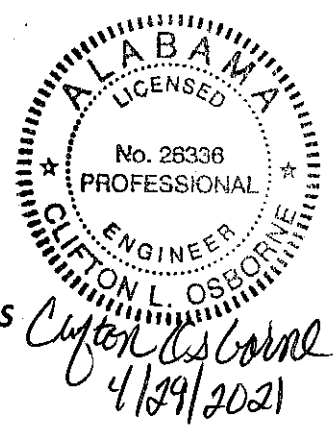


**GENERAL TERMS AND CONDITIONS**  
**PLEASE READ AND SIGN**

**REFERENCE: SELF-CLEANING CHANNEL SCREEN WITH WASH PRESS**



- 1) Sealed bids will be received at the Main Office of the Water Works and Sewer Board located at 931 Noble Street, Anniston, Alabama 36202-2268 until Tuesday, May 25, 2021 at 10:00 am local time and then at said place publicly opened and read aloud.
- 2) Each bid must be submitted in a sealed envelope addressed to the Water Works and Sewer Board of the City of Anniston, 931 Noble Street, P.O. Box 2268, Anniston, Alabama 36202-2268. The envelope shall be marked "SEALED BID, SELF-CLEANING CHANNEL SCREEN WITH WASH PRESS, ATTENTION: CLIFTON L. OSBORNE, TO BE OPENED 10:00 am local time Tuesday, May 25, 2021". Anyone who has questions regarding this solicitation should contact Clifton L. Osborne of the Board Engineering Department at (256) 241-5000.
- 3) The attached specifications are being provided to potential bidders as guidelines which describe the type and quality of equipment, supply, and/or service the Water Works and Sewer Board is seeking to purchase. The bidder must list exceptions to each specification item for consideration. Failure to comply with this provision could be cause for rejection of the bid.
- 4) Whenever the words equal, equivalent or alternate appear in the specifications, they shall be interpreted to mean an item or material or equipment similar to that named, and which is suited to the same use as that named and which is approved by the Board Engineering Department.
- 5) It will be assumed that all bids are based upon the specifications unless the bidder stipulates to the contrary. Exceptions from the specifications may be considered if they do not alter the performance for the intended purpose.
- 6) If it becomes necessary to revise any part of this bid, a written addendum will be provided on the Board website at [awwsb.org](http://awwsb.org). The Water Works and Sewer Board of the City of Anniston is not bound by any oral representations, clarifications, or clarification made in the written specifications by Board employees unless such clarification or change is provided to bidders at [awwsb.org](http://awwsb.org).
- 7) The bidder shall guarantee the units submitted for their bid shall be new and of the latest and most improved model of the current production, and shall be of first quality as to workmanship and materials used in said units. All modifications shall be made at the factory. Equipment shall not have been operated for any purpose other than routine operational testing. Demonstrators will not be accepted.
- 8) All bids shall be typewritten or in ink on the form(s) prepared by the Board. Bids prepared in pencil will not be accepted. All proposals must be signed by officials of the corporation or company duly authorized to sign bids.
- 9) All corrections or erasures shall be initialed and dated by the person authorized to sign bids.

- 10) Prices quoted shall be delivered prices, exclusive of all federal or state excise, sales, and manufacturer's taxes. The Board will assume no transportation or handling charges other than specified in this bid. The Board is tax exempt by law - Article 9 of Code of Alabama (1975) - Title 11-50-322.
- 11) Prices quoted to the Water Works and Sewer Board shall remain firm for a minimum of 60 days from the date of opening of the bid.
- 12) The delivery schedule shall be entered in the appropriate space on the proposal form. If all items cannot be delivered on the same schedule, please note variances.
- 13) The bidder shall assume ultimate responsibility for guaranty of all components of the equipment. All items furnished in accordance with these specifications shall be covered by the manufacturer's and/or supplier's standard warranty or guarantee on new equipment. The minimum warranty period on new equipment must be one year unless otherwise stated.
- 14) The Board reserves the right to request a demonstration of any and all items bid before making the award.
- 15) The Board reserves the right to accept or reject any or all items covered in the request, or any portion(s) thereof, waive formalities or informalities, re-advertise and/or take such other steps decreed necessary and in the best interest of the Board. The Board further reserves the right to reject any and all bids, and to waive any informality in any bid.
- 16) All bids will be awarded to the lowest responsive and responsible bidder. This determination may involve all or some of the following factors: price, conformity to specifications, terms of payment, financial ability to meet the contract, previous performance, facilities and equipment, availability of repair parts, experience, delivery promise, compatibility as required, other costs, and other objective and accountable factors which are reasonable.
- 17) All items bid will be inspected by a representative of the Water Works and Sewer Board upon delivery to ascertain compliance with the specifications. Items not in compliance with the specifications shall be rejected until proper remedial measures are taken to assure compliance. Payment to the successful bidder will be made in accordance with standard payment procedures of the Board.
- 18) Any provisions made in the Invitation for Bids supersedes any provisions outlined here in the General Terms and Conditions
- 19) A bid bond or cashier check in the amount of 5% of bid amount shall be submitted with your proposal.
- 20) Bidders may be disqualified, and rejection of proposals may be recommended for any of (but not limited to) the following causes:
  - Failure to use the bid forms furnished by the Board
  - Lack of signature by an authorized representative on the bid form

