

## SECTION 11334 - SCREENINGS PRESS

### City of San Diego, CWP Guidelines

\$# \_\_\_\_\_

NTS: Screenings presses do not have a long operating history in the United States. A brief review of installations indicate a recurring problem with the discharge chute. Manufacturers recommend a tube or trough, angled upward, be attached to the discharge of the press to allow for additional compaction by using the weight of the screenings and additional drainage. However, apparently smaller plants (less than 5 mgd) do not produce enough screenings to force the compressed materials through the chute and into the storage bin before they plug due to too much compaction or drying out. At the smaller press locations contacted, compacted screenings were being removed manually or the chute (tube or trough) had been completely or partially removed.

With this in mind, the DESIGN CONSULTANT shall evaluate alternative methods for the discharge of the compacted screenings into the storage bins.

\_\_\_\_\_  
#S

#### **PART 1 -- GENERAL**

##### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing a screenings press complete with motor, supports, and accessories for the compaction of municipal sewage screenings.
- B. The WORK also requires that one manufacturer accept responsibility for furnishing the WORK as indicated but without altering or modifying the CONTRACTOR'S responsibilities under the Contract Documents.

##### 1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.
  - 1. Section 11000 Equipment General Provisions
  - [2. Section 11331 Reciprocating Rake Bar Screens]

##### 1.3 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1. AGMA 908-B89                      Geometry Factors for Determining the Pitting Resistance and Bending Strength of Spur, Helical, and Herringbone Gear Teeth
2. AGMA 2001-B88                    Fundamental Rating Factors and Calculation Methods for Involute Spur and Helical Gear Teeth
3. AGMA 6019-E89                    Gear Motors Using Spur, Helical, Herringbone, Straight Bevel, or Spiral Bevel Gears
4. AISI                                    Pocketbook of AISI Standard Steels
5. ASTM A36                            Specification for Structural Steel
6. ASTM A48                            Specification for Grey Iron Castings

1.4 SERVICES OF MANUFACTURER

- A. **Instruction of OWNER'S Personnel:** An authorized service representative shall instruct the OWNER'S personnel in the operation and maintenance of the equipment for at least two [4] hour sessions in the field on separate days. [The sessions shall overlap with the instruction for the bar screens as indicated in Section 11331.]

**PART 2 -- PRODUCTS**

2.1 GENERAL REQUIREMENTS

- A. The screenings press system shall be designed to compress and transport screenings from the bar screens to the [screenings bin]. The press shall be the shaftless, spiral type.

2.2 DESIGN AND OPERATING CRITERIA

\$# \_\_\_\_\_

NTS: The two columns of parameters below represent two sizes of press which are available. Delete unnecessary information.

#\$

- A. Each press shall meet the following requirements:

- |  |   |        |         |
|--|---|--------|---------|
| 1. Equipment identification                              | - | [   ]  | [   ]   |
| 2. Maximum cubic feet of screenings per hour, continuous | - | [ 60 ] | [ 125 ] |
| 3. Rotating speed, max, rpm -                            |   | [ 35 ] | [   ]   |
| 4. Volume reduction, min percent                         | - | [ 40 ] | [ 40 ]  |

- |     |                                      |   |           |         |
|-----|--------------------------------------|---|-----------|---------|
| 5.  | Obtained solids content, min percent | - | [ 50]     | [ 50 ]  |
| 6.  | Screw diameter, nominal, inches      | - | [ 8 ]     | [ 12 ]  |
| 7.  | Screw thickness, min, inches         | - | [ 1/2 ]   | [ 1/2 ] |
| 8.  | Inlet hopper opening length, feet    | - | [ ]       | [ ]     |
| 9.  | Motor horsepower, min.               | - | [ 1-1/2 ] | [ 2 ]   |
| 10. | Screw shaft diameter, min, inches    | - | [ 3 ]     | [ 4 ]   |

