ATTACHMENT VV
TAB

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DEPARTMENT OF ECOLOGY
AT
3100 PORT OF BENTON BLVD
RICHLAND, WA 99352
(509) 372-7950

ATTACHMENT VV
TECHNICAL SPECIFICATIONS
For

STABILIZATION BUILDING PROCESSES

MIXED WASTE FACILITY
RCRA/TSCA PERMIT ~~APPLICATION~~

~~ATG~~ PERMA-FIX NW, INC.
RICHLAND, WASHINGTON
WAR 00001 0355

Section	Title	Rev
Division 11000 – Equipment		
11100	Dryer Systems	0
11200	Size Reduction Equipment	0
11300	Extruder	0
11400	Container Washers and Compactors	0
11500	Containers	0
11600	Abrasive Blast Booth	0
11700	Sorting Systems	0
11800	Cutting and Shearing	0
11900	Enclosures	0
Division 14000 – Conveying Systems		
14100	Monorails, Cranes and Lifts	0
14200	Material Handling Systems	0
Division 15000 - Mechanical		
15000	General Installation Requirements	0
15060	Pipe & Pipe Fittings–General	0
15061	Carbon Steel Piping Systems	0
15066	Cast Iron Piping Systems	0
15069	Stainless Steel Tubing Systems	0
15070	Stainless Steel Piping Systems	0
15075	Copper Piping Systems	0
15090	PVC & CPVC Piping Systems	0
15091	PVDF & Double Contained Piping Systems	0
15092	Polypropylene Piping Systems	0
15101	Manual Valves	0
15111	Control Valves	0
15130	Indication Devices	0
15132	Mixers	0
15140	Pumps	0
15176	Stainless Steel Tanks	0
15181	Piping & HVAC Duct Installation	0
15663	Liquid Filtration Equipment	0
15801	Building Air Handling Units	0
15829B	Building Exhaust Monitoring	0
15829C	Building Toxic Gas Monitoring	0
15840	Process Vent Duct	0
15841	Sheet Metal Duct Work (Low Pressure)	0
15842	Sheet Metal Duct Work (High Pressure)	0
15822	Blowers	0
15885	Air cleaning Devices	0

Section	Title	Rev
Division 16000 – Electrical		
16014	Vibration Equipment for Electrical Systems	0
16121	Medium–Voltage Cable Accessories	0
16171	Electric Motors	0
16321	Distribution Transformers–Dry & Oil Type	0
16361	Air Interrupter Switchgear – Medium Voltage	0
16430	Low-Voltage, Metal-Clad Switchgear	0
16601	Inventory Control	0
16622	Packaged Standby Generator System	0
16624	Automatic Transfer System	0
16721	Fire Alarm Systems	0

Technical Specifications

Section 11100

Dryer Systems

ATG INC.
47375 Fremont Blvd
Fremont, CA 94538

PURCHASE SPECIFICATION

FOR

DRYER SYSTEM

~~NOTE~~
~~THIS DOCUMENT CONTAINS PROPRIETARY AND CONFIDENTIAL DATA THAT SETS FORTH TECHNCIAL KNOWHOW AND TRADE SECRETS OF ATG INC. THIS DOCUMENT MAY NOT BE REPRODUCED, OR SHOWN, TO ANY THIRD PARTY WITHOUT THE EXPRESS PRIOR WRITTEN PERMISSION OF ATG.~~

TABLE OF CONTENTS

Section	Title
1	COMMERCIAL TERMS AND CONDITIONS
2	SCOPE AND GENERAL REQUREMENTS
3	FUNCTIONAL AND OPERATIONAL REQUIREMENTS
4	FEEDSTOCK SPECIFICATION

1. COMMENRCIAL TERMS AND CONDITIONS

This specification sets forthcommercial terms and conditions and technical specifications and requirements for a skid mounted dryer system. In the following text, the term Buyer means ATG, Inc. (ATG) with offices in 47375 Fremont Blvd, Fremont CA 94583. Seller means a firm, company or a corporation that receives an order from ATG to provide the system specified herein.

1.1 Price:

Seller price to supply the System encompassing documentation, hardware and tests specified herein are as follows:.

1. **Approval Design Package.** Approval design documentation as specified herein at a fixed price cost of $ _____ .

2. **System Hardware, Documentation and Tests.** A skid mounted dryer system and all accessories including as built documentation, shop tests as specified in this document, FOB ATG Richland, Washington, at a fixed price cost of $ _____ .

3. **Performance Tests.** Fixed price cost for conducting the performance tests specified in this document, $ _____ .

4. **One Year Optional Service Contract.** Fixed price cost for one year service contract as specified in this purchase agreement - $ _____ .

1.2 Performance Warranty

Seller hereby represents and warrants to Buyer as follows: The equipment that constitutes non-consumable component parts of System will be free from defects in workmanship and material, for a period of one year following the date of commercial operation of System.

1.3 Authrization to Fabricate

Seller shall not start material purchase or fabrication of the system unless a written Authrization to Fabricate is issued by Buyer. Buyer's issuance of Authorization to Fabricate is depedendent on receiving approvals form the regulating agencies (EPA and Washington State Departmetn of Ecology). Buyer expects that approximately 32 weeks will be required for obtaining the neccessary approvals (refere to section 1.4 for cancellation). However, Seller should be aware of the regulators approvals is not guaranteed.

1.4 Cancellation

RCRA/TSCA

purchase of the system in whole or in part, when Buyer determines it is in its interest to do so. Cancellation of the order shall be issued by delivering to Seller a Notice of Termination. If such a notice is issued by the Buyer prior to issuance of an Authorization to Fabricate, then the obligation of the Buyer shall be limited only to the cost of preparing the approval design package which is specified as Item 1 in paragraph 1.1 above.

2. SCOPE AND GENERAL REQUIREMENTS

2.1 System Harware Scope

Work shall include delivery of a dryer system and accessories, fully skid mounted, assembled, and wired ready for operation at ATG's facility after minimal field assembly and installation. The entire system begins at the dryer feed cart and ends at the condenser exhaust fan outlet. The unit shall be shipped F.O.B. Richland, Washington. The vendor's scope of supply shall consist of, but not limited to:

1. A rail mounted feed cart with a stainless steel pan.
2. Dryer chamber encompassing insulation and seamless stainless steel (S.S.) liner.
3. Electrical heating units encompassing S.S. recirculation fans, corrosions resistant electrodes, S.S. ducting and related controls and accessories.
4. Exhaust fans encompassing flow control dampers, condenser, mist eliminators, ID fans and discharge piping. ATG plans to connects the exhaust to a carbon filter subsystem.
5. The dryer system shall include all instrumentation and devices needed for safe drying of organic bearing wet solids and liquids using in-container drying approach.
6. Electrical subsystem encompassing transformers, main breakers, starters, AC and DC power controllers (main power supply transformers to be by ATG).
7. Main control subsystem encompassing PLC controllers and alarm signals suitable for integration with the plant supervisory control and data acquisition (SCADA) computer system (64 tag key Wonderware man/machine interface software).

2.2 Shop Testing Scope.

After shop assembly, the unit shall be shop tested to the extent practical.

1. All pressurized systems shall undergo a hydrotest at a minimum of 1.5 times the design operating pressure. Acceptance criteria shall be as follows: 1) no visible leakage and 2) less than 1% pressure loss during a 30 minutes pressurization at the test pressure. Hydrostatic test procedures according to ASME Section VIII shall be used whenever applicable.

2. Inspections shall be conducted to determine the presence of any weld breaks, puctures, scrapes in the protective coatings, cracks, corrosion and other structural damage or inadequacy in the construction of the units.

Certified shop test reports signed by a P.E.shall be submitted after each test.

2.3 System Test Scope

System testing shall be conducted by Seller, and in presence of ATG's representative/s, after the unit is completed at Seller's facility. Work shall consist of: 1) start-up of the system at Seller's facilities, trouble shooting the system hardware and software to ensure operation according to the established procedures, and 3) demonstrating system performance with surrogate materials (see section 3). This "performance test" shall be in accordance with a Test Plan/System Acceptance Criteria which shall be submitted by Seller for review by ATG, at least 3 weeks before conducting the tests. Acceptance criteria shall demonstrate the system can operate at the rated capacity based on a 48 hour continuous operation.

ATG's representative/s shall be present during the system performance test. Seller shall fix or replace any part of the system that malfunction of found to be unacceptable during the performance tests. In lieu of a test at Seller's site, performance tests at ATG's site will be acceptable. In this case, the following requirements shall be applied:

1. Performance tests shall be witnessed by Seller representatives.
2. The test results shall be documented in a test report, certified by ATG and submitted to Seller.
3. The Seller's obligations shall be deemed fulfilled only after acceptance and approval of the test results by ATG..

2.4 Deliverable Documents

The following documentation shall be provided by Seller.

1. **Approval Design Package.** Work shall include preparation of a design document package as needed for ATG to obtain permit from EPA, the Washington State Departmetn of Ecology and Health. These documents shall include, but not limited to: 1) PFDs with mass balance calculations; 2) P&IDs which shall follow ANSI standards and the project legend/format; 3) equipment general arrangement and assembly drawings, with weights, anchor bolt, piping and other interface requirements; 4) electrical wiring and power connection requirements and alarm interface with SCADA; and 5) operations manuals including safety procedures to be used during the operation. After the review process by the regulatory bodies, which is anticipated to require approximately 32 weeks, ATG will return comments to the Seller. It shall be Seller's responsibility to finalize the approval documentation and resubmit the package for ATG's use. All drawings shall be in AUTOCAD Vesrion 14 format. Microsoft Office Software shall be sued for reports and other written documentaiton.

2. **AS-Built Drawings.** The design drawing including a PFDs, P&IDs, mechanical/assembly,

as-built conditions of the system and shall be submitted two weeks before shipement of the system to ATG.

3. **Operating and Maintenance Procedures/Instructions.** Two copies of an O&M manual, including parts list for the entire system shall be submitted two week before delivery of the system. Spare parts list shall provide adequate information and specification to allow ordering of spare parts by a purchasing agent.

2.5 Excluded From Seller's Scope of Supply

The following items will be provided by others.

1. **Permits.** Permit application and permit approval documentation.