- Failure to properly complete the bid form and vendor compliance
- Unauthorized alteration of the bid form

21) Bidders will submit two (2) names, addresses, telephone numbers of current users of the equipment proposed in the bid

_____	_____
_____	_____
_____	_____
_____	_____

I HEREBY CERTIFY THAT I HAVE READ AND UNDERSTAND THESE INSTRUCTIONS

\_\_\_\_\_  
SIGNATURE OF BIDDER

\_\_\_\_\_  
NAME OF BIDDER (typed or printed)

PROPOSAL FORM

REFERENCE: *SELF-CLEANING CHANNEL SCREEN WITH WASH PRESS*

THE WATER WORKS AND SEWER BOARD OF THE CITY OF ANNISTON  
931 NOBLE STREET  
P.O. BOX 2268  
ANNISTON, AL 36202-2268

OPENING DATE: May 25, 2021, at 10:00 am

I HEREBY SUBMIT THE FOLLOWING FOR CONSIDERATION IN ACCORDANCE WITH ALL TERMS AND SPECIFICATIONS OF THE ABOVE REFERENCED INVITATION FOR BID:

MAKE: \_\_\_\_\_

MODEL: \_\_\_\_\_

DELIVERY SCHEDULE: \_\_\_\_\_

TOTAL PRICE: \_\_\_\_\_ \*

(\*TOTAL PRICE INCLUDES SELF-CLEANING CHANNEL SCREEN WITH WASH PRESS PLUS ALL DESIGN, LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO INSTALL)

DELIVERY SCHEDULE SHALL BE NUMBER OF DAYS FROM DATE OF ORDER

THIS BID MUST BE RETURNED ALONG WITH SETS OF DESCRIPTIVE LITERATURE WITH MANUFACTURER'S SPECIFICATIONS

SUBMITTED BY: \_\_\_\_\_

NAME : \_\_\_\_\_

TITLE : \_\_\_\_\_

CORPORATION : \_\_\_\_\_

ADDRESS : \_\_\_\_\_

TELEPHONE NUMBER : \_\_\_\_\_

DATE : \_\_\_\_\_

SIGNATURE : \_\_\_\_\_

**SECTION 11 33 00 – SELF-CLEANING ELEMENT FILTER MEDIA, CHANNEL SCREEN**

**PART 1 - GENERAL**

**1.1 REQUIREMENTS**

A. The Bidder shall supply all design, labor, equipment, and materials necessary to furnish and install one (1) continuous belt flow through screen, 75-degree channel screen, or equivalent, of such width (4 feet minimum) and discharge height as required for the channel and conveyor layout shown on the attached drawings. Screen spacing shall be 6mm. The design shall be based on the Model STR-53-127-6L mechanical filter screen unit, as manufactured by Hydro-Dyne Engineering. The mechanical screen unit will consist of a frame assembly, filter belt/screen assembly, drive assembly, rotating brush assembly, spray assembly and discharge chute.

B. The automatic bar/filter screen will be designed to positively clean and remove debris up to 7 inches in diameter from the influent stream and elements designed to retain and elevate debris to the discharge point of the unit where the rotating brush assembly and spray system cleans the elements.

C. The unit shall be suitable for installation and operation in the channel depicted in the attached drawings. The angle of inclination shall be 75 degrees from horizontal. The total discharge height of the screen, as measured from its base to the screenings discharge point, shall be as required to deposit debris onto the conveyor shown on the attached drawings.

D. The Bidder should become familiar with existing configuration and conditions at the installation site at the headworks building at Choccolocco Creek WWTP, 35 Friendship Road, Oxford, AL 36203 to ensure that the equipment proposed will conform, adapt, and fit in the existing proposed space. The Bidder is responsible for assessing all existing site conditions including verifying channel dimensions in order to prepare the bid.

E. The attached record drawings are including in the bid package in order to help bidders with evaluation of existing site conditions and were not developed for design of this screen procurement. Design of the screen installation is the responsibility of the Bidder. Notes have been placed IN RED on the record drawings to merely convey the desire of the Owner.

E. The Choccolocco Creek WWTP has an average daily flowrate of 10.7 MGD with peaks of approximately 36 MGD. Treatment processes include screens, cyclonic grit removal, 4 primary clarifiers, 4 aeration basins, 6 secondary clarifiers, and UV disinfection. TSS averages 112 mg/L and peaks periodically above 300 mg/L and rarely above 500mg/L.

