CITY OF HOUSTON

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June 6, 2013

Subject: Letter of Clarification No. 2 to Invitation to Bid No. S50-C24545 to Remove, Furnish and Install a Barscreen, Conveyor/Compactor System and Associated Equipment for the Public Works and Engineering Department

To: All Prospective Bidders:

This letter of Clarification is being issued for the following reasons:

- **To revise Section "B" Scope of Work/Technical Specifications and respond to questions posed by perspective bidders:**

1.) Remove Page Nos. 9, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 & 23 of 33 and replace with Page Nos. 9, 12, 13, 14, 15, 16, 17, 18, 19, 20 & 21 of 31 marked, REVISED 6/3/2013.

2.) The following questions and City of Houston responses are hereby incorporated and made a part of the Invitation to Bid:

Question No. 1 Can we get a drawing, plans and elevation, in pdf of the structure, and dumpster location?

Answer: The old drawings showing the plans and elevation of the barscreen, conveyor/compactor structure, and dumpster location, if available, may be obtained from the Groveway Library. For further information, prospective bidders should contact Ms. Julie Ward at 832-395-4997 or email her at Julie.ward@houstontx.gov. However, to be certain, vendors who intend to submit a bid are encouraged to visit the job site and take their own measurements of the structures involved, and view the location of the dumpster.

Question No. 2 A part of the bid package is a Contractor's Questionnaire. This questionnaire requires a minimum of 5 contracts removing, furnishing and installing a barscreen and conveyor/compactor system of similar type and size. Is it your intent that the manufacture have 5 screens that have been in operation for at least 5 years or is it the intent that the General Contractor has performed a minimum of 5 like renovation projects that thru the year 2008?

Answer: The City's intent is for the Contractor to have performed and succesfully completed a minimum of five like renovation projects since the year 2008. (See the attached Page No. 9 of 31 marked, REVISED 6/3/2013)

S50-C24545 / Letter of Clarification No. 2
Remove, Furnish and Install a Barscreen, Conveyor/Compactor System and Associated Equipment for the Public Works and Engineering Department

Question No. 3 The City of Houston currently has Duperon screens installed, and operating satisfactorily. In each case, both Duperon and Mahr I screens were named, and their individual specifications describing construction and operation, and their Five (5) year Warranty. We request that the specifications for the Duperon FlexRake be included in the bid documents, as has been done on every screen bid previously, so as to remove doubt from bidding contractors about acceptability by the City Operations Staff (user).

Answer: Please refer to Section "B", **Provision 6.0 entitled "Brand Name or Trade Name" which states "Any manufacturer's names, trade names, brand names, or catalog numbers used in the specifications are for the purpose of describing and establishing the general quality level, design and performance desired. Such references are not intended to limit or restrict bidding by other Contractors/Suppliers, but are intended to approximate the quality design or performance that is desired. Any bid that proposes like quality, design or performance, will be considered. Equivalent products will be considered, provided a complete description and product literature is provided. Unless a specific exception is made, the assumption will be that the item bid is exactly as specified on the Invitation to Bid."**
(See the attached revised pages marked, REVISED 6/3/2013)

Note: No further questions will be accepted after the publication of this Letter of Clarification.

When issued, Letter(s) of Clarification shall automatically become a part of the solicitation documents and shall supersede any previous specification(s) and/or provision(s) in conflict with the Letter(s) of Clarification. All revisions, responses, and answers incorporated into the Letter(s) of Clarification are collaboratively from both the Strategic Purchasing Division and the applicable City Department(s). It is the responsibility of the bidder/respondent to ensure that it has obtained all such letter(s). By submitting a bid on this project, bidders/respondents shall be deemed to have received all Letter(s) of Clarification and to have incorporated them into this solicitation and resulting bid.

Furthermore, it is the responsibility of each Contractor to obtain any previous Letter of Clarification associated with this solicitation.