2. **Utilities.** Including cooling water, chilled water subsystem, steam supply subsystems, and nitrogen supply.

3. **Instrument/Service Air.** Service and instrument air will be provided by ATG according to the specifications supplied by Seller..

4. **Nitrogen supply.** Nitrogen supply will be provided by ATG according to the specifications supplied by Seller.

5. **Process (potable) water supply.** Potable water supply will be provided by ATG according to the specifications supplied by Seller.

6. **Building Confinement (HEPA/Ventilation).** Building HEPA ventilation system will be provided by ATG.

7. **Electrical Supply.** ATG will wire the main electical power supply line to the main breaker for the system. The main breaker shall be provided by Seller.

8. **Skid Interconnection Wiring.** Interconnection wiring between the system skids will be performed by ATG according to wiring diagram provided by Seller.

9. **Interconnection piping.** The system shall be skid mounted and piped to the maximum extent possible. ATG will provide labor and material to set and anchor the skids, interconnect the piping and wiring between the skids and connect to the skid the utilities supplied by ATG. Piping from the system exhaust outlet to the carbon filters will also be by ATG.

10. **Building and Structures.** Structures to house the system will be provided by ATG.

2.6 Maintenance Service Contract

Seller agrees to provide engineering and technical support needed for the operation and maintenance of the system during the first year of operation. Services provided under this item includes:

1. **Engineering/Technical:** Any engieering and technical support needed for the fine tunning, re-design, re-work and/or repair of the system as a whole and/or individual system components including instrumentation and control devices.

2. **Rework Labor:** Any labor required for fabrication and/or testing of new parts outside of ATG's facility.

3. **Replacement Parts.** All replacements parts and components.

2.7 Fabrication Codes and Standards

The System shall be designed and fabricated according to acceptable industry standards including NFPA and SMACNA. All castings and key process components shall have ASTM matrial designations. All motors and electrical devices used in and near the pipes and devices handling flammable gases must be explosion proof in accordance with the NEMA standards. Hazardous class shall be Class 1 Division 2. Electrical equipment shall comply with NEC-504. The system shall be designed, fabricated and installed in accordance with applicable Benton County , state of Washington, and federal requirements and codes. All electrical panels and devices shall be UL listed as required by the state of Washington.

2.8 Quality Assurance

Work covered by this purchase order is subject to quality assurance requirements according to the standard industry practice.

2.9 Schedule

One hard copy and an electronic disk copy of the approval documentation shall be submitted within two weeks after award. Drawing shall be in AUTOCAD Vestion 14. Microsoft Office Software shall be sued for other documentaiton.

The unit shall be delivered to ATG's site within within twenty 12 weeks after approval of the drawings.

3. FUNCTIONAL AND OPERATIONAL REQUIREMENTS

3.1 General Requirements

1. The function of the system shall be to provide evaporation of liquids contained in RCRA contaminated wet solids (wet soil, wet sludge, wet salts, etc.) and liquids placed in a 55 gallon drum or large box. The system shall vaporize liquids at a temperature of no greater than 250 degrees F using hot air or stream as a source of heat. The system shall also recover water contained in the exhaust gas and condense it to a distillate which shall be piped into a portable container provided by the Buyer.

2. The system shall condense moisture contained in the dryer exhaust with a recovery rate of approximately 90%. The condensate will be collected in a portable container (provided by Buyer).

3. The system shall be design for operation under negative pressure. The system shall come to a safe shut-down when the negative pressure exceeds the set points.

4. System internals shall be S.S. and shall be designed to minimize build-of salt crystals and particulates.

5. The system exhaust flow rates and temperature settings shall be variable to allow optimization and operational flexibility.

3.2 Waste Feed

The following general steps define the feed system operation:

1. Input liquids/sludges shall be pumped to the drums placed on the dryer feed cart by a feed pump/tank assembly. The transfer pump will be provided by the Buyer.

2. Incoming drums and large boxes containing wet soils/sludges/salts shall be place on the feed cart by a fork lift truck.

3. The cart shall be placed on rails and shall be suitable for manual operation.

4. The cart shall be sized to receive 6 standard 55-gallon drums, or one B-25 Container with a dimension of 4 ft. wide, 6 ft. long and 4 ft. high. The drums may contain as much as 100% liquids. However, the B-25 container will be full of moist soil with no more that 1% free liquids. The maximum weight of the B-25 container used in the design shall be 10,000 lb.

5. The cart shall have a S.S. pan with a working volume sized to hold one 55 gallons of liquids - in the event of a spillage (working volume means deduct the volume of space occupied by the 6 drums from the overall volume of the pan)

3.3 Drying Chamber

1. The unit shall be able to handle a mixture of solid, sludge and liquid inorganic and organic material in the incoming drums.

2. The process chamber shall be heated by a recirculating hor air or steam. If hot air is used, it must be electrically heated. At high operating temperatures, the volatile organic material and water will vaporize.

3. The temperatures in the process chamber shall be high enough to minize the vaporization of toxic organics but high enough to expedite watre vaporization A range of 180 -250 F is most desirable.

4. After evapoaration, the dryer shall be cooled and drums containing dryed solids shall be removed and sent to other process units.

5. Process chamber temperature control during the drying process shall be provided. Recirculation air flow rate shall be measures and its flow rate shall be adujustaible via a control damper.

6. The process chamber lining and insulation shall be mounted such that to mimimize leakage.

7. The process chamber doors shall be constructed such that it forms an air-tight seal when it is closed. The system shall not operate when the door is opened.

8. A flammable gas monitoring instrument shall be installed in the drier chamber to prevent the potential for accumulation of flammable gases above 0.25% LEL limits. In the event of a high flammability alarm, the system shall be automatically brought to a safe shut down mode.

3.5 Exhuast Treatment

Gases leaving the dryer chamber contains moisture which shall be removed in the exhuast line as follows.

1. The exhaust from the dryer chamber shall be first cooled to a temperature which allows moisture recovery. After moisture recovery, the gases shall be discharged to a carbon filter exhaust system provide by ATG. The moisture content of the gases discharged from dryer shall be such that it will not harm the removal capacity of the carbon filter system (approximately 90% moisture removal is recommended).

2. Moist eliminators, if needed for the protection of the carbon beds, shall be provided.

3. Flow, temperature and moisture measurement devices shall be provided at the exhaust. Exhaust flow rate shall be adjustable via a flow control damper

4. An induced draft (ID) fan shall be included to provide the motive force for suction of the vapor from dryer chamber and maintaining negative air pressure inside the chamber. A vacuum pressure of approximately minus 1 inches (-1" W.C.) of water column in the dryer chamber is desired. A differential pressure controller shall be provided to monitor the pressure. Alarms and set points shall be provide such that upon a high pressure signal, the system reverts to a safe shut-down mode.

3.6 Sampling and Analysis

Manual gas sample points with a proper sample connectors shall be included in the exhaust line and at a location in the recirculation line, as appropriate.

3.7 Gas Purging

Purging cycle shall be provided to evacuate noxious gases from the dryer chamber and the dryer chamber exhaust lines when a shut-down and personnel entry is desired.

3.8 Instrumentation and Controls

1. The system shall be supplied with all of the instrumentation needed for the complete operation and control of the system. The following shall be provided as a minimum:
   - Oven temperature.
   - Flow indicator and transmitter and flow control dampers for both recirculation and exhaust gas flows.
   - Exhaust moisture measurement and transmitter.
   - Oven gas flammability indicator / transmitter set at 25% LEL.

2. The system controls and instrumentation shall be designed for minimum operator attendance. The dryer shall be designed for automatic operation requiring only initial settings of the temperature, pressures, etc. The system shall not require operator attendance other than placing wastes in the chamber and removing them after a batch is complete.

3. Remote actuators shall be provided for all routinely operated dampers and valves.

4. The main control panel shall be based on a programmable logic controller (PLC) unit if possible. Alarms shall be suitable for connection to the main alarm panel.

5. The system shall have an automatic safe shut-down control logic that stops the operation of the overall system in the event of a critical process malfunction or equipment failure.

3.9 System Pressure Boundaries

atmosphere (controlled by the induced draft fan units) pressure.

3.10 Redundancy of Critical Components

Redundancy and/or manual bypass systems shall be included for the system whenever needed for safety, availability and efficiency of the unit and for the safe and orderly shutdown of equipment while protecting the worker safety.

3.11 Skid Mounted Equipment

The system components shall be skid mounted to the extent possible. Skids shall have secondary containment. All skid mounted equipment shall be assembled and wired requiring only interconnection of the wiring and piping. Whenever possible, quick disconnects and bolts shall be used for ease of disassembly and maintenance. Adequate space shall be provided for access to the equipment by the maintenance personnel.

3.12 Equipment Location

The equipment will be installed indoors at ATG's stabilization building. The system foot print shall be minimized as much as possible to allow flexibility during installation, operation and fork-lift access.

3.13 System Throughput

1. The system design shall be based on receiving six (6) -55 gallon drums full of soil with each drum containing approximately 200 lb of water and vaporizing all of the water inside drums within a 48 hour period (i.e., an evaporation rate of approximately 25 lb/hr)

2. The throughput shall be demonstrated on a 48 hours continuous operation basis.

4 FEEDSTOCK SPECIFICATION

The system input waste feed material will have a combination of physical, chemical properties described below

4.1 Physical and Chemical Description

1. **Liquids**

   Water containing a maximum of 10% of the following solutions:

   - Decon solutions containing EDTA solvents with high concentration of iron,

- Boric acid concentrates.
- Haloginated solvents.
- Tri-butyle phosphate.

2. **Sludge/Wet solids**

- Mixed ion-exhange organic resisns (dewatered and/ot slurry form).
- Inorganic ion-exchange resins (zeoplites, etc.)
- Process residue salts.
- Wet soil (mud)
- Cemented soilds (nitire salts mixed sith cement based stabilization agents)
- Absorbent material such as diatomaceous earth (DE), solca-floc, and vermiculite

3. **Haloginated Material Feed Rate**

- The system internals shall be designed for an evaporation rate involving the removal of 12 lb of chlorine in a 48 hour drying cycle.

4.3 System Test Surrogate Waste

System performance test shall be based on wet soils in the feed drums. The total weight of water in each drum shall be 200 lb. Haloginated solvents equal to 10% of the 200 lb liquid shall be added. The total chlorine in the feed shall be limited to 12 lb.