**1.2 DESIGN REQUIREMENTS**

A. System Description

1. The screen will have a continuous stainless steel belt that automatically rotates within the internal guide system of the static frame.
2. The screen herein specified will be of the straight through type that will present a clean screening grid to the influent flow at all times.
3. The solids will collect as a mat on the front face of the continuous belt. The belt will intermittently rotate and elevate the solids to the discharge point. Larger objects will be picked up by a series of hooks.
4. The solids will be automatically removed at the top of the screen into an internal hopper and be fed to the screening handling system.
5. The continuous belt will be directly driven by drive sprockets that shall support and rotate the grid assembly.
6. The screen will be totally enclosed and have access covers that will be lightweight and easily removable for maintenance.
7. The Washing Compactor will sit under the discharge point of the fine screens.
8. The Washing Compactor will be adequately sized to handle all the screenings and wash water that will be generated by the screen at peak flow. The system will be required to wash the screenings to reduce the organic content and compact the remaining solids into a dry plug.
9. The Washing Compactor will generally comprise of a screw auger rotating within the washing and drainage trough, a wash water system, a compaction zone and an outlet chute arrangement.
10. All stainless steel (including frame, grid, and drive components) mentioned below as stainless steel shall be T304 stainless steel. All hardware shall be T316 stainless steel.

B. System Performance – The fine screening system will be designed to meet the following design parameters:

- |     |  |   |
|-----|--|---|
| 1.  | Number of screens                            | 1   |
| 2.  | Peak flow per screen                         | 21.0 MGD  |
| 3.  | Velocity through the grid                    | 6 ft/s  |
| 4.  | Screen grid opening                          | 6 mm  |
| 5.  | Head loss at peak flow                       | 9" @ 30% blinding and 42" upstream water level. |
| 6.  | Structural design differential of frame/grid | 48" minimum @ 100% blinding                     |
| 7.  | Drive design differential (operating)        | 48 inches minimum                               |
| 8.  | Screen grid supporting drive sprockets       | 3 minimum – all stainless steel                 |
| 9.  | Channel width                                | 60 inches                                       |
| 10. | Channel height                               | 66 inches                                       |
| 11. | Number of Washing Compactors                 | 1   |

12.	Diameter of screw	8 inches
13.	Minimum diameter of shaft	2.875 inches
14.	Compactor discharge height above grade	69.5 inches
15.	Wash water requirements	26 GPM @ 40 PSI per system

## PART 2 - PRODUCTS

### 2.1 REQUIREMENTS

- A. If submitted equipment requires arrangement differing from that specified, prepare and submit for review complete structural, mechanical, and electrical drawings and equipment lists showing all necessary changes and embodying all special features of equipment proposed. Any changes are at no additional compensation and the Manufacturer will be responsible for all engineering costs of redesign by the Engineer, if necessary.

### 2.2 CONTINUOUS BELT THROUGH FLOW SCREEN

#### A. Laced Link Grid - The Continuous Screening Belt

1. The screenings belt will consist of heavy duty stainless steel laced links connected in parallel and separated by Delrin spacers to maintain specified opening. Each laced link hook element shall be fabricated from 14 gauge (minimum) stainless steel. Each straight element shall be fabricated from 16 gauge (minimum) stainless steel. All elements shall be a minimum of 1 inch wide forming a slotted opening of the specified width and minimum 1 inch deep in the direction of flow. Hooks on elements shall form horizontal lifting trays or shelves for removing large solids and rags every 8 inches.
2. Links, hooks and screening lifting members must be manufactured out of stainless steel. Plastic is not acceptable.
3. The stainless steel laced links will be connected by heavy duty stainless steel axles every 8 inches to form a continuous belt that will rotate within the frame's guide system. Axle diameter shall be a minimum 5/8 inch. The axle design will allow the row of laced links to pivot. The links shall support the screening grid and bear tension loads across the entire width and length of the screen belt.
4. The axles will be extended to fix a UHMWPE guide link to the side of each row of laced link elements. These guides will interlock to create a continuous guide link system that will slide within the frame.
5. Guide links shall be precision machined from solid virgin UHMWPE. Injection molded links are not acceptable.
6. The heavy duty guide links will be minimum 2 inches thick to protect against undue wear from grit and will be specially machined to form a closure seal between the rotating belt and the static frame.

7. The seal shall be continuous from grade level through the water flow forming an uninterrupted closure between the traveling screen grid and the stationary frame. The seal shall be fixed to the screen frame and be adjustable so that it will remain in contact with the rotating screen belt at all times.
8. Guide systems that use rollers, stainless or hardened steel chains will not be acceptable.
9. Grid sealing systems that use neoprene seals or stainless steel hinges will not be acceptable.
10. Grid to frame sealing systems that use adjustable UHMWPE strips attached to the frame will not be acceptable.
11. The bottom of the grid shall be sealed with a replaceable front lower seal brush with a stainless steel holder and polypropylene bristles.
12. Intermittent stainless steel laced link elements that form sharp hooks will be regularly placed along the face of each row of the grid to effectively remove larger particles.

