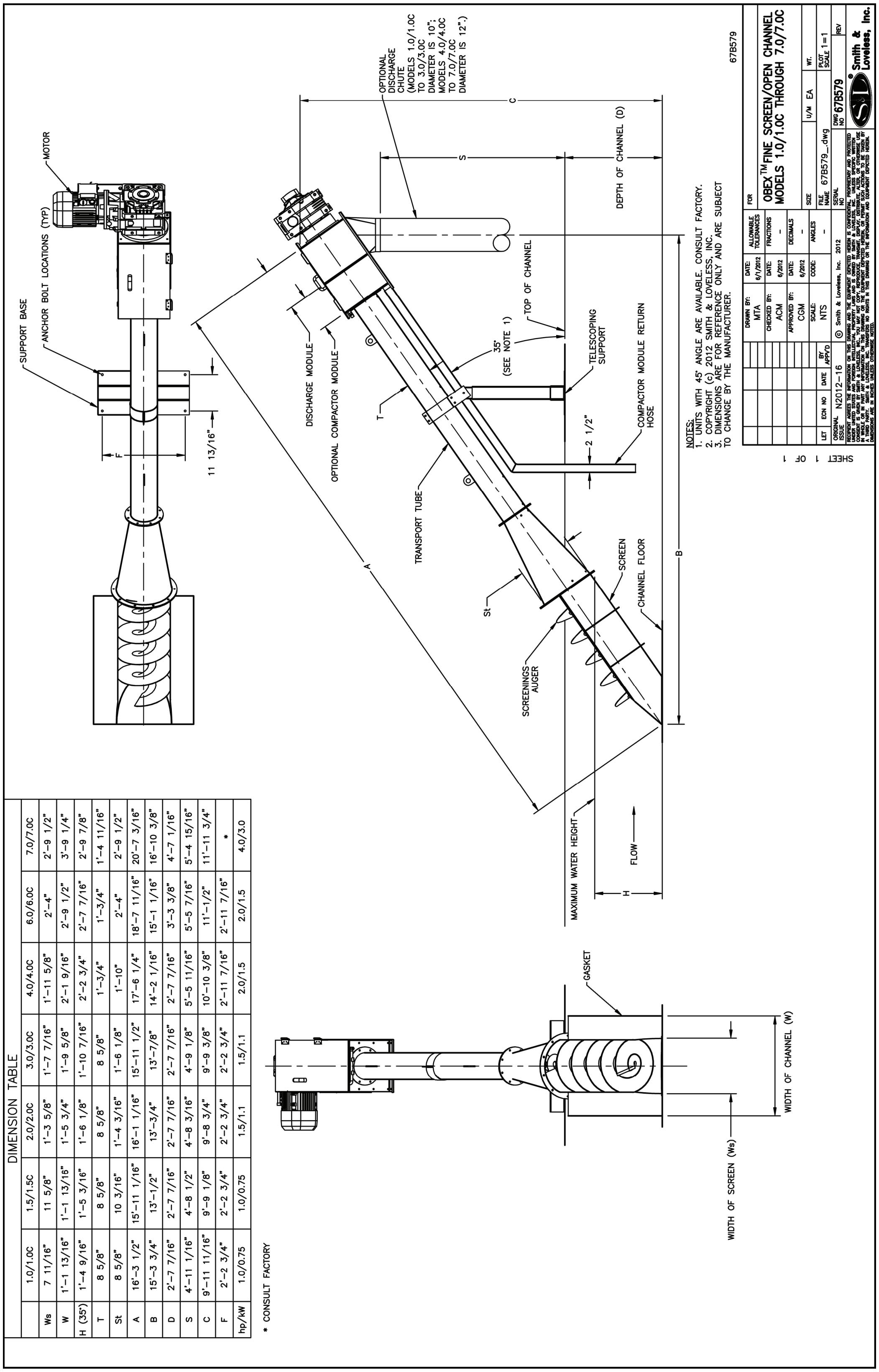

DIMENSION TABLE

	1.0/1.0C	1.5/1.5C	2.0/2.0C	3.0/3.0C	4.0/4.0C	6.0/6.0C	7.0/7.0C
Ws	7 11/16"	11 5/8"	1'-3 5/8"	1'-7 7/16"	1'-11 5/8"	2'-4"	2'-9 1/2"
W	1'-1 13/16"	1'-1 13/16"	1'-5 3/4"	1'-9 5/8"	2'-1 9/16"	2'-9 1/2"	3'-9 1/4"
H (35°)	1'-4 9/16"	1'-5 3/16"	1'-6 1/8"	1'-10 7/16"	2'-2 3/4"	2'-7 7/16"	2'-9 7/8"
T	8 5/8"	8 5/8"	8 5/8"	8 5/8"	1'-3/4"	1'-3/4"	1'-4 11/16"
St	8 5/8"	10 3/16"	1'-4 3/16"	1'-6 1/8"	1'-10"	2'-4"	2'-9 1/2"
A	16'-3 1/2"	15'-11 1/16"	16'-1 1/16"	15'-11 1/2"	17'-6 1/4"	18'-7 11/16"	20'-7 3/16"
B	15'-3 3/4"	13'-1/2"	13'-3/4"	13'-7/8"	14'-2 1/16"	15'-1 1/16"	16'-10 3/8"
D	2'-7 7/16"	2'-7 7/16"	2'-7 7/16"	2'-7 7/16"	2'-7 7/16"	3'-3 3/8"	4'-7 1/16"
S	4'-11 1/16"	4'-8 1/2"	4'-8 3/16"	4'-9 1/8"	5'-5 11/16"	5'-5 7/16"	5'-4 15/16"
C	9'-11 11/16"	9'-9 1/8"	9'-8 3/4"	9'-9 3/8"	10'-10 3/8"	11'-1/2"	11'-11 3/4"
F	2'-2 3/4"	2'-2 3/4"	2'-2 3/4"	2'-2 3/4"	2'-11 7/16"	2'-11 7/16"	*
hp/kW	1.0/0.75	1.0/0.75	1.5/1.1	1.5/1.1	2.0/1.5	2.0/1.5	4.0/3.0