## 2.3 CONSTRUCTION

A. **Materials:** The screenings press shall be constructed of the following materials:

- |    |  |   |                                  |
|----|--|---|----------------------------------|
| 1. | Spiral screw and shaft                                   | - | Steel, ASTM A36                  |
| 2. | Trough, compression zone, drainage tray, and inlet chute | - | Stainless steel, AISI Type 304   |
| 3. | Equipment supports                                       | - | Steel or aluminum                |
| 4. | Fasteners  | - | Stainless steel, Type 304 or 316 |
| 5. | Gear box housing   | - | Cast iron, ASTM A48              |

B. **Spiral Screw:** The screw shall be a continuous, rotary spiral with a solid or hollow center shaft.

C. **Compression Zone:** Compression of screenings shall occur in a zone provided as an integral part of the screw press. From the compression zone, the screenings will be forced into the discharge pipe as indicated on the drawings. Liquid from the discharge pipe shall drain back to the screw area.

D. **Trough:** The horizontal spiral shall be supported by a U-shaped trough assembly, minimum of 1/8-inch thick, provided with water drain holes, countersunk from the outside. The trough shall be provided with a full length, removable, drainage tray with a [3-inch] NPT outlet.

E. **Inlet Chute:** An inlet chute for each press shall be provided to receive screenings from the screen. The chute shall be flange-bolted to the top of the press inlet. Chutes shall have removable access doors. Sidewalls shall be sloped at 60 degrees from the horizontal.

F. **Washing System:** A washing system shall be installed between the collecting trough and the screw housing. The washing system shall be designed to clean the trough and also prevent the accumulation of compacted material in the drain holes. It shall be controlled by a solenoid valve actuated by a timer in the control panel.

In addition, the compression zone shall be provided with a manual washwater connection as indicated.

- G. **Supports:** The equipment shall be supported and braced to the height indicated. All supports shall be fabricated of not less than 1/4-inch thick steel or aluminum of equivalent strength. Anchor bolts shall be provided.
- H. **Gear Motor:** The drive motor shall be [1200] rpm, 480 V, heavy duty [explosion proof] motor in accordance with Section 16040. The gear reducer shall be the helical type with Class II service factor in accordance with AGMA 6019-E89. The gear reducer shall be provided with anti-friction bearings designed for high overhung loads with all gears.
- I. **Gear Head:** The gear motor shall drive a gear head consisting of gears manufactured from case hardened steel and hardened to minimum 58 Rockwell C. Gear teeth shall be in accordance with AGMA 908-B89 and 2001-B88, Class II. A thrust bearing shall support the screw shaft. Gear head and bearing shall be mounted inside a totally enclosed, oil-filled gear box with a service factor of 2.0. Gear box shall be protected from contamination by two shaft seals.
- J. **Controls:** Screw press controls shall be as indicated. The screw press shall be capable of being operated either manually or automatically. [In the automatic mode, the press shall be interlocked with the bar screen [and conveyor] so that the press is started when any bar screen cycle begins, and the press continues to operate for [ ] minutes after the bar screen cycle is completed.] High torque from a jammed screw shall stop the press and activate an alarm. The NEMA rating of local control panels shall be in accordance with the area designations of Section 16050.
- [K. **Discharge Chute:** The screenings shall discharge into a [tube or trough] sized to match the equipment provided. It shall be angled upward to allow drainage back into the screw area. Length of the discharge [tube or trough] shall be as indicated. It shall be provided with hinged sections to allow easy access to the entire chute for manual removal of screenings if needed.]

## 2.4 SPARE PARTS

- A. The WORK includes the following spare parts:
  - 1. [2] bearing assemblies
  - 2. [2] shaft seal sets

## 2.5 MANUFACTURERS

- A. Products of the type indicated shall be manufactured by one of the following (or equal):
  - 1. Infilco Degremont, Model [200] [300]
  - 2. Jones & Attwood, Model [200] [300]

## PART 3 -- EXECUTION

3.1 **General:** Products and equipment shall be installed in accordance with the manufacturer's installation instructions.

\*\* END OF SECTION \*\*