B. Frame

1. The continuous belt will rotate within a heavy duty stainless steel static support frame that shall stand at a 75 degree angle in the channel.
2. The screen will not be fixed within the channel to allow the entire machine, including screen grid, to pivot/lift out of the channel for repair or bypass. All routine maintenance will be achieved without removing the screen from the channel and shall be performed at grade level.
3. The guide link system will travel around a guide wear track that is integral to the support frame.
4. The design will ensure that the support frame meshes with the closure seal on each guide link to prevent passage of screening material and grit particles.
5. All components of the lower wear tracks shall be bolt in, field replaceable and manufactured from stainless steel.
6. The frame shall accommodate stainless steel protective covers designed to prevent leakage and contain spray wash. All access covers for maintenance will be lightweight and easily removable. Screens with covers requiring neoprene, rubber or plastic seals are not acceptable.
7. If required, the screen manufacturer will supply the stainless steel angled filler plates with neoprene seals to connect from the upstream corners of the support frame to the channel walls.



C. Offloading of Screenings

1. A stainless-steel spray wash header will be located in the head space of the screen to offload the screenings from the continuous belt.
2. The spray bar will incorporate brass nozzles at 2-inch spaces that can easily be replaced or removed for cleaning.
3. The spray bar will be positioned behind the rotating belt and will backwash the solids into a discharge hopper manufactured from stainless steel. The wash water will be used to continuously flush the screenings from this hopper into the extended sluice or directly into the Washing Compactor.
4. The addition of a mechanically rotating brush system to aid offloading will not be acceptable.

D. Screen Drive Mechanism

1. Each screen will have a maximum 1 hp, continuous duty electric motor suitable for a 460/3/60 supply and rated for a Class 1 Div. 2 environment. As a minimum, the motor will be TEFC with an IP55 enclosure rating and will conform to NEMA MG-1 requirements. The motor will be located outside of the screen covers and above the top of the channel.
2. The gear reducer shall be directly coupled to a heavy duty shaft machined from stainless steel.
3. The continuous belt will be supported and rotated around heavy duty stainless steel sprockets located on the drive shaft in the head space of the screen.
4. These sprockets will have lugs that transmit torque directly from the gear reducer to notches on the underside of the UHMWPE guide links. Driving forces shall be transmitted to areas located behind the screen's grid to prevent solids from contacting drive surfaces.
5. Chain driven systems or screens with wheels submerged in the wastewater are not acceptable.
6. Drive systems that use an external track and pinion to drive or push the band against grid weight supporting wear tracks will not be acceptable. Drive shall lift, and be capable of bearing, the full weight of the grid.

2.3 SPARE PARTS

- A. The manufacturer will supply the following spare parts, per screen supplied, with the equipment:
1. Ten (10) hook links and elements spacers

2. Two (2) grid axles
3. Two (2) guide links

## 2.4 ACCESSORIES

A. The manufacturer will supply the following accessories, with the equipment:

1. Three (3) 1" NEMA 4X brass body solenoid valve
2. Two (2) 1.5" wash water strainer
3. One (1) wash water pressure gauge

## 2.5 ELECTRICAL CONTROLS AND ANCILLARY COMPONENTS

A. General Information - The manufacturer will supply one UL listed main control panel and one local control station that shall automatically control the equipment offered in this section.

B. The Main Control Panel – A 480 Volt primary U.L. listed and labeled control panel in a NEMA 4X 304 stainless steel enclosure suitable for wall mounting and outdoor installation. The control panel shall consist of the following components for the screening system:

1. Programmable relay to perform necessary logic functions and monitor equipment mounted electrical devices.
2. Emergency Stop Push Button.
3. Hand-Off-Auto selector switch for screen operation.
4. Hand-Off-Auto selector switch for compactor operation.
5. Hand-Off-Auto selector switch for spray wash operation.
6. Control power and run indicating lights.
7. Motor current monitor and hour meter.
8. Fault indicating light and system reset pushbutton.
9. Run and fault auxiliary output contacts for customer use.
10. A step-down control transformer (500 VA minimum), motor starter and main lockout/fused disconnect will be provided.
11. Programmable control relay with minimum of 5 cycle timers
12. Hour run meter
13. Fuses and breakers
14. Motor overload sensor
15. Screen run/fault lights
16. Washing Compactor run/fault lights
17. Reset pushbutton
18. Current monitors

C. Ancillary Control Components

1. Float Switch - A mercury type float switch of chemical resistant polypropylene construction will be provided with a 316 SST pipe mounting bracket, float mounting clamp and expansion anchors. The mounting bracket requires a suitable length of 1" nominal pipe to suspend the float in the channel, to be supplied by others. The float will have a 20-foot long integral cable.