* CONSULT FACTORY

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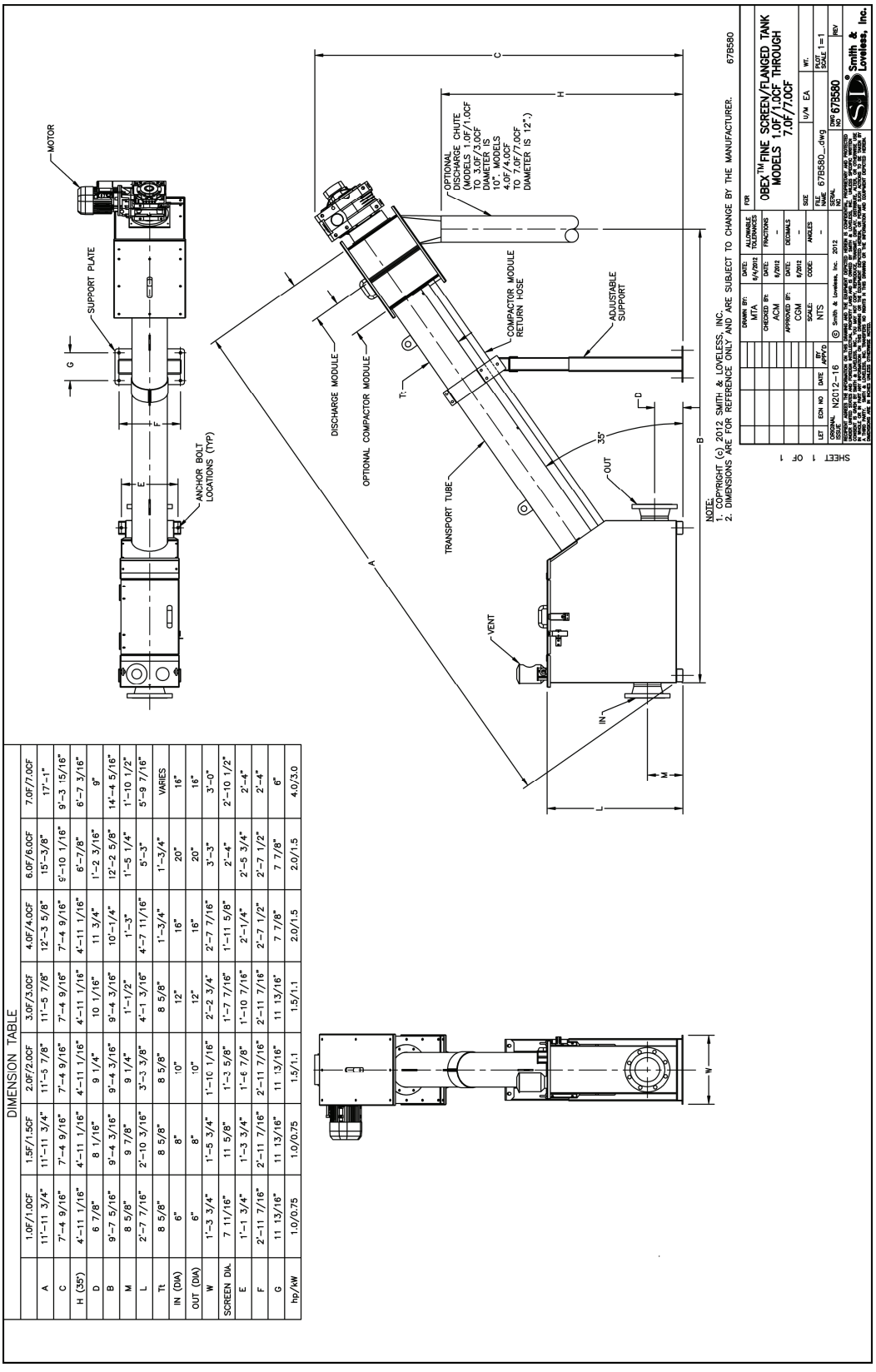