Arturo Lopez

Arturo Lopez
Senior Procurement Specialist
832-393-8731

Attachments: Revised Page Nos. 9, 12, 13, 14, 15, 16, 17, 18, 19, 20 & 21 of 31.

CONTRACTOR'S QUESTIONNAIRE: ***REVISED 6/3/2013***

In order to receive bid award consideration, the bidder shall be required to submit evidence of experience having supplied at least ***five (5) contracts removing, furnishing and installing a barscreen and conveyor/compactor system fully operational since 2008*** of similar type and size in the USA that have been in successful operation for at least five (5) years. The bidder shall also be required to furnished conveyor/compactor equipment of the size and type specified which has been in successful operation for not less than the past 5 years. **Bidder must have references documenting that it has removed, furnished and installed five barscreens and conveyor/compactor systems fully operational since 2008.** The reference(s) should be included in the space provided below. Please attach another piece of paper if necessary. If references are not included with the bid, the bidder shall be required to provide such references to the City of Houston within five working days from receipt of a written request from the City of Houston to do so. **Bidder's capability and experience shall be a factor in determining the Contractor's responsibility.**

1. Business Name: _____

Business Address: _____

City, State, Zip: _____

Name of Owner/Contact Person: _____

Phone: _____ Fax: _____Email:_____

No. of Years providing Service to this business: _____

2. Business Name: _____

Business Address: _____

City, State, Zip: _____

Name of Owner/Contact Person: _____

Phone: _____Fax:_____ Email:_____

No. of Years providing Service to this business: _____

3. Business Name: _____

Business Address: _____

City, State, Zip: _____

Name of Owner/Contact Person: _____

Phone: _____Fax:_____ Email:_____

No. of Years providing Service to this business: _____

4. Business Name: _____

Business Address: _____

City, State, Zip: _____

Name of Owner/Contact Person: _____

Phone: _____Fax:_____ Email:_____

No. of Years providing Service to this business: _____

REVISED 6/3/2013

TECHNICAL SPECIFICATIONS

PART II

LINE ITEM NO. 2 – BAR SCREEN SYSTEM:

1.0 Mechanically Cleaned Barscreen and Associated Equipment General Specifications:

2.0 Materials and Construction:

2.1 The screen must be mechanically cleaned; the incline of the bar screen shall be 15 degrees from vertical.

2.2 The rakes shall approach channel invert from upstream side of screen and rake upward at upstream face with tines between the bars.

2.3 The screen shall be designed to be pulled out of the channel. The rubber side flaps shall seal the screen to the channel walls.

2.4 Screenings shall be discharged on downstream side of screen to the conveyor/compactor system.

2.5 The screen frame shall be supplied in one piece requiring no field assembly.

2.6 The framework of the screen shall be constructed of Grade 304 stainless steel and cross section with a minimum thickness 3/16" [4.7 mm]. Various parts fastened by welding, riveting, or bolting shall be braced as necessary to insure a rigid structure. The side frames shall be minimum 3/16* [4.7 mm] formed to a channel profile. The bottom thickness shall be 5/16" [8 mm]. The frame shall have support beams with U-profile thickness of 3/16" [4.7 mm] on the front above the maximum water line. Wraparound stainless steel stiffeners with a thickness of 3/16" [4.7 mm] formed to a channel profile shall be placed along the screen frame above the maximum design water depth for rigidity. No braces, gussets or stiffeners shall be inside the screen frame that will allow for screenings to collect.

2.7 Bolts and nuts shall be of Grade 304 stainless steel.

2.8 Anchor bolts shall be 3/4" Grade 304 stainless steel furnished by the contractor.

2.9 Screen bars shall be constructed of Grade 304 stainless steel. The bar rack shall consist of continuous taper section bars. The dimensions of the bars are:

2.9.1 12mm x 8mm x 50mm (.47* x .23" x 1.97") for bar spacing >3/8* [10mm]

2.9.2 Round or rectangular bars shall not be used.

2.9.3 Bars shall be supported from framework and be readily removable.

2.9.4 The screen bars shall be individually replaceable without any welding or cutting.

2.9.5 Screen bars that are welded to the framework or welded into sub-assemblies shall not be allowed.

2.9.6 Replacement screen bars shall be available from the screen manufacturer.

2.9.7 Bars shall be fastened to a dead plate that extends to the point of discharge.

2.9.8 Bars shall extend a minimum of 7.8* (200mm) above the maximum water level.

2.9.9 The screen field shall be accurately constructed to give a clear opening of 0.5 inches between the bars (minimum Bar Spacing; 3/16" [4.5mm]).

2.9.10 There shall be no space wider than the opening between the bars which would permit passage of larger solids through the screen.

2.10 The dead plate of shall be constructed of Grade 304 stainless steel plate (thickness is 3/16" [4.7 mm]) shall extend to the point of discharge. The dead plate shall be true and flat such that a close clearance between the raking tines and the plate can be maintained during the cleaning cycle. The back side of the dead plate shall be constructed to guarantee a maximum gap between rake bar and dead plate, leading to the discharge chute without interruption.

2.11 The raking tines shall have the tooth profile precision cut from a single continuous bar of sufficient thickness and depth to insure adequate stiffness and strength to cope with the specified duty cycle. The rakes shall run in guides on both sides to ensure engagement. The rakes shall clean the bars from the upstream side of the screen. The rakes shall be fabricated from stainless steel Grade 304. The rake material thickness shall be as follows:

2.11.1 Thickness of rake bar 1/2" (12 mm)

2.11.2 Reinforcement profile 1/4* (6 mm)

2.11.3 Side sheets 3/8* (10 mm)

2.11.4 The rake capacity shall be as follows:

2.11.4.1 Chain with 125mm pitch:

2.11.4.2 Capacity/Rake Bar: 0.108 f/ft [Q.010m^3/meter] screen field width (SFW),

2.11.4.3 Total Screen Capacity at approx. 10 second cleaning interval (ft^3/h) = 0.108 *f* x SFW (ft) x 360,

2.11.4.4 Total Screen Capacity at approx. 5-second cleaning interval (ft^3/h) =0.108 *fx* SFW (ft) x 720.

2.11.5 S.S. rakes shall have a shovel shape to prevent screenings from falling back to the channel. *Flat rakes without this feature are not accepted.* Rake tines shall penetrate into the screen bar spacing to insure that screenings *are* completely cleared during each lifting operation. Rake tines are mechanically engaged Into the screen bars. The raking tines shall engage into the bottom of the bar screen grids at the channel invert. Drive chains, chain guides, chain sprockets, bearings, and axles shall be fully replaceable without having to

remove the screen from the channel.

2.12 Screenings transported to the top of the screen shall be discharged positively by means of a scraper mechanism to the discharge chute. The scraper mechanism shall be fitted with a compression spring that allows the scraper to return to its resting position smoothly without any shock. A scraper blade made of a combination of synthetic and other material shall be provided.

2.13 The drive mechanism for the rakes shall incorporate a solid shaft constructed of stainless steel Grade 304. The drive shaft shall be a solid shaft constructed of type 304 stainless steel.

2.14 The upper sprocket shall be solid and made of type 304 stainless steel. The upper sprocket shall have a 125 mm pitch and a tooth width of minimum 27 mm. *Split sprockets will not be accepted.*

2.15 Upper bearings shall be UCFX 4 - bolt flange bearings or equal mounted in the take-up frame assembly. The bearings shall be grease-lubricated. The take up screw shall be an Acme Lead Screw made of 18-8 stainless steel. *Threaded rods will not be accepted.*

2.16 The lower sprocket shall be solid and made of type 304 stainless steel. The lower sprocket shall have a 125 mm pitch, a tooth width of minimum 27 mm and a bore of 70 mm. *Split sprockets will not be accepted.*

2.17 The lower stub shaft shall be machined from a single piece of material. *Welded components will not be accepted.*

2.18 Bearings for lower submerged sprockets shall be of proven self-lubricating PE (Polyethylene) material and be maintenance-free. A ceramic collar-type shall be bonded onto the stub shaft. *Metallic lower bearings or bushing and lower bearings requiring lubrication will not be accepted.*

2.19 Chains shall be heavy-duty roller type with a minimum weight of 7 lbs/ft and constructed of Grade 304 stainless steel of high tensile strength and resistance to corrosion. Chain rollers must be Stainless Steel. The ultimate strength of the chain shall be minimum 31,000 pound-force (137,500 Newtons). Chain Pins shall be stainless steel and hardened.

2.20 The chain guide shall be securely fixed to the screen frame for the full height of travel and shall not protrude into the flow. The type of chain guide, thickness of material and size shall be an L-Profile 2.6571.3870.19" (65/35/5mm), material Grade 304 stainless steel. *Replaceable wear strips on chain guides located below the water level will not be accepted.*

2.21 The drive motor shall be maximum 5 HP. The motor shall be an inverter duty rated motor with a 1.0 service factor, rated for continuous duty. The motor shall be controlled by a variable frequency drive (VFD), rated for continuous operation. (Enclosure shall be rated applicable for the specific installation environment.) The drive unit, including the reduction gearbox, shall be directly shaft-mounted and shall be positioned to facilitate maintenance work.

2.2.1.1 A VFD and a programmable logic controller (PLC) shall be provided. The VFD

shall have solid state overload integral. The motor shall be able to automatically reverse the direction of travel of the raking mechanism for an adjustable distance and revert to the forward motion to clear a blockage. The reversing action shall function a maximum of three times for any one obstruction. The motor shall re-set automatically if the blockage causing the initial overload condition is cleared; or, should the blockage remain upon. Upon completion of the fourth attempt, the screen shall be tripped and an alarm generated. The reverse function shall be effective only in the low speed mode.

2.22 The rake mechanism shall be capable of two cleaning speeds. Normal speed shall have a ten second cleaning interval and high speed shall have a five second cleaning interval. *Screens which do not meet this performance criteria will not be accepted.*

2.23 A discharge chute (thickness of 3/16" [4.7 mm]) shall be provided for each screen to divert screenings discharged from the screen to a conveyor/compactor. The discharge chute shall be made of Grade 304 stainless steel. The discharge chute shall be mounted at an angle of 30 degrees. Panels shall be positioned on both sides to protect from splashing.

2.24 Removable covers shall be provided for easy maintenance. The covers shall be constructed of clear impact-resistant Polycarbonate material (thickness is 1/4" [6mm]) to allow for visual observation during screen operation. *Stainless steel covers will not be accepted.*

2.25 Top Enclosed: The discharge chute and top of screen shall be fully enclosed. The top of the frame shall be covered with an 11 gauge, type 304 stainless steel cover, bolted to the front and back of the screen frame. The sides of the top cover shall be bent to overlap the side frames. The discharge chute shall be enclosed from the top of the frame to the bottom of the chute. The chute and chute enclosure shall be manufactured from a single piece of 3/16" [4.7 *mm]* type 304 stainless steel material. The enclosure shall include an access opening with cover. The cover shall be easily removable for maintenance. The cover shall be made of 3/8* thick clear, impact resistant, polycarbonate to allow for visual inspection during screen operation. The polycarbonate cover shall have stainless steel handles and be attached to the chute enclosure by four (4) quick release clamps. The access opening shall be (= SFW-1')" wide by 18* long.

3.0 Bar Screen Control Panel:

3.1 The Contractor shall be required to provide a bar screen main control panel pre-wired and tested, requiring wall mounting and connection to the external wiring in the field. The control panel shall include all equipment required to control one or more bar screen(s) as specified herein. The panel shall be located in a non-classified area where no corrosive gasses are present.

3.2 The control panel enclosure shall be sized as required to house equipment and shall be suitable for wall mounting or mounting to strut-type supports. Enclosure shall be rated National Electrical Manufacturers Association (NEMA) 4X.