2. Ultrasonic differential level system consisting of the following for new and existing screen:
  - a. NEMA 4X enclosure with viewing window
  - b. Milltronics Hydro-Ranger 200 controller with real-time 4-20 mA output
  - c. Two (2) NEMA 4X/7 transducers
3. Local Control Station – NEMA 7 - Each local station shall consist of the following components:
  - a. NEMA 7 enclosure
  - b. Hand/Off/Auto switch for each motor
  - c. Emergency stop

## 2.6 SEQUENCE OF OPERATION

### A. Hand Operation

1. When the Hand mode is selected, the screen will run continuously. Placing the selector switch in the Off position will stop the screen.

### B. Automatic Operation

1. When the Auto mode is selected, the unit will run via the water level sensor, repeat cycle timer, or thermostat.
2. After the water level has lowered, the unit will continue to run for the length of time set on the off-delay timer, typically set at 30 seconds.
3. The Spray wash system and brush are also activated whenever the screen is running.

### C. Emergency Stop

1. The unit can be deactivated at any time by pressing either the control panel or unit mounted Emergency Stop push buttons.

### D. Fault Conditions

1. Motor overload or high motor current will stop the drive motor and illuminate the fault light

## 2.7 SURFACE PREPARATION AND PAINTING

- A. The majority of stainless steel materials, including hardware, flanges and piping shall be pickled by means of a four tank system that is in accordance with ASTMs A380 and A967. This process is for quality control, removal of heat affected discoloration, surface treatment for corrosive environments and to provide a uniform finish to the stainless steel surfaces. Stainless steel components must be fully submerged in the tanks for complete coverage. Electro-chemical wanding is acceptable on weld finishes that cannot be submerged due to size. Sandblasting, pickling pastes and abrasive cleaners will not be accepted as forms of metal finishing. The drive and grit components do not require pickling.

1. Detergent bath for the removal of soils, greases, oils and dirt
  2. Rinsing process to remove detergent and residual soils
  3. Tank 3 – Two part acid solution for the removal of tightly adhere oxide films
  4. Tank 4 – Final rinse process to remove all residual acid
- B. All ferrous surfaces (except stainless steel) shall be coated with a pre-primer, primer, and an exterior top coating, or fusion bonded polyester coating suitable for humid/wet environments for superior corrosion protection.
- C. Motor(s) and gearbox(s) shall be surface prepared to withstand humid/wet environments for superior corrosion protection.

### PART 3 - EXECUTION

#### 3.1 WARRANTY

- A. The equipment manufacturer shall provide unconditional warranty on the self-cleaning channel screen.
- B. The manufacturer's warranty period shall be for 12 months after the final acceptance of the equipment by the Owner.
- C. The equipment manufacturer shall guarantee that the equipment furnished is suitable for the purpose intended and free from defects of design, material and workmanship. In the event the equipment fails to perform as specified, the equipment manufacture shall promptly repair or replace the defective equipment without any cost to the Owner.

#### 3.2 FACTORY TESTING

- A. The screening system and all components shall be factory assembled and tested for a minimum of 24 hours prior to shipment. The equipment shall be shipped fully assembled and shall be capable of being set in place and field erected by the Contractor with minimal field assembly.
- B. During the factory test period the screening system shall be adjusted as required assuring proper operation on completion of the field installation. The Manufacturer shall supply a certification of the completion of the factory testing of the assembled screening system and appurtenances and shall certify as to the equipment being in satisfactory operating condition at time of shipment. The Engineer and/or Owner may, at their own option and expense, witness the factory test.

#### 3.3 DELIVERY AND STORAGE

- A. The screening system shall be appropriately crated and delivered to protect against damage during shipment.

- B. An authorized representative of the Contractor shall inspect the screens on delivery to the jobsite and shall report any damage or missing components to the Manufacturer and the Engineer within 72 hours of receipt of the shipment.

#### 3.4 INSTALLATION

- A. Anchor Bolts - Anchors shall be 304 stainless steel. The anchorage of the screen shall be designed around the HILTI HY 150 Epoxy Anchoring system.
- B. The installation of the equipment shall be as indicated on the drawings and in strict accordance with the Manufacturer's instructions and recommendations.
- C. The Bidder shall supply all design, labor, equipment, and materials necessary to furnish and install the screen in the space shown on the attached drawings.
- D. The Bidder shall supply all design, labor, equipment, and materials necessary to install electrical wiring and termination to the equipment. An existing motor control panel schedule is shown in the attached drawings.
- E. The Owner shall supply and install the necessary water supply to the washing compactor.

#### 3.5 FIELD TESTS, ADJUSTMENTS AND COMMISSIONING

- A. The equipment shall be shipped completely factory assembled. Contractor shall verify all access dimensions, channel dimensions, and any interior building dimensions to ensure equipment may be installed as a factory assembled units.
- B. The manufacturer will provide a qualified service representative following installation for a total of one (1) trip for two (2) days for inspection of installation, equipment startup and operator training for all of the equipment provided.
- C. After completion of the installation, the equipment shall be inspected and certified by an authorized representative of the Manufacturer as being in compliance with the Manufacturer's recommendations and requirements. At such time as the Manufacturer has deemed the installation to be acceptable, the Manufacturer's authorized service representative shall make any required adjustments and shall start the equipment to assure proper operation.
- D. The Manufacturer's authorized representative shall provide instruction to the plant personnel as to the operation and maintenance of the equipment including commissioning, shut down, on-line operations, lubrication and preventative maintenance.
- E. The Contractor shall include in his bid, the cost of the above referenced authorized service representative for a minimum of one (1) trip totaling two (2) eight hour days onsite to complete the certifications and training described in this specification section.