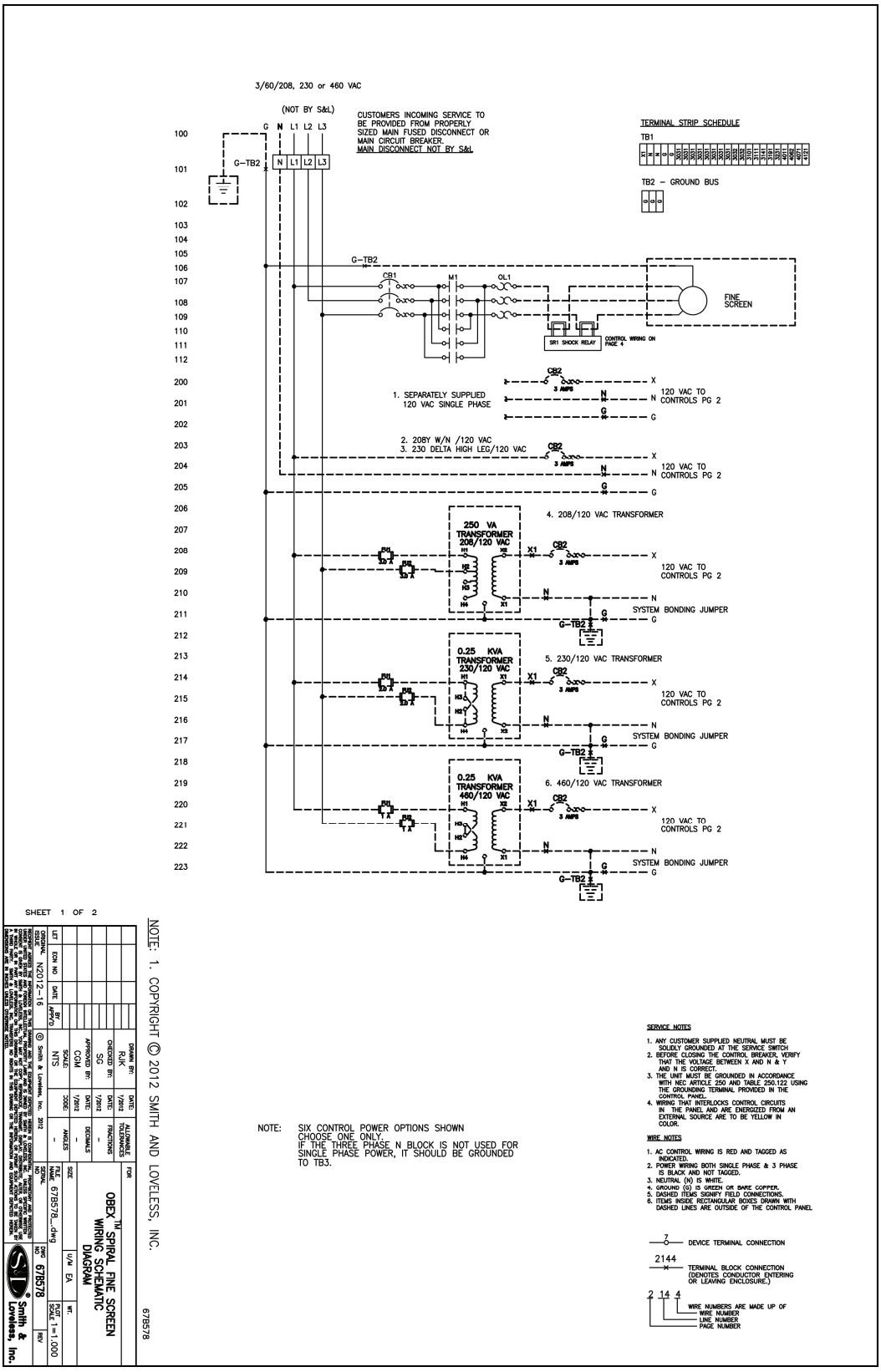
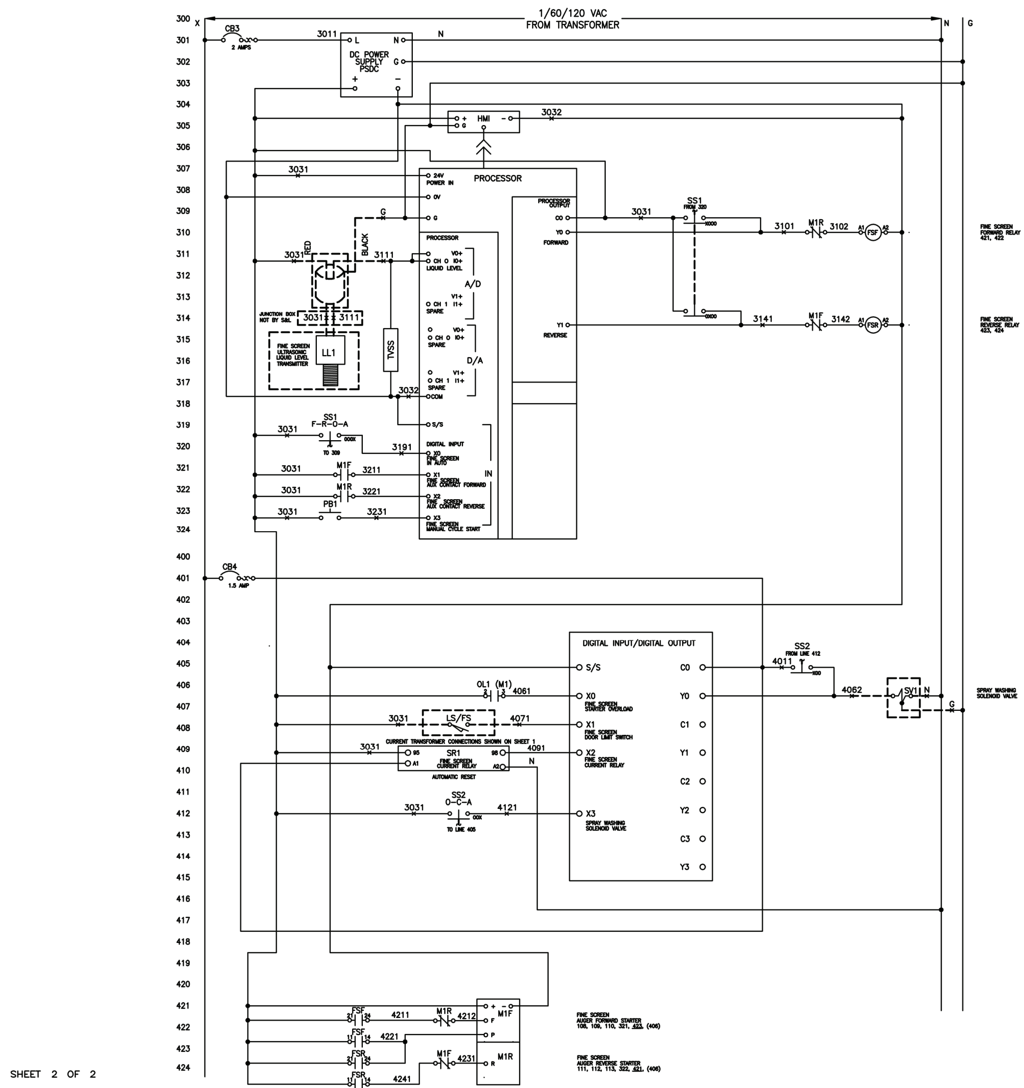