3.3 Each Bar Screen motor shall be controlled by individual VFD, sized as required for bar screen motor horsepower and suitable for use with variable torque loads. The VFD shall include discrete and analog input and outputs as required by control panel manufacturer.

Bypass starters will not be accepted.

3.4 The VFD(s) shall be controlled by a programmable logic controller (PLC). The PLC shall be used to control the VFD to operate the screen at two (2) speeds and through the automatic reversing/cleaning shuttle sequence. The PLC shall include discrete and analog inputs and outputs as required.

3.5 Each screen shall be controlled in synchronization with ultrasonic level sensors. Upon reaching a predetermined differential set point the screen shall begin operation in low or normal speed and shall shut down after a predetermined time if the differential level is less than the predetermined set point. Upon reaching a second higher predetermined differential set point the screen shall operate in high speed.

3.6 When an over-current is detected the screen shall automatically stop and run in reverse for a predetermined time. After clearance of the overload the screen shall automatically reset in normal operation. The screen shall provide an alarm if the overloads are repeated a maximum of four (4) times. *The use of clutches, friction disks or similar devices for overload protection are not acceptable.*

3.7 The control panel shall have an operator interface terminal (OIT) to allow push button adjustment of counter values, timers and level set points without connecting to the PLC. The OIT shall be rated NEMA 4X and provide fault and troubleshooting information.

3.8 Door mounted NEMA 4X indicating lights shall be provided to indicate running and alarm status of the bar screen. Legend plates and a door mounted alarm rest push button shall also be provided.

3.9 The main control panel shall include Hand/Off/Automatic and Forward/Off/Reverse 3-position switches and an emergency stop mushroom pushbutton.

4.0 Sequence of Operation - 2-Speed Operation:

Wain Panel *On/Off*	Main Panel *Hand/Off/Auto & Fwd/Off/Rev*	Result	Action when Blockage occurs	Comments
j	*Auto & Any Position*	Screen starts in LSP when the rising water differential reaches set level (Level 1).	Screen performs cleaning shuttle up to 4 times. If no success, screen stops and initiates alarm contact.	LSP - Low Speed Mode. Approx. 10-second cleaning interval
On f	*Auto & Any Position*	Screen starts in HSP when the rising water differential reaches set level (Level 2).	Screen performs cleaning shuttle up to 4 times. If no success, screen stops and initiates alarm contact.	HSP - High Speed Mode. Approx. 5-second cleaning interval.
j *On*	*Auto & Any Position*	Exercise run	Screen performs cleaning shuttle up to 4 times. If no success, screen stops and initiates alarm signal.	X min in LSP, every Y min. (X & Y are Operator adjustable)

On	*Manual & Forward*	Screen operates forward in LSP.	Screen stops immediately. No cleaning shuttle.	***REVISED 6/3/2013***
On	*Manual & Reverse*	Screen operates in reverse in LSP.	Screen stops immediately. No cleaning shuttle.	
On	*E-Stop Engaged*	Screen stops immediately.	N/A	
On	*Off & Any Position*	Screen will not operate.	N/A	
On	*Hand & Off*	Screen will not operate.	N/A	
Off	*Any Position & Any Position*	Screen will not operate.	N/A	

5.0 Spare Parts:

5.1 The following minimum recommended spare parts shall be provided for mechanically cleaned screens:

5.1.1 Two (2) rake bars.

5.1.2 Five (5) feet of chain.

5.1.3 One (1) pair wiper arm wear pads.

6.0 Design Data:

{ Channel Width	3.75 t.
Channel Depth	3.5 ft.
Discharge Height above Operating Floor	4.0 ft.
Maximum Water Depth	3.0 ft.
Bar Spacing	0.5 In.
Screen Incline from Vertical	15

END OF SECTION

REVISED 6/3/2013

LINE ITEM NO. 3 – CONVEYOR/COMPACTOR SYSTEM:

1.0 Shafted Spiral Conveyor/Compactor System Technical Specifications: The conveyor/compactor system shall be supplied complete with controls, an inlet hopper and discharge tubing as per the technical specifications herein.

2..0 Performance and Design Requirements:

2.1 The conveyor/compactor system supplied shall be a shafted screw conveyor/compactor system that consists of a shafted screw, sieve zone, wash zone, press zone, transport zone, collection pan, discharge tube, drive system and controls. The system shall be designed to receive, positively convey and compact screenings discharged from the bar screen. The screenings shall be introduced into the inlet hopper directly over the sieve zone, washed in the wash zone, compacted in the press zone, conveyed through the transport zone, and discharged from the discharge tbe with a continuous bagging system into a suitable receptacle (provided by the City). The shafted screw conveyor/compactor shall be designed to handle a maximum capacity of 54.5 ft^3/nr.

2.1.1 The shafted screw conveyor/compactor system, exclusive of the discharge tubing, shall have a length of approximately 3.5 ft excluding the drive. The shafted screw conveyor/compactor system shall be designed to be installed at an incline of _5 deg from the horizontal. Support legs shall be supplied as required for adequate support under operating conditions. The support legs shall allow for a 4ft adjustment in height.

2.2 Design Materials and Construction:

2.2.1 Shafted Screw Assembly:

2.2.1.1 The shafted screw assembly must consist of a spiral welded to mechanical tubing. The mechanical tubing shall be welded to an end shaft.

2.2.1.2 The shafted screw shall be manufactured from one (1) concentric flight formed from carbon plate and welded to form a single spiral.

2.2.1.3 The diameter of the shafted screw assembly shall be nine (9) inches in diameter and shall be constant over the length of the assembly. The shafted screw shall have one (1) abrasive resistant brush assembly. The brush shall be nylon and tack welded to the screw.

2.2.1.4 The pitch of the screw shall reduce to 66% of the screw outer diameter in the press zone area.

2.2.1.5 The final quarter-pitch of the shafted screw must be hard faced.

2.3 Sieve Zone:

2.3.1 The sieve zone shall be tubular in design with an integral collection pan and an inlet chute to accept screenings from the bar screen.

2.3.2 The sieve zone shall be manufactured from minimum 11 gauge Grade 304

stainless steel and minimum 14 gauge perforated Grade 304 stainless steel. The perforations shall be 1/8".

2.3.3 The sieve zone shall include one (1) inlet hopper to direct screenings from the shafted screw conveyor/compactor system. The inlet hopper shall be constructed of 14 gauge [2 mm] Grade 304 stainless steel and shall be bolted to the transport zone of the U-Trough.

2.4 Transport Zone:

2.4.1 The transport zone shall be tubular in design and constructed of minimum 11 gauge Grade 304 stainless steel.

2.4.2 The transport zone shall be fitted with wear bars constructed of minimum 3/8" thick carbon steel. The wear bars shall be bolted from the outside of the transport zone. *Welded wear bars will not be accepted.*

2.5 Wash Zone:

2.5.1 The wash zone shall be tubular in design with an integral collection pan located directly under the wash zone.

2.5.2 The wash zone shall be constructed of minimum 11 gauge perforated Grade 304 stainless steel plate and minimum 14 gauge Grade 304 stainless steel plate. The perforations shall be 1/8".

2.5.3 The wash zone shall consist of a spray header fitted with two (2) spray nozzles to provide cleaning of screenings before compacting. The wash zone supply water shall be approximately 10 GPM at 40psi. The wash zone shall include a solenoid valve to control the flow of water into the wash zone. The wash zone shall include a solenoid valve, shipped loose to control the flow of water. The Contractor shall be required to provie and install the interconnecting piping and valves between the water source, the wash zone and the solenoid valve.

Note: The Contractor shall also be required to provide a Y-strainer with mesh size 40, equivalent to 0.47mm (470 microns).