#### 3.6 OPERATION AND MAINTENANCE MANUAL

- A. In addition to the normal Installation, Operation, and Maintenance manuals required by the contract, a spare manual will be shipped with the unit in order to allow for proper operation of the equipment prior to the release of all final Installation, Operation, and Maintenance manuals to the end user.

**END OF SECTION 11 33 00**

**SECTION 11 33 01 – WASHING COMPACTOR**

PART 1 - GENERAL

1.1 REQUIREMENTS

- A. Supply all design, labor, equipment, and materials necessary to furnish and install a complete and operational screw wash press system including, but not limited to, wash press unit, supports, drive assembly and controls.
- B. The manufacturer shall be responsible for visiting the site to evaluate the dimensional, electrical, utilities and other requirements for installation of the equipment.

1.2 SUBMITTALS

- A. Product Data:
  - 1. Rated capacities
  - 2. Operation criteria and characteristics
  - 3. Furnished specialties
  - 4. Utility requirements
  - 5. Accessories
  - 6. Materials
  - 7. Equipment weights
  - 8. Dimensions of individual components
  - 9. Motor Data
  - 10. Finishes
  - 11. Details of construction
- B. Shop drawings showing the following shall be submitted and approved prior to installation.
  - 1. Location requirements
  - 2. Installation requirements
  - 3. Elevations
  - 4. Dimensions of equipment
  - 5. Utility requirements and connection
  - 6. Power and control wiring diagrams
- C. Product test reports based on evaluations performed by the manufacturer shall indicate compliance with these contract documents.
- D. The wash press shall be a Hydro-Dyne Engineering Model WCP8-52-5S or equivalent.
  - 1. Equivalent manufacturer shall have a minimum of five (5) years of design and manufacturing experience with screw wash press units, with not less than one hundred (100) screw wash press units sold and installed in similar applications. Equivalent manufacturer shall include U.S. installation list with the equipment submittal.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products by one of the following manufacturers:
  - 1. Screw Wash Press:
    - a. Hydro-Dyne Engineering Model WCP8-52-5S
    - b. Approved Equivalent

### 2.2 WASHING COMPACTOR

- A. Press unit shall consist of a spiral, trough, support legs, wash zone, trough flush spray, press zone, drive system and controls.
- B. The main body will be the washing trough that will receive screenings and wash water directly from the discharge point of the screen.
- C. The washing trough will house the screw auger and provide a dedicated section to reduce organic content.
- D. The stainless steel drainage section will be slots with 5mm openings and be adjustable to maintain auger alignment. This drainage section shall be removable and easily replaceable in the field with no special tools. The flights of the screw may be fitted with a stiff nylon brush that will maintain contact with the drainage section, preventing blockages. The replaceable brushes will be supplied in pre-coiled lengths with stainless steel removable clamps.
- E. The steel screw auger will sit in the washing trough. Washing compactors with shaftless screws are not acceptable as a shaft is required to support the flight and provide necessary torque and compaction.
- F. The auger will be a varied pitch screw aligned at the compaction end by steel wear and anti-rotation bars designed to prevent the compacted screening from spinning within the compaction zone.
- G. The screw will rotate allowing wash water and free organic/fecal material finer than trough openings to escape and return to the plant flow. The wash water will flush the separated organic material through the drainage section in solution or as small particles.
- H. The compacted screenings will be pushed through the compaction zone and pass through an elbow into an outlet chute. The outlet chute will provide for screening expansion and will elevate the dewatered screenings to discharge by gravity into a waste receptacle (by others).



- I. Each Washing Compactor will have a minimum 5 hp, inverter duty electric motor suitable for a 460/3/60 supply and rated for a Class 1 Div. 2 environment. As a minimum, the motor will be TEFC with an IP55 enclosure rating and will conform to NEMA MG-1 requirements.
- J. The wash press unit shall be designed to receive and wash screenings, then reduce the volume and water content by means of a pressing action. Solids to be washed shall be gravity fed to an inlet trough and conveyed by the spiral towards the washing section where water is injected, back flowing the solids while the spiral alternately stops and restarts to repeatedly convey the screenings through the wash section. The wash water is then turned off and the screenings are discharged and dewatered by the backpressure generate in the discharge pipe.
- K. The press unit shall be inclined at 0 degrees from horizontal.
- L. The compactor discharge height shall be 69.5 inches above grade.
- M. The press shall have an inlet capacity of 20 cubic feet per hour, handling wet screenings with an approximate dry weight of not less than 8% solids.