DIMENSION TABLE

	1.0F/1.0CF	1.5F/1.5CF	2.0F/2.0CF	3.0F/3.0CF	4.0F/4.0CF	6.0F/6.0CF	7.0F/7.0CF
A	11'-11 3/4"	11'-11 3/4"	11'-5 7/8"	11'-5 7/8"	12'-3 5/8"	15'-3/8"	17'-1"
C	7'-4 9/16"	7'-4 9/16"	7'-4 9/16"	7'-4 9/16"	7'-4 9/16"	9'-10 1/16"	9'-3 15/16"
H (35°)	4'-11 1/16"	4'-11 1/16"	4'-11 1/16"	4'-11 1/16"	4'-11 1/16"	6'-7/8"	6'-7 3/16"
D	6 7/8"	8 1/16"	9 1/4"	10 1/16"	11 3/4"	1'-2 3/16"	9"
B	9'-7 5/16"	9'-4 3/16"	9'-4 3/16"	9'-4 3/16"	10'-1/4"	12'-2 5/8"	14'-4 5/16"
M	8 5/8"	9 7/8"	9 1/4"	1'-1/2"	1'-3"	1'-5 1/4"	1'-10 1/2"
L	2'-7 7/16"	2'-10 3/16"	3'-3 3/8"	4'-1 3/16"	4'-7 11/16"	5'-3"	5'-9 7/16"
Tt	8 5/8"	8 5/8"	8 5/8"	8 5/8"	1'-3/4"	1'-3/4"	VARIES
IN (DIA)	6"	8"	10"	12"	16"	20"	16"
OUT (DIA)	6"	8"	10"	12"	16"	20"	16"
W	1'-3 3/4"	1'-5 3/4"	1'-10 1/16"	2'-2 3/4"	2'-7 7/16"	3'-3"	3'-0"
SCREEN DIA.	7 11/16"	11 5/8"	1'-3 5/8"	1'-7 7/16"	1'-11 5/8"	2'-4"	2'-10 1/2"
E	1'-1 3/4"	1'-3 3/4"	1'-6 7/8"	1'-10 7/16"	2'-1/4"	2'-5 3/4"	2'-4"
F	2'-11 7/16"	2'-11 7/16"	2'-11 7/16"	2'-11 7/16"	2'-7 1/2"	2'-7 1/2"	2'-4"
G	11 13/16"	11 13/16"	11 13/16"	11 13/16"	7 7/8"	7 7/8"	6"
hp/kW	1.0/0.75	1.0/0.75	1.5/1.1	1.5/1.1	2.0/1.5	2.0/1.5	4.0/3.0





LEGEND

CB1 POWER BREAKER; FINE SCREEN ROTOR
CB2 CIRCUIT BREKAER; MAIN CONTROLS
CB3 CIRCUIT BREAKER; CONTROL POWER
CB4 CIRCUIT BREAKER; OUTPUT CONTROL POWER
FSF FINE SCREEN FORWARD RELAY
FSR FINE SCREEN REVERSE RELAY
FU1 TRANSFORMER PRIMARY PROTECTION FUSE
FU2 TRANSFORMER PRIMARY PROTECTION FUSE
HMI HUMAN-MACHINE INTERFACE
LL1 LIQUID LEVEL TRANSDUCER
LS/FS FINE SCREEN INSPECTION HATCH LIMIT SWITCH
M1F REVERSING STARTER; FINE SCREEN (FORWARD)
M1R REVERSING STARTER; FINE SCREEN (REVERSE)
PB1 PUSH BUTTON; FINE SCREEN MANUAL CYCLE START
PSDC 24 VDC POWER SUPPLY
SR1 CURRENT RELAY: FINE SCREEN
SS1 SELECTOR SWITCH; FINE SCREEN F-R-O-A
SS2 SELECTOR SWITCH; SPRAY SOLENOID VALVE; OPEN-CLOSE-AUTO
SV1 SPRAY WASHING SOLENOID VALVE
TVSS TRANSIENT VOLTAGE SURGE SUPPRESSOR

OBEX™ SPIRAL FINE SCREEN WIRING SCHEMATIC DIAGRAM
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CHECKED BY: SG DATE: 7/2012
APPROVED BY: COM DATE: 7/2012
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