Technical Specifications

Section 11200

Dryer Systems

Area/Location: Stabilization

Equipment No.		
	TP-01-CV-0103	**Enclosed Metering Conveyor**
	TP-01-MAG-0104	**Metals Collection**
	TP-01-SHR-0105	**Shear Shredder**
	TP-01-F-0106	**Feeder**

Process and Instrumentation Diagram: **31001-P-013**

Process Media	
Liquid	N/A
Gasses	Process Exhaust
Vapors	N/A
Solids	Heterogeneous waste, metals, soils, concrete
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

General Description: System used to produce uniformly sized particles for the given stabilization processes. Equipped with a temperature alarm and mist spray.

THROUGHPUT 2000 lbs./hr

CONSTRUCTION CARBON STEEL

FINISHES/COATINGS

Interior/Exterior: KOMAR Industries' standard

ELECTRICAL DATA

Shredder Motor HP: 100

Shredder Power: 480 V / 3 ϕ / 60 Hz

CONTROL Allen Bradley PLC and control cabinet

UNIT DESCRIPTION

Enclosed Mtering Conveyor: In feed conveyor accepts waste directly from the bin dumper. The variable speed conveyor is to be enclosed and ported for a ventilation system by others. This conveyor will meter the waste material at a controlled rate so as not to overload the shredding and feeding system. there will also be access hatches on the sides for cleaning purposes.

Metals Collection: Positioned at the end of the metering conveyor will be a magnetic separation device. This will be incorporated to prevent metal from entering the shredder. System must be accessible for removal of the captured materials.

Sear Shredder: System would utilize a hydraulic shear shredder. The unit will allow for one step reduction of the waste (3/8") by using four cutting shafts. A sizing screen will be placed below the cutters to allow for various output sizes. The largest single piece the shredder will process is 18" x 18" x 18". the drive will be variable speed.

Feeder: System will receive will be used at the feeder output. The output elevation must be greater than the loading height of the carts (provided by others).material from shredder and feed into bins at variable rates. A ventilation hood

Preferred vendor, but not limited to:
Manufacturer: KOMAR Industries, Inc.
Model No. QR4040-100 (Application: Shredder)

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____
2. Approved _____ Date _____
3. Approved _____ Date _____
4. Approved _____ Date
5. Approved _____ Date
6. Approved _____ Date

Technical Specifications

Section 11300

Extruder

Area/Location: Stabilization

Equipment No.		
	TT-04-F-0409	**Extruder**
	TT-04-HX-0411	**Heat Extruder**
	TT-04-PMP-0410	**Cooling Pump**

Process and Instrumentation Diagram: **31001-P-025**

Process Media

Liquid	Waste sludge
Gasses	N/A
Vapors	N/A
Solids	Size reduced waste, nitrated salts, reagent, polymer
Moisture Content	<1%
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Single-Stage Thermatic Extruder Water cooled, 2 ½" bore, 5 heat zones

CAPACITY

Extruder	500 lbs./hr
Hopper	10 cu. ft.

PERFORMANCE

Polymer Type	Low density polyethylene
Melt Temperature	130° C to 150° C

CONSTRUCTION

Gear Reducer	Heavy-duty gears with cast iron housing
Hopper	Stainless steel with slide gate, safety glass, and safety grid
Barrel	4140 steel tube with bimetallic, wear resistant cast-in liner
Cooling Coils	Stainless steel

FINISHES/COATINGS

Interior Coating	Manufacturer's Standard
Exterior Coating	Manufacturer's Standard

ELECTRICAL DATA

Motor HP	100
Volts/Phase/Hertz	460/3/60

CONTROL

Type of controller	EPIC III™ touch screen

Preferred vendor, but not limited to:
Manufacturer: Davis-Standard
Model No.

1. Approved _____ Date _____
2. Approved _____ Date _____
3. Approved _____ Date _____
4. Approved _____ Date
5. Approved _____ Date
6. Approved _____ Date

Technical Specifications

Section 11400

Container Washers and Compactors

Equipment No. **TP-07-CPR-0705In-Barrel Compactor**

Process and Instrumentation Diagram: **31001-P-019**

Process Media	
Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Heterogeneous waste, debris
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Completely enclosed drum crushing and/or compaction within a drum

CAPACITY

Capacity	55 and 85 gallon drums

PERFORMANCE

Cycle Time	78 seconds
Compaction Force	85,000 lbs.
Dimensions	43” L x 40” W x 130” H
Weight	4200 lbs.

CONSTRUCTION

Piston	5” chrome polished, high tensile
Piston Pump	Positive displacement, high pressure
Compaction Head	1” thick reinforced steel
Base Plate	1 ½” thick structural steel
Chamber/Door	3/8” steel plate

FINISHES/COATINGS

Interior Coating	Manufacturer’s standard
Exterior Coating	Manufacturer’s standard

ELECTRICAL DATA

Motor HP	10
Motor Type	Explosion proof, Class 1, Group D
Volts/Phase/Hz	460 / 3ϕ / 60

CONTROL

Push Button	Oil-Tite 115 V
Function	Up, down, E-stop
Limit Switch	Stops up travel

FILTER SYSTEM

Description	Pre-filter, HEPA, and charcoal filter system
Standards	Meets ANSI-N510 for hazardous air filtration
Air Flow	1130 cfm
Blower Motor	2 HP @ 3450 rpm
Dimensions	30” W x 12’-8” L
Weight	1300 lbs.

Preferred vendor, but not limited to:
Manufacturer: Ram Flat Compactor
Model No. 85AR-HANC

Other Manufacturers
1. Rampactor, Inc., Model 6036HT

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Equipment No. **TP-07-CPR-0707** **Super Compactor**

Process and Instrumentation Diagram: **31001-P-019**

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Heterogeneous waste, debris
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	1500 ton existing super compactor

CAPACITY

Capacity	55 gallon drums
Throughput	60 drums / 8 hr. shift

PERFORMANCE

Cycle Time	8 minutes
Compaction Force	?? lbs.
Dimensions	5’-8” W x 25’-1” L x 12’-4” H

Preferred vendor, but not limited to:
Manufacturer: Everett Engineering
Model No.

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____ 4. Approved _____ Date
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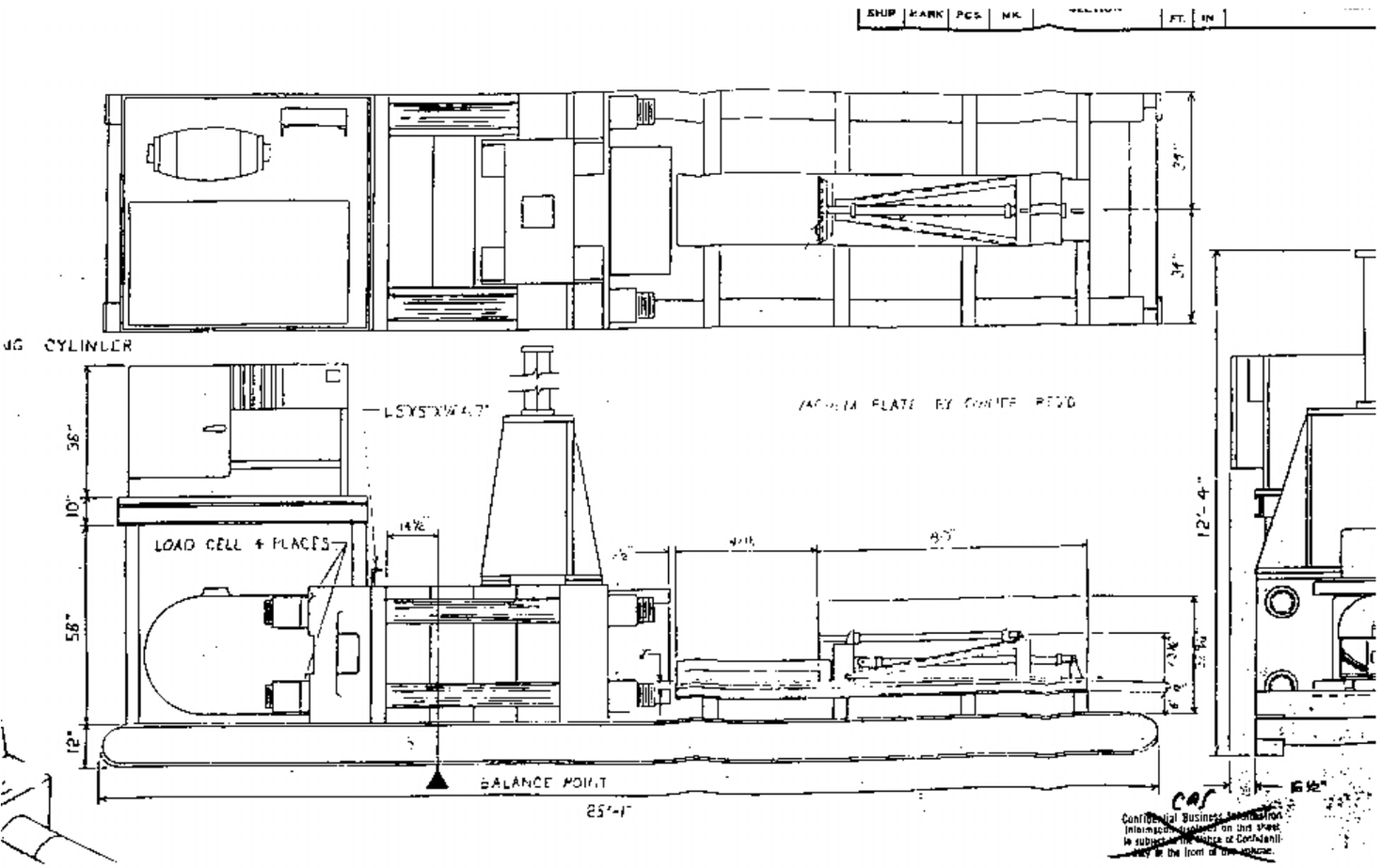
3. Approved _____ Date _____ 6. Approved _____ Date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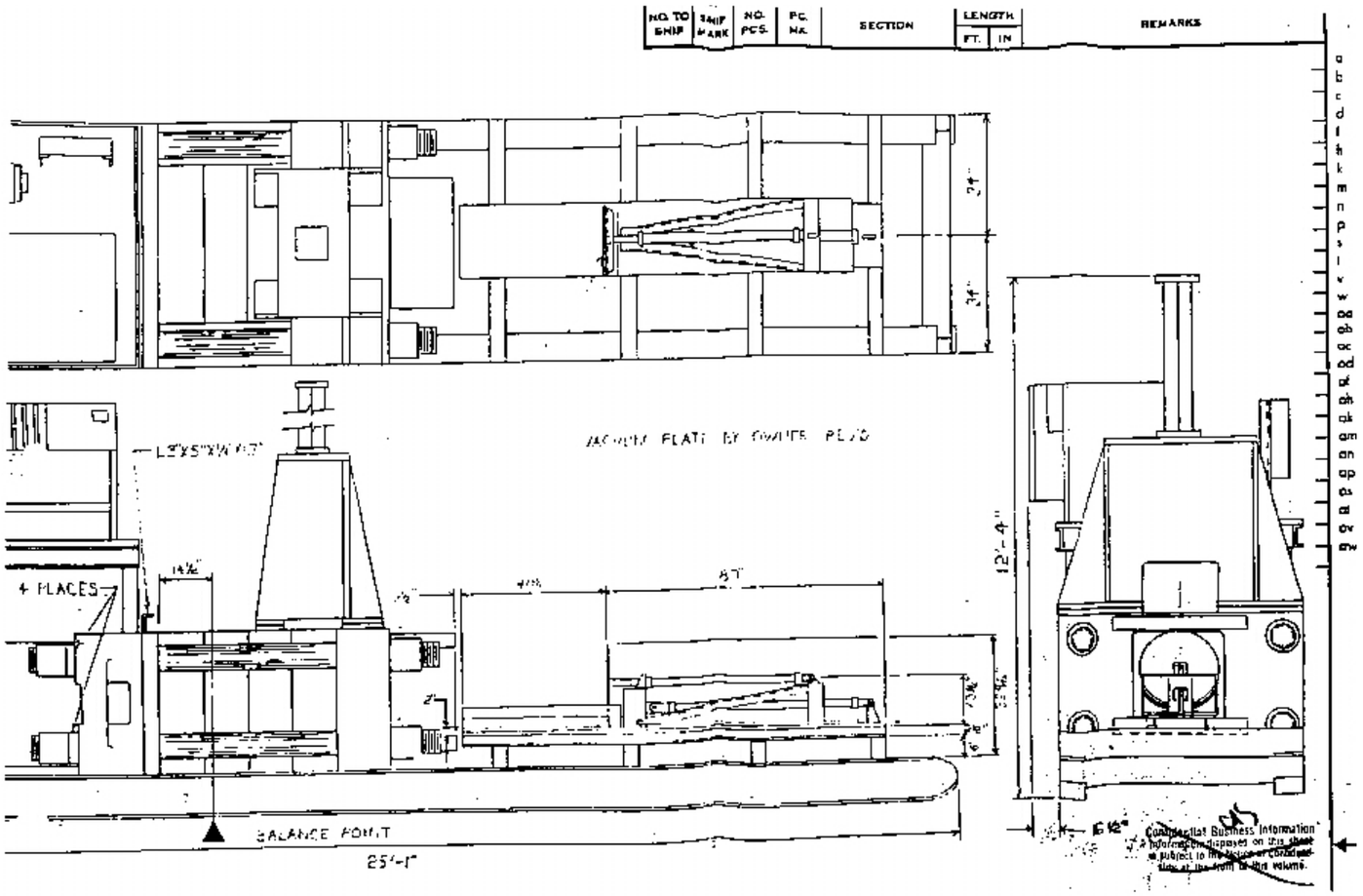
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Equipment No. **TT-06-Z-0601** **Triple Rinse Washer**
TT-06-PMP-0602 **Drum Wash Recirculation Pump**