## 2.3 SPIRAL

- A. The shafted spiral shall be constructed of high strength carbon steel and prime coated for protection during shipment. The spiral shall be 10.00 inches OD, shall have 0.63-inch thick flights and shall have a replaceable 0.25-inch wide nylon brush with type 304 stainless steel casing attached with bolted clips to the spiral OD throughout the inlet area to scour the perforated sheet. The brush OD shall be 10.50 inches.

## B. TROUGH

1. The press body shall consist of an inner trough, an outer trough and an inlet area. The press body shall be constructed of type 304L stainless steel for all welded components and type 304 stainless steel for all non-welded covers. Press bodies must be fabricated with "L" grade stainless steels, which shall minimize corrosion in the weld heat affected zone.
2. INNER TROUGH. The press inner trough shall be constructed of 0.25-inch thick stainless steel in the washing and pressing barrel with 0.19-inch diameter holes chamfered to 0.38-inch diameter on the outside. The unit shall have six (6) 0.25-inch thick by 1.50-inch wide replaceable wear bars with 400 Brinell hardness.
3. OUTER TROUGH. The outer trough shall be constructed from 10 gauge (0.13) thick type 304L stainless steel, shall receive free liquid from the washed solids and shall direct the flow to a 4.00-inch OD drain tube.

## C. INLET AREA

1. An inlet areas 13.75 inches wide by 63 inches in length, shall be constructed of 12 gauge (0.11 inch) thick stainless steel with 0.19-inch diameter perforations and shall receive incoming materials.

D. WASH ZONE SPRAY

1. The wash zone shall include a spray wash system to wash organic residue from the screenings. The wash zone spray shall consist of one (1) spray header, four (4) water injection points at 9 o'clock, 11 o'clock, 1 o'clock and 3 o'clock , one (1) ball valve and one (1) solenoid valve. The solenoid valve body shall be of brass construction with Buna seals. The ball valve shall be of brass construction with a stainless steel ball. The system shall have an output of 10 GPM at 60 psi. The spray connection shall be ½ inch NPT.

E. OUTER TROUGH FLUSH SPRAY

1. The press shall include a single point spray wash system to flush organic residue trapped in the outer trough. The flushing spray shall consist of one (1) spray header, one (1) ball valve and one (1) solenoid valve. The solenoid valve body shall be of brass construction with Buna seals. The ball valve shall be of brass construction with a stainless steel ball. The system shall have an output of 15 GPM at 60 psi. The spray connection shall be ½ inch NPT.

F. DRIVE SYSTEM

1. The wash press unit drive system shall consist of a motor, gear reducer and drive shaft.

G. GEARMOTOR

1. The drive system shall consist of a single speed dual voltage SEW-Eurodrive or equivalent motor direct coupled to a SEW-Eurodrive FA type helical gear reducer or equivalent. The electric motor shall be 3 Horsepower, 1800 RPM, 230/460 volt, 3 Phase, 60 Hz, TEFC, 1.15 Service Factor, NEMA Design B, with class F insulation, 40 °C ambient temperature and sever duty rated. The gear reducer shall be AGMA Class II with 94% efficiency shall have 13,900 inch-pounds of torque, shall be shaft mounted directly on the spiral drive shaft, shall have 2.0 Services Factor and an output speed on 14 RPM. Gear reducers with Service Factors of less than 1.4 and efficiencies of less than 94% shall not be allowed. The motor conduit box shall have one (1) ½ inch and one (1) ¾" NPT conduit connection.

H. SHAFT

1. The drive shaft shall be direct coupled to the spiral and constructed of painted carbon steel.

I. COMPRESSION TYPE PACKING GLAND

1. The package gland arrangement, located at the drive end of the machine, serves as a liquid barrier. The packing gland surrounds the shaft creating a seal.

J. DISCHARGE PIPING

1. A 14-gauge type 304L stainless steel discharge pipe shall be fitted to the press to direct screenings into a customer provided receptacle. All discharge pipe flanges shall be 304L stainless steel. Aluminum flanges shall not be allowed. Pipe supports shall be supplied by the press manufacturer.

K. TRANSITION INLET CHUTE/GUARD

1. A 12-gauge type 304L stainless steel transition inlet chute/guard shall be supplied to direct materials into the inlet feed area. The chute/guard shall be flange bolted to the trough with each side a minimum 60 degrees from horizontal.

L. FASTENERS

1. All fasteners shall be type 18-8 stainless steel.

M. SURFACE FINISH

1. SURFACE TREATMENT OF STAINLESS STEEL COMPONENTS

- a. All welded stainless steel subassemblies shall be free from welding discoloration and shall have a 2B finish.
- b. The motor and gear reducer shall have the standard manufacturer's finish. The spiral and drive shaft shall be prime coated carbon steel.