2.6 Press Zone:

2.6.1 The press zone design shall tubular in design with an integral collection pan located directly under the zone.

2.6.2 The press zone shall be constructed of minimum 11 gauge Grade 304 Stainless Steel.

2.7 Collection Pan:

2.7.1 The collection pan design shall be a U-Tough design located directly under the sieve.

2.7.2 The collection pan shall be constructed of minimum 14 gauges Grade 304 stainless steel and attached to the compactor body with quick release clamps.

2.7.3 The collection pan water supply shall be approximately 10 GPM at 40 psi. The flush water shall run five (5) seconds out of every twenty (20) seconds and be field adjustable. The flush water shall flow down to the base of the collection pan to the 3" diameter drain outlet.

2.7.4 The wash zone shall include a solenoid valve, shipped loose to control the flow of water. The Contractor shall be required to furnish and install all interconnecting piping and valves between the water source, the wash zone and the solenoid valve.

2.8 Discharge Tube:

2.8.1 The discharge tube shall be cylindrical and constructed of minimum 14 gauge Grade 304 stainless steel.

2.8.2 The discharge tube shall include an integral bagging system. The bagging system shall consist of a plastic bag holder that shall mount on the discharge tube. The holder shall be readily removable for inspection and service. The holder shall provide for a consumable 260 feet high-strength biodegradable polyethylene tube/bag to receive screenings directly from the compactor.

2.9 Drive System:

2.9.1 Electric Motor: The electric motor shall be maximum 3 HP, 230/460V, 3 Phase, 60 Hz, TEFC, rated for the required Electrical Area Classification.

2.9.2 Gear Reducer: The design shall utilize a shaft mounted parallel helical type gea reducer driven by a direct coupled motor. The reducer shall have a cast iron housing with an output speed of 14 rpm. The service factor shall be minimum 1.0.

2.10 Controls:

2.10.1 The screw compactor control panel enclosure shall be sized as required to house the required components and shall be suitable for wall mounting or mounting to strut-type supports. The enclosure shall be rated NEMA 4X included with the main control panel. The control panel shall be pre-wired and tested, requiring only wall mounting and connection to external wiring by the electrical contractor in the field. The panel shall be located in a non-classified area where no corrosive gasses are present.

2.10.2 The screw compactor control panel shall be controlled in synchronization with the upstream screening equipment. The screw compactor shall begin operation whenever the screening equipment begins operation and shall continue operation for a predetermined period of time after the upstream equipment stops.

2.10.3 The control panel shall have front panel mounted NEMA 4X pilot lights indicating, power, fault, forward and reverse.

2.10.4 The control panel shall include a disconnect, motor starter, control power transformer, adjustable timer and other components to allow for sequencing the system.

2.10.5 Output Dry Contacts shall be provided for fault, forward and reverse.

2.10.6 The control panel shall be fitted with an adjustable current switch. Upon a fault, the equipment shall shut down and an alarm contact shall be initiated.

2.10.7 The main panel shall include an automatic/local switch, forward/reverse switch and an emergency stop. *(Standard - NEMA 4X)*

2.11 Anchor Bolts:

2.11.1 The Contractor shall be required to provide all anchor bolts, nuts and washers and shall be constructed 3/4″ diameter, 304 grade stainless steel.

2.12 Spare Parts:

2.12.1 The Contractor shall be required to provide the following spare parts. The spare parts shall be packaged with labels bearing the description and quantity of the contents.

2.12.1.1 Recommended for one (1) year operation: One (1) brush and one (1) set of wear bars.

2.12.1.2 Recommended for five (5) year operation: One (1) thrust bearing, one (1) set shaft seals, two (2) sets of wear bars and one (1) shafted screw.

2.7 Surface Finishes and Coatings:

2.7.1 The Contractor shall be required to fabricate, weld and bead blast all stainless steel surfaces prior to equipment assembly. All purchased components such as motors, reducers, valves, switches, etc. shall be supplied with the manufacturers' standard finish.

END OF SECTION

END OF DOCUMENT