Process and Instrumentation Diagram: **31001-P-027**

Process Media

Liquid	Liquid waste, reagents
Gasses	N/A
Vapors	N/A
Solids	Waste remains
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Triple rinse drum washer

CAPACITY

Capacity	55 gallon drums
Throughput	8 drums / 8 hr.

PERFORMANCE

Recirculation Tanks	Wash and rinse
Tank Material	Stainless steel
Tank Heater	Electric
Water Consumption	21 gallons / cycle
Dimensions	81” W x 123” L x 81” H
Weight	1900 lbs.

FINISHES/COATINGS Manufacturer’s standard

ELECTRICAL

Motor Type	NEMA 7

CONTROL

Manual	Load / unload
Automated	Timer, rinse cycle detergent dispensing

Preferred vendor, but not limited to:
Manufacturer: ETP, Inc.
Model No. 2B Washer

Other Manufacturers
1. SRS Industrial Engineering, Inc. Model 55-DC

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Equipment No.		
	TT-06-Z-0603	**Tote and Bin Washer**
	TT-06-PMP-0604	**High Pressure Pump**
	TT-06-PMP-0605	**Rinse Pump**
	TT-06-PMP-0606	**Scavenger Pump**

Process and Instrumentation Diagram: **31001-P-027**

Process Media

Liquid	Liquid waste, reagent remains
Gasses	N/A
Vapors	N/A
Solids	Waste remains
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Automatic tote and bin washer with closed loop wash cycle

CAPACITY

Capacity	TOTE bins and B-25 bins
Throughput	Adjusted for processing needs

PERFORMANCE

Cycle Time	1 to 15 minutes
High Pressure Pump	350 psi at 40 gpm, TEFLON fitted
Scavenger Pump	Liquid removal at >40 gpm
Unit Hoses	Solvent resistive

SPECIAL LID

Size	Fits both 4 ft. x 6 ft. (B-25) and 3 ½ ft. x 4 ft. (TOTE bin)
Suction	Through top of lid (no holes bottom of bins)

FINISHES/COATINGS Manufacturer's standard

ELECTRICAL DATA

Motor Type	NEMA 4X enclosure

CONTROL

Type	PLC

Preferred vendor, but not limited to:
Manufacturer: SRS Industrial Engineering, Inc.
Model No. TW-500

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Technical Specifications

Section 11500

Containers

Equipment No. **Drum-Cart**

Process and Instrumentation Diagram: **N/A**

Process Media

Liquid	Liquid Waste
Gasses	N/A
Vapors	N/A
Solids	N/A
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description: Cart used as secondary containment for the transportation of material stored in drums.

CAPACITY

Drum Type: 55-gallon and 85-gallon drums

CONSTRUCTION

Material: Plain carbon steel
Fabrication: See attached drawing

CONTROL

Method of control: Manual

FINISHES/COATINGS None

Preferred vendor, but not limited to:
Manufacturer:
Model No.

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____
2. Approved _____ Date _____
3. Approved _____ Date _____
4. Approved _____ Date
5. Approved _____ Date
6. Approved _____ Date

Equipment No. **B-25 Bin**

Process and Instrumentation Diagram: **N/A**

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Heterogeneous waste, organic waste, metal scraps, concrete
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	B-25 bin for material storage and transport

CAPACITY

Capacity	90 ft^3
Dimensions	73” L x 47” W x 52” H
Empty Weight	400 lbs. (max.)
Full Weight	3000 lbs. (max.)

CONSTRUCTION

Material	ASTM A-569 low carbon hot rolled steel
Classification	LSA waste container
Package Type	CFR specification “Strong-Tight”

FINISHES/COATINGS

Interior Coating	Manufacturer Standard
Exterior Coating	Manufacturer Standard

CONTROL

Method of control	Forklift

Preferred vendor, but not limited to:
Manufacturer: Container Products Corporation

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____
2. Approved _____ Date _____
3. Approved _____ Date _____
4. Approved _____ Date
5. Approved _____ Date
6. Approved _____ Date

Equipment Specification Data Sheet 11500 - Co

Area/Location: Stabilization

Model No. B-25 LSA Waste Container

Equipment No. ~~Reagent Bin~~
Waste Bin

Process and Instrumentation Diagram: **N/A**

Comment [SS1]: Deleted reagent bin above, however you have reagents listed here. Clarify what bin will be used for. Justify why this needs to be deleted in this mod.

Comment [BN2]: The waste bin contains a mixture of reagents and waste.

Process Media

Liquid	Liquid waste, reagents
Gasses	N/A
Vapors	N/A
Solids	Heterogeneous waste, organic waste, reagents
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Enclosed hopper bin

CAPACITY

Capacity	62 ft^3
Empty Weight	725 lbs.

DESCRIPTION

L x W x H	43” x 49” x 70”
Opening	22” diameter lid with bolted clamp ring and neoprene gasket
Mounts	1 ¼” vacuum pressure relief fitting, dual purpose
Hopper	12” x 12” CAMLOCK slidegate assembly, 45° sides

CONSTRUCTION

Material	304 stainless steel
Thickness	12 gauge top, body, hopper 10 gauge bottom
Material Finish	2B

CONTROL

Method of control	Forklift

Preferred vendor, but not limited to:
Manufacturer: TOTE Systems
Model No.

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____
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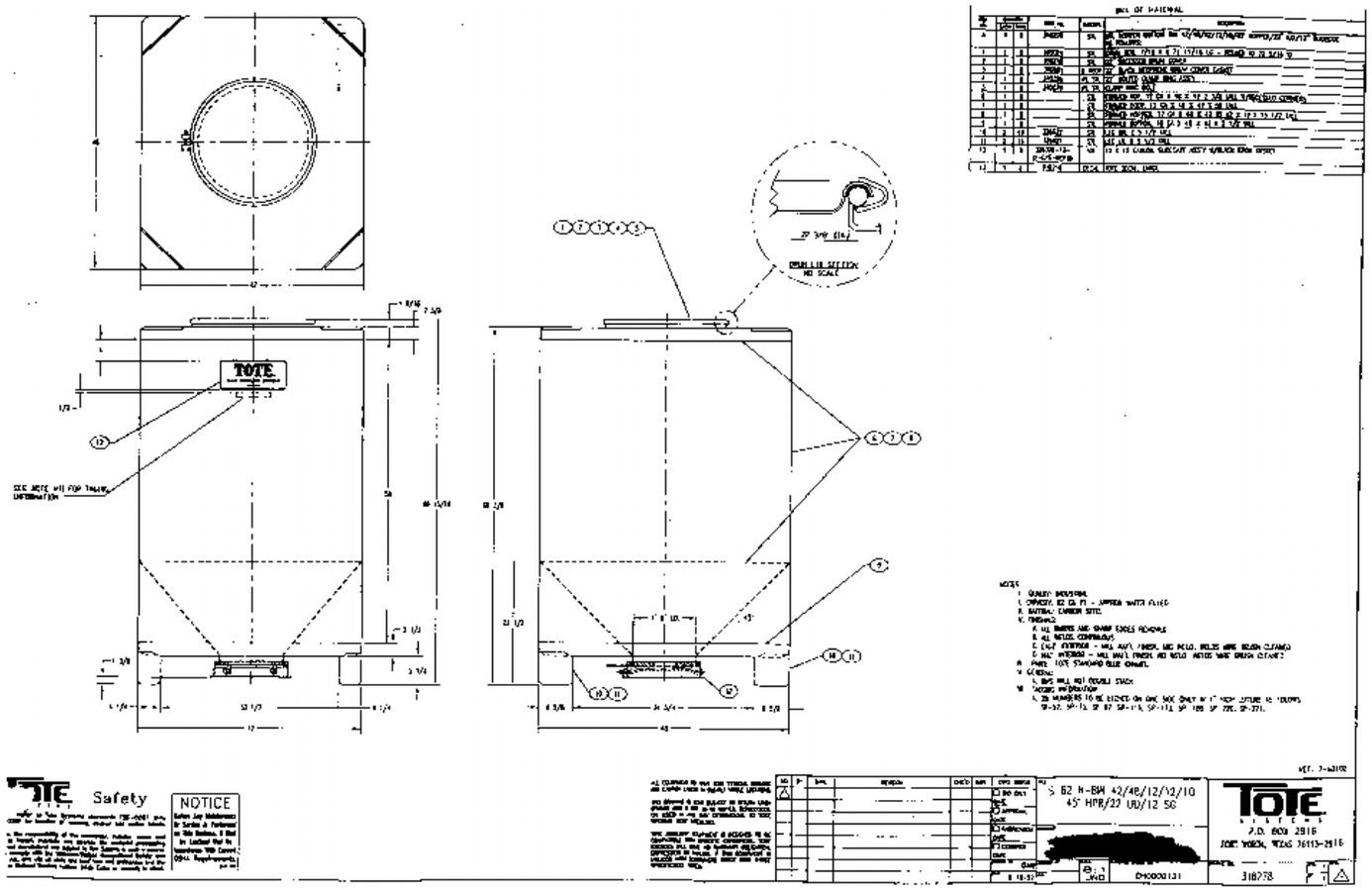
6. Approved _____ Date


BILL OF MATERIAL
TOTE
SEE NOTE #11 FOR TRAILER INFORMATION
DETAIL 1-1B SECTION
NO SCALE
NOTICE
Safety
S 62 H-BM 42/48/12/12/10
45' HPR/22 UD/12 SG
P.O. BOX 2916
PORT WORTH, TEXAS 76113-2916
318278

Technical Specifications

Section 11600

Abrasive Blast Booth

Equipment No.		
	TT-05-ABB-0503	**Liquid Abrasive Decontamination Booth**
	TT-05-FLT-0504	**HEPA Filter**
	TT-05-FLT-0508	**Filter**
	TT-05-PMP-0507	**Abrasive Rinse Pump**
	TT-05-PMP-0505	**Abrasive Wash Pump**

Process and Instrumentation Diagram: **31001-P-026**

Process Media

Liquid	Process water, slurry from recirculation
Gasses	CO_2
Vapors	N/A
Solids	CO_2 pellets
Specific Gravity	1.0
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Liquid Abrasive Blast Booth

THROUGHPUT

Throughput	1.7 m^3 / 8 hr ≈ (8) 55-gallon drums of material

DESCRIPTION

Overall Dimensions	19'-0" L x 4'-0" W x 8'-1" H (w/ high pressure H_2O unit)
Work Chamber	8'-0" L x 4'-0" W x 4'-0" H
Abrasive Media	Water, CO_2 pellets
Filter System	HEPA
Spray Guns	(2) wash, (1) rinse, (1) pellet
Weight	1000 lbs.
Load Weight	1500 lbs. max.

FINISHES/COATINGS

Interior	Manufacturer Standard
Exterior	Manufacturer Standard

ELECTRICAL DATA

Motor HP	5 hp (4 kW)
Motor Type	Splashproof – Class F Insulation
Motor Power	230 V / 3ϕ / 60 hz
Control Enclosure	NEMA 12 rating
Control Power	110 V / 1ϕ / 60 hz

SERVICE REQUIREMENTS

Air	Service air – 1" NPT, 100 psi, 90 cfm with non-return valve, relieving ball valve, and air filter
Water	75 gallons per complete drain (max.), ½" NPT connection

SERVICE PROVIDERS

CO_2 Pellet Delivery	Pyro Minerals Inc. (510) 839-3900
CO_2 Storage Bins	Alpheus Cleaning Technologies Corp. (888) 257-4387

Manufacturer: Kleiber & Schulz, Inc.
Model No. 4' x 8' Liquid Abrasive Decontamination System

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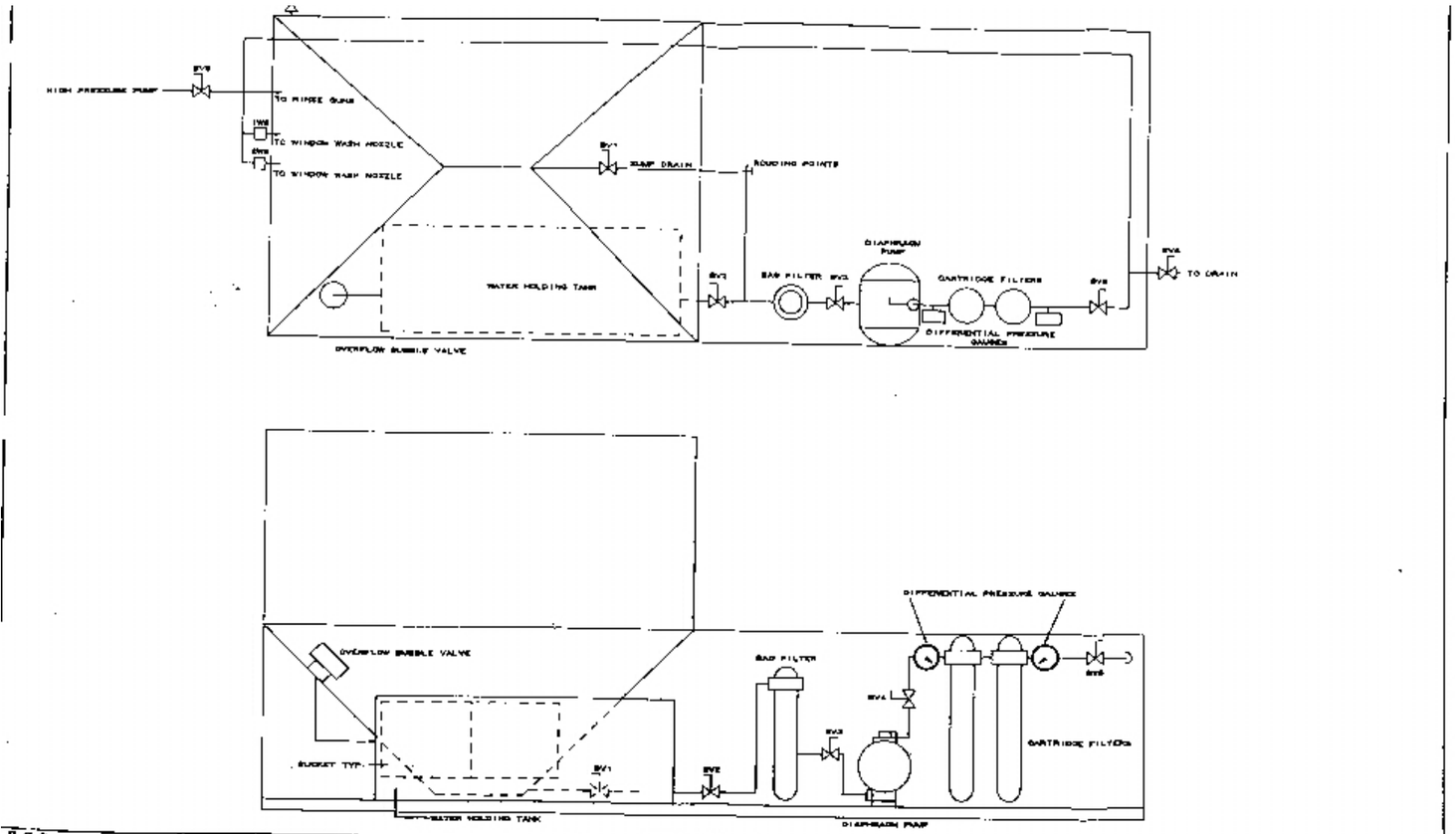
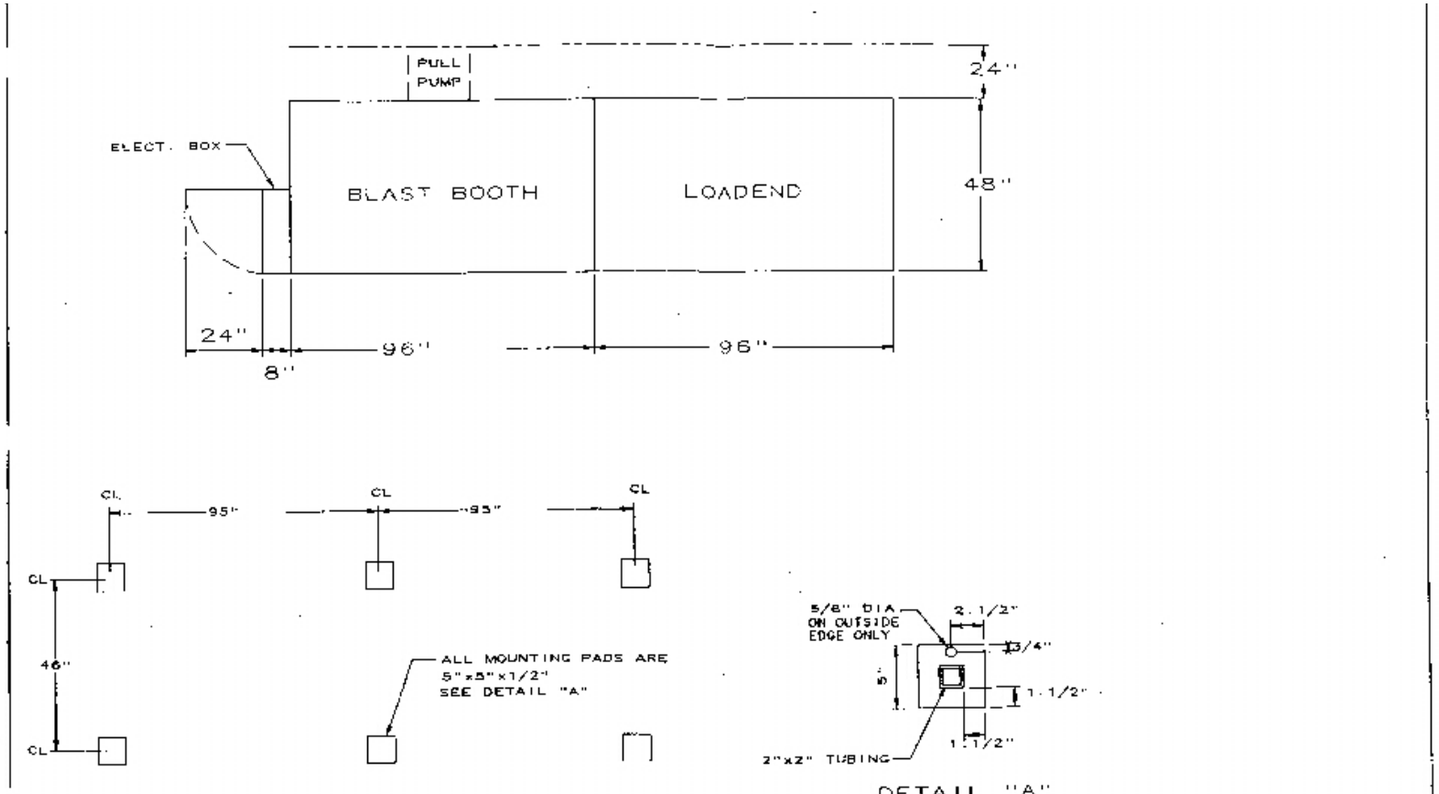
4. Approved _____ Date
5. Approved _____ Date
6. Approved _____ Date



KS KLEIBER & SCHULZ FARMINGDALE, NY		CLOSED LOOP RINSE SYSTEM DWG # : KS-107-105	DRAWN BY: CJO	APPROVED BY:	REV. # A	SHT. #



KLEIBER & SCHULZ FARMINGDALE, NY		FLOOR PADS AND MOUNTING	DRAWN BY:	APPROVED BY:	REV. #	SHT #
		DWG # : KS-107-107	BDL		A	1/1

Technical Specifications

Section 11700

Sorting System

Area/Location: Stabilization Building

Equipment No. **TP-03-E-0301** **Bin Dumper**
TP-01-E-0102 **Bin Dumper**

Process and Instrumentation Diagram: **31001-P-015; 31001-P-013**

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Heterogeneous waste, organic waste, metal scraps
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Tipping device to dump bin and drum contents onto conveyor

THROUGHPUT

Bin dumps	8 per day (max.)

CAPACITY

BIN SIZE (L X W X H)	75” X 48” X 52” (MAX.)
Lift Capacity	2500 lbs.

REQUIREMENTS

Load Position	Floor level
Discharge Design	Enclosed
Discharge Height	44 ½”
Discharge Angle	135 degrees

ELECTRICAL DATA

Motor HP	1.5
Volts/Phase/Hertz	460 / 3 / 60

CONTROL

Method	Manual control of discharge angle

Preferred vendor, but not limited to:
Manufacturer: National Bulk Equipment, Inc.
Model No.

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Area/Location: Stabilization Building

Equipment No.		
	TP-03-CV-0303	**Feed Conveyor**
	TP-03-Z-0308	**Feed Conveyor Vent Hood**
	TP-03-Z-0305	**Sort Table Vent Hood**

Process and Instrumentation Diagram: **31001-P-015**

Process Media	
Liquid	N/A
Gasses	Process Exhaust
Vapors	N/A
Solids	Heterogeneous waste, organic waste, metal scraps
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Transfer material from dump area to sort table

THROUGHPUT

Adjustable	To meet the processing demands

DIMENSIONS

Conveyor

Elevation	44 1/4” (top of belt)
Length	10’-8”
Drive	Variable speed
Belt Width	60”
Belt Length	23’-0”
Belt Type	3 ply with alligator fasteners

Conveyor Vent Hood

Width	5’-7”
Length	9’-2”
Openings	3 per side (2 Plexiglas, 1 open)
Exhaust Size	6” diameter

Sort Table Vent Hood

Diameter	8’-0”
Height	2’-2”
Openings	3 workstations
Exhaust Size	8” diameter

CONSTRUCTION

Refer to attached drawings for fabrication details.

Preferred vendor, but not limited to:
Manufacturer: G/M Systems
Model No.

1. Approved _____ Date _____
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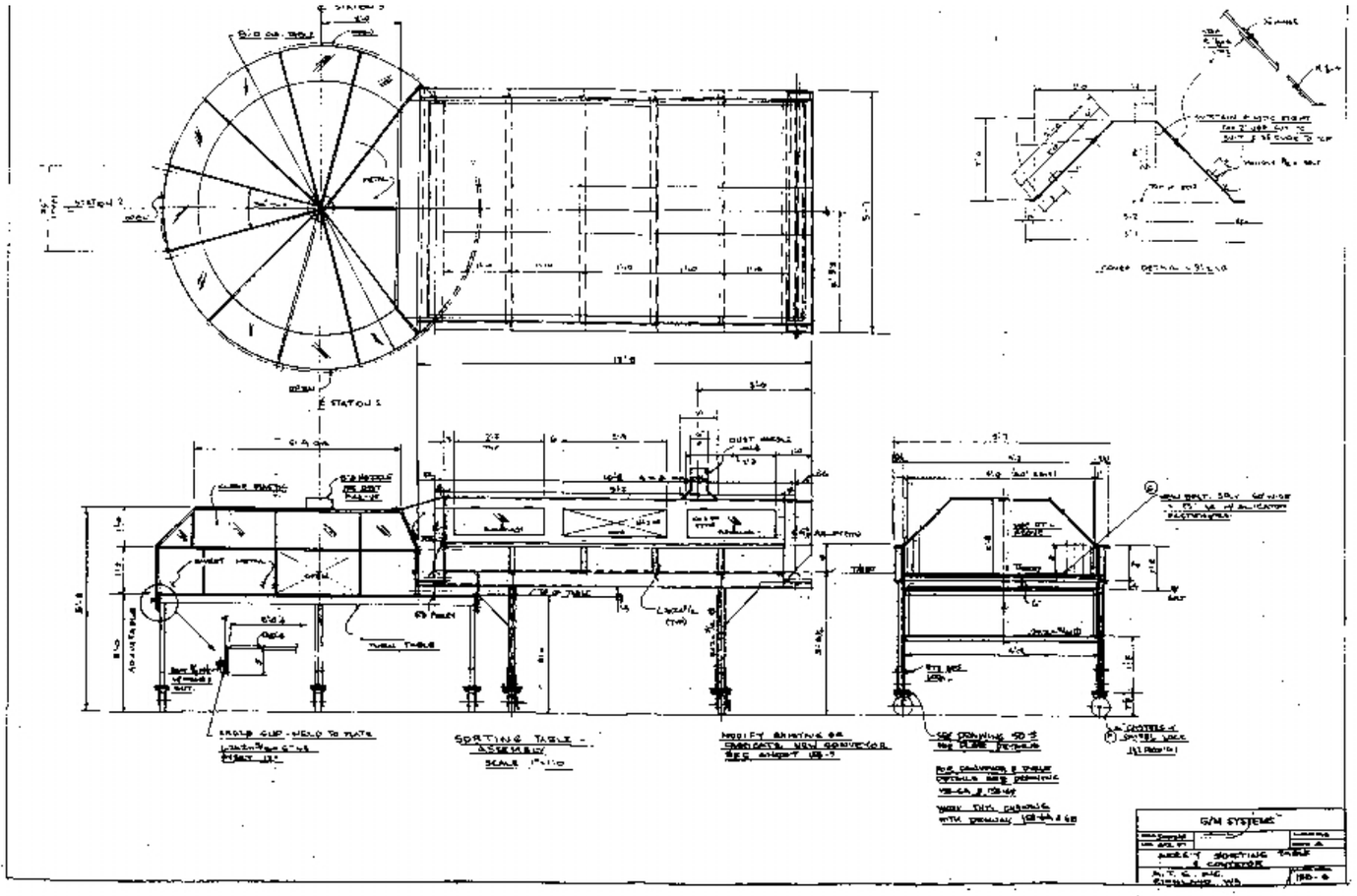
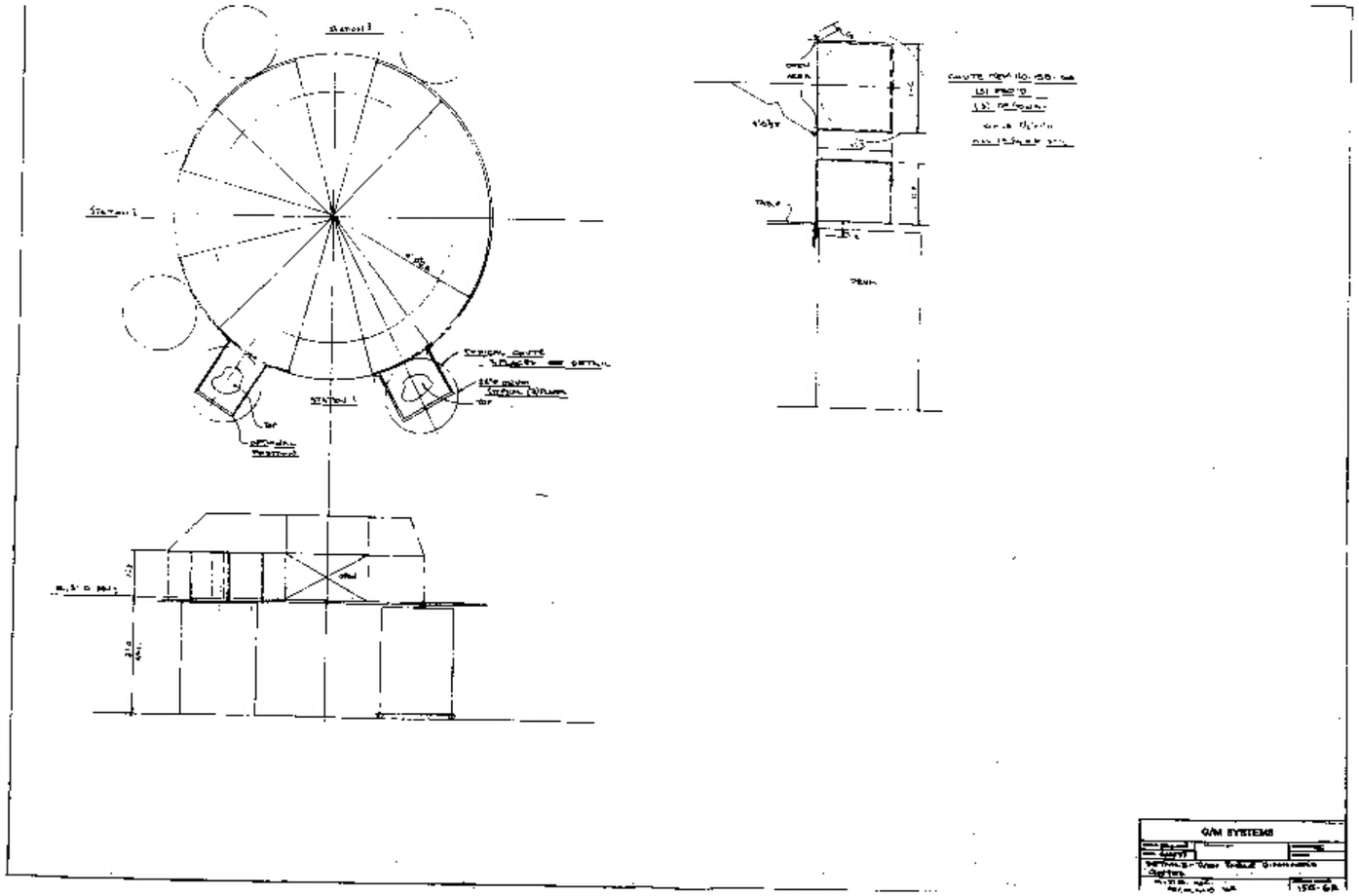
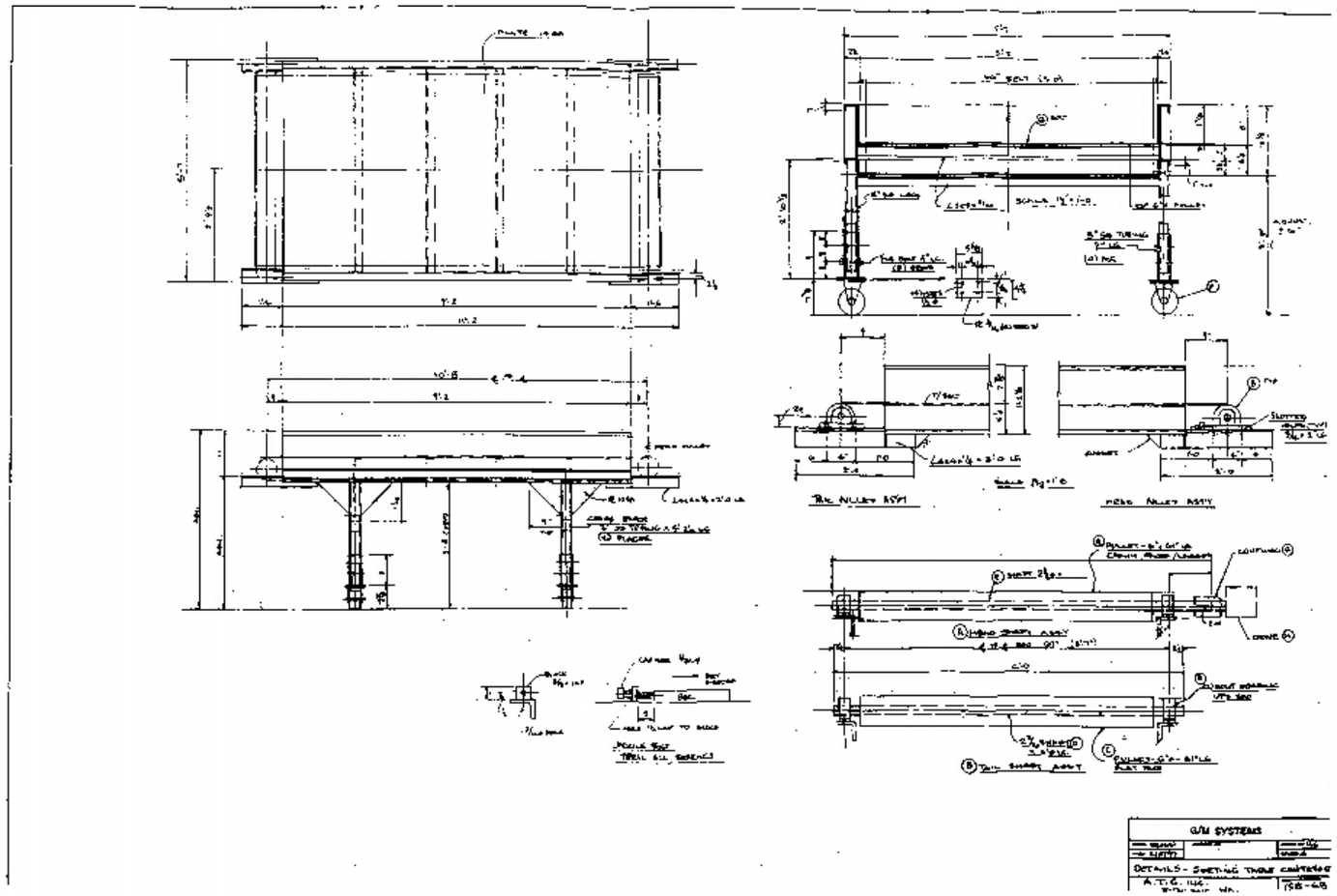
5. Approved _____ Date
6. Approved _____ Date


SORTING TABLE - ASSEMBLY
G/M SYSTEMS


G/M SYSTEMS


G/M SYSTEMS

Area/Location: Stabilization Building

Equipment No. **TP-03-Z-0304** **Rotating Sort Table**

Process and Instrumentation Diagram: **31001-P-015**

Process Media	
Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Heterogeneous waste, organic waste, metal scraps
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Rotating table for manual sorting of material

THROUGHPUT

Adjustable	To meet the processing demands

DIMENSIONS

Size	8’-0” diameter
Table Elevation	30”
Guardrail Height	3 ½”

CONSTRUCTION

Table Material	Stainless steel
Frame Material	Carbon steel
Table Thickness	12 gauge (min.)

ELECTRICAL DATA

Motor HP	1/2
Motor Enclosure	TEFC
Volts/Phase/Hertz	460/3/60

Preferred vendor, but not limited to:
Manufacturer: New London Engineering
Model No. 180

1. Approved _____ Date _____
2. Approved _____ Date _____
3. Approved _____ Date _____
4. Approved _____ Date
5. Approved _____ Date
6. Approved _____ Date

Technical Specification

Section 11800

Cutting and Shearing

Equipment No. **TP-02-TT-0202** **Torch Cutting Table**
TP-02-CYL-0203 **Cylinder Gas Bottle Rack**
TP-02-SER-0205 **Shear Table**
TP-02-T-0206 Disassemble Table

Process and Instrumentation Diagram: **31001-P-014**

Process Media

Liquid	N/A
Gasses	Oxyacetylene
Vapors	N/A
Solids	Scrap metal, wood, plastic and construction debris
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

General Description Cut large waste objects to sizes required for treatment tanks

THROUGHPUT

Throughput Adjusted to meet processing demands

CONSTRUCTION

Table Top Material Plate steel
FRAMEWORK MATERIAL TUBE STEEL

DIMENSIONS

Torch Cutting Table	8’-0” L x 3’-6” W x 2’-8” H
Disassemble Table	8’-0” L x 3’-6” W x 2’-8” H
Gas Bottle Rack	4’-0” L x 1’-3” W
Rack Capacity	4 bottles

FINISHES/COATINGS None

SHEAR TABLE

Dimensions	10’-0” L x 3’-6” W x 2’-8” H
Capacity	½” material
Type	Hydraulic shear
Control	CNC programmable backgauge
Manufacturer	Amada America, Inc.

Preferred vendor, but not limited to:
Manufacturer: N/A
Model No.

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____
2. Approved _____ Date _____
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4. Approved _____ Date
5. Approved _____ Date
6. Approved _____ Date

Equipment No. **TP-02-MC-0207** **Ferrous Metal Cutting Saw**
TP-02-MC-020? **Non-Ferrous Metal Cutting Saw**

Process and Instrumentation Diagram: **31001-P-014**

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Scrap metal, wood, plastic and construction debris
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Variable speed heavy duty band saw suitable for cutting ferrous and non-ferrous metals.

UNIT PERFORMANCE

Throat (band to column)	36”
Maximum Work Height	13”
Saw Blade Length	125”
Table Size	26” x 26”
Variable Band Speed	5-300 / 850-5200 fpm
Options	Integral exhaust hood

ELECTRICAL DATA

Motor HP	? hp
Volts / Phase / Hz	480 / 3 / 60

Preferred vendor, but not limited to:
Manufacturer: DoALL
Model No. 3613-20

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____
2. Approved _____ Date _____
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4. Approved _____ Date
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Technical Specification

Section 11900

Enclosures

Area/Location Stabilization

Equipment No. **TP-09-Z-0901** **Consolidation Box**

Process and Instrumentation Diagram: **31001-P-021**

Process Media

Liquid	Liquid Waste
Gasses	Process Exhaust
Vapors	Process Exhaust
Solids	N/A
Specific Gravity	N/A
Temperature	<100°F
Pressure	100 PSI

SCOPE

Unit Description	Protector Stainless Steel Multi-Hazard Glove Box

CAPACITY/THROUGHPUT

Capacity	2 m^3 / 8 hr

DIMENSIONS (L x W x H)

Cabinet Overall	62 3/8” x 31 1/8” x 46 3/8”
Cabinet Interior	35 1/2” x 28” x 32”
Transfer Chamber	11” x 20” x 13” (max. container size)
Exhaust Collar	3” square
Clearance Under Box	48” minimum

CONSTRUCTION

Cabinet Exterior	Epoxy coated 18 and 20 gage steel
Cabinet Interior	Type 304 stainless steel

ELECTRICAL DATA

Volts	115
Hertz	60
Amps	15

SPECIAL REQUIREMENTS

Filtration	HEPA exhaust
Internal Outlets	(2) 115 volt, 9amp max. combined rating
Internal Drain	Drain hole and stainless steel funnel for external liquid transfer

Preferred vendor, but not limited to:
Manufacturer: LABCONCO
Model No. 50655

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____
2. Approved _____ Date _____
3. Approved _____ Date _____
4. Approved _____ Date
5. Approved _____ Date
6. Approved _____ Date

Equipment Specification Data Sheet 11900-E

Area/Location Stabilization

Equipment No. **TT-03-Z-1305** ~~Confinement~~ SeaLand ~~Confinement~~ **Enclosure**
TT-04-Z-0416 **Polymer Filling Enclosure**

Process and Instrumentation Diagram: **31001-P-024; 31001-P-025**

Process Media

Liquid	N/A
Gasses	Process Exhaust
Vapors	Process Exhaust
Solids	N/A
Specific Gravity	N/A
Temperature	<100°F
Pressure	100 PSI

SCOPE

Unit Description Enclosure for waste processing and capturing exhaust (TT-03)
Enclosure for capturing exhaust (TT-04)

THROUGHPUT

~~Confinement~~ SeaLand Enclosure (TT-03) (~~8~~25) 55-gallon drums / 8 hour shift
Polymer Filling (TT-04) (10) 55-gallon drums / 8 hour shift

DIMENSIONS

(TT-03) Overall (L x W x H) ~~6'19~~20' ~~10~~0" x ~~6'~~8'-0" x ~~7'~~9'-~~0~~6"
~~Door (W x H) 3' 0" x 7~~6'
(TT-04) Overall (L x W x H) 6'-0" x 6'-0" x 7'-0"
Door (W x H) 3'-0" x 6'-6"

CONSTRUCTION

(TT-03) Material ~~One-piece molded fiberglass reinforced polyester (RFP).~~
Carbon steel (Sealand shipping container)
Floor Steel
Man door (2) (W x H) 3'-0" x 7'-0"
Elec.Roll-up Door (2) (W x H) 4'-0" x 4'-0"

(TT-04) Material One-piece molded fiberglass reinforced polyester (FRP)
Floor ~~Carbon Ss~~Steel
Thickness 1" minimum on walls, roof, and door
Insulation Sufficient to maintain a minimum rating of "R" = 7.2
Door Corrosion resistant hardware and 17" x 17" shatterproof window

ELECTRICAL DATA

(TT-03) Volts/Phase/Hertz 460/3/60
Safety Switch 60 amp
Internal Outlet Liquid tight

(TT-04) Volts/Phase/Hertz 120/1/60
Safety Switch 30 amp
Internal Outlet Duplex receptacle

CONTROLS

(TT-03) Lighting External switch
Emergency Exit Lighting On all the time with battery backup
Hydraulic Unit Internal switch
Elec. Roll-up Doors Internal switch and Manual backup operation
Elec. Roller Conveyor Internal switch

Comment [SS3]: 1 what? Where is the description of the actual door that the operator will use?

Comment [BN4]: added

Comment [LM5]: What if there is a power failure and someone is inside unit?

Comment [BN6]: The operator opens the door and exits the unit. There is emergency backup lighting inside the unit.

Comment [SS7]: Where is the electrical data for the new sealand? Is this information the correct specs for the electrical components listed above?

Comment [BN8]: added

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____
2. Approved _____ Date _____
3. Approved _____ Date _____
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5. Approved _____ Date
6. Approved _____ Date

(TT-04) Lighting/Exhaust External switch
Temperature Thermostat and heater~~, None~~

Preferred vendor, but not limited to:
Manufacturer: (TT-03) Yangzhou Runyang Logistic Equip. Co. Ltd, Model No. Type TYC-13
(TT-04) Bevco Engineering Co., Inc. Model No. ECS-F66

Bevco Engineering Co., Inc.
Corrosive Storage Model No. RY7046767, 1G-3.15.K90-VTE-VWK-VBM

Other Manufacturers
1. Approved Equal

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Technical Specification

Section 14100

Monorails, Cranes and Lifts

Attachment 11 – Technical Specifications for STB Processes *February 14, 1998*

[illegible] Jib Crane

Process and Instrumentation Diagram 31001-P-019

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	N/A
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE	
Crane Type	Base plate mounted free standing jib crane
CAPACITY/THROUGHPUT	
Hoist capacity	2-ton
UNIT PERFORMANCE	
CONSTRUCTION	
Height	15 feet (Approx – to be verified at final design)
Boom Length	10 feet (Approx – to be verified at final design)
Rotation	360 degree
FINISHES AND PROTECTIVE COATINGS	
Exterior coating	Manufacturer's standard
ELECTRICAL DATA	
Horsepower	6
Voltage/Phase/HZ	480/3/60
Enclosure	NEMA 7
CONTROL DATA	
Control Panel	Local control panel to raise, lower and move hoist.

Preferred vendor, but not limited to:
Manufacturer Spanco
Model No 100 Series

Other Manufacturers
1. Approved equal

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Process and Instrumentation Diagram: 31001-P-014

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	N/A
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE	
Crane Type	Heavy duty electric wire rope hoist with monorail trolley
CAPACITY/THROUGHPUT	
Hoist capacity	2-ton
UNIT PERFORMANCE	
Trolley speed	2 speed: 60 fpm & 15 fpm
Hoist speed	32 fpm
Height of lift	40-ft (Approx – to be verified at final design)
CONSTRUCTION	
Hoist housing	Carbon steel
Hoist Brakes	Disk type brakes with regenerative braking
Trolley Brakes	Disk type brakes
FINISHES AND PROTECTIVE COATINGS	
Exterior coating	Manufacturer's standard
ELECTRICAL DATA	
Horsepower	6
Voltage/Phase/HZ	480/3/60
Enclosure	NEMA 7
CONTROL DATA	
Control Panel	Local control panel to raise, lower and move hoist
Limit switches	Upper and lower limit switches

Preferred vendor, but not limited to:
Manufacturer American Crane & Equipment Corporation
Model No Low Headroom Monorail Hoist Model 23

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

ss and Instrumentation Diagram 31001-P-013; 31001-P-015

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Heterogeneous waste, organic waste, metal scraps
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Powered drum lift and tilt

CAPACITY

Drum Size	55-gallon

CONSTRUCTION

Frame	All steel welded

DIMENSIONS

Frame Height	55"
Dispensing Height	60"
Length of Base	60"
Width of Base	44" front, 25" back

FINISHES/COATING

Interior Coating	Manufacturer standard
Exterior Coating	Manufacturer standard

ELECTRICAL DATA

Motor Type	TEFC
Volts/Phase/Hertz	115/1/60

Preferred vendor, but not limited to:
Manufacturer: Morse Mfg. Co., Inc.
Model No. 400A-60-110

Or – Manufacturers
Approved Equal

1. Approved _____ Date _____
2. Approved _____ Date _____
3. Approved _____ Date _____
4. Approved _____ Date
5. Approved _____ Date
6. Approved _____ Date

Equipment No.	**TT-01-E-0102**	**Waste Container Lift**
	TT-01-E-0107	**Reagent Container Lift**
	TT-02-E-0202	**Waste Container Lift**
	TT-02-E-0207	**Reagent Container Lift**
	~~**TT-03-E-1310**~~	~~**Bin Elevator**~~
	TT-04-E-0415	**Waste Container Lift**

Process and Instrumentation Diagram **(2) 31001-P-022; (2) 31001-P-023; ~~31001-P-024;~~ 31001-P-025**

Process Media

Liquid	Liquid or slurry waste, reagents
Gasses	N/A
Vapors	N/A
Solids	Sized reduced mixed waste, reagents
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

General Description

Bins will be placed on the lift arms by a forklift (positioned by guides) and locked into place by a safety pinning system. The operator will then raise the bin to the required height. Once elevated, the bin will be pivoted 180 degrees to the dumping position directly above the feeder. The bin slidegate and feeder will be connected by a flexible boot to form an airtight seal. The operator will open the bin slidegate only once per completed dumping. The feeder will regulate the amount of material being processed. After the bin is emptied, the procedure is reversed and the lowered bin is removed. Throughput varies for each process, depending upon feed rates and cycle times. A lift (in any process) will be used a maximum of eight times in an eight hour shift.

Comment [LM9]: Is this addressing the list of equipment from above? What bin is this refereeing to ?

Comment [BN10]: Yes. All MTUs listed on this sheet.

CAPACITY

Container size	62 ft^3 bin
Lifting weight	6000 lbs. (max.)

REQUIREMENTS

Vertical lift	15 ft.
Discharge point	6 ft. radius from pivot point

CONTROLS

Method of control	PLC operated from floor level

Preferred vendor, but not limited to:
Manufacturer: TOTE Systems
Model No.

1. Approved_____ Date_____
2. Approved_____Date_____
3. App3. Approved_____ Date_____
4. App4. Approved_____ Date_____

A

Process and Instrumentation