2.4 ELECTRICAL DEVICES AND CONTROLS

A. ELECTRICAL DEVICES

1. All Interconnecting conduit and wiring shall be included in the supply of the unit. In addition to the drive motor, the following electrical devices shall be furnished with the unit:
  - a. SOLENOID VALVES: Two (2) 120-volt, single phase, 60 Hz solenoid valves for the wash zone and flush spray washed housed in NEMA 4X enclosures shall have 18-inch long integral leads and shall have ½ inch NPT conduit connections.

B. EMERGENCY STOP LOCAL PUSH BUTTON STATION

1. A NEMA 4X polycarbonate emergency stop push button shall be mounted to the end flange and shall have a ½ inch NPT conduit button.

C. CONTROLS

1. The following controls shall be provided for the unit, in the screen control panel:

- a. A 480 volt primary U.L. listed and labeled control panel shall be provided in a NEMA 4X type 304 stainless steel enclosure suitable for wall mounting. It shall contain the following logic devices for proper operation of the equipment:
  - 1) Programmable relay to monitor equipment mounted electrical devices to perform necessary logic functions.
  - 2) Emergency stop push button
  - 3) Hand-Off-Auto selector switches for the drive, wash and flush water sprays.
  - 4) Control power and spiral run incandescent indicating lights.
  - 5) Motor current monitor and hour meter.
  - 6) Fault and fault reset push button incandescent light.
  - 7) Run and fault auxiliary output contacts for customer use.
  - 8) A Step-down control transformer, IEC rated motor starter and fused main disconnect shall not be provided.

## 2.5 SEQUENCE OF OPERATION

- A. HAND OPERATION. When HAND mode is selected, the spiral shall run continuously. When either spray wash HAND mode is selected, the spray wash shall run continuously.
- B. INTERMITTENT AUTOMATIC OPERATION. The control panel shall be equipped to control the wash cycle, spiral movement and flush cycle. Each wash or flush cycle and the spiral movement shall be controlled independently though the use of timers and counters. The drive motor and spray washes shall be controlled automatically when the selector switches are places in the auto position.
  1. The press motor starts after an adjustable number of start cycles from the interlocked feeding equipment. The press motor shall run for an adjustable length of time, typically set at 30 seconds.
  2. The press motor continues to run, and the washing solenoid opens for an adjustable length of time, typically set at 4 seconds. The press motor stops for an adjustable length of time, typically set at 4 seconds, while the washing solenoid remains open.
  3. Motor stop/start cycle repeats for an adjustable number of counts, typically set at six (6).
  4. The washing solenoid closes, and the press motor runs for an adjustable length of time, typically set at 30 seconds, to dewater and discharge the screenings.
  5. The flush solenoid opens for and adjustable length of time after the press motor stops, typically set at 10 seconds. The system shall reset after the flush solenoid closes.
- C. EMERGENCY STOP
  1. The unit can be deactivated at any time by pressing either the control panel mounted or unit mounted Emergency Stop push buttons.
- D. FAULT CONDITIONS
  1. Motor overload or high motor current conditions shall stop the motor and illuminate the fault light.

E. SPARE PARTS

1. The following total spare parts shall be furnished:
  - a. One set of wear bars with fasteners
  - b. One set each brush with clip and fasteners

F. ANCHOR BOLTS

1. The installer shall furnish ½” – 13UNC by 5-1/2 inches long type 304 stainless steel expansion anchor bolts.

PART 3 - EXECUTION

3.1 FACTORY SERVICE

- A. The Wash Press unit manufacturer shall provide factory service during one (1) trip for one (1) day for inspection of installation, equipment start-up, and operator training.

3.2 FACTORY ASSEMBLY, TESTING AND INSPECTION

- A. The unit shall be factory operated and inspected prior to shipment. The Engineer and/or Owner may, at their own option and expense, witness the factory test.

3.3 OPERATION AND MAINTENANCE MANUAL

- A. The Wash Press supplier shall provide two (2) installation, operation and maintenance manuals to the Owner.

3.4 SPARE PARTS

- A. The following total spare parts shall be furnished:

1. One set of wear bars with fasteners.
2. One set each brush with clip and fasteners.

- B. WARRANTY

1. The equipment manufacturer shall provide unconditional warranty on the screw wash press.
2. The manufacturer's warranty period shall be for 12 months after the final acceptance of the equipment by the Owner.
3. The equipment manufacturer shall guarantee that the equipment furnished is suitable for the purpose intended and free from defects of design, material and workmanship.
4. In the event the equipment fails to perform as specified, the equipment manufacturer shall promptly repair or replace the defective equipment without any cost to the Owner.

C. INSTALLATION

1. The Bidder shall supply all design, labor, equipment, and materials necessary to furnish and install the wash press in the space shown on the attached drawings.
2. The Bidder shall supply all design, labor, equipment, and materials necessary to install electrical wiring and termination to the wash press. An existing motor control panel schedule is shown in the attached drawings.

**END OF SECTION 11 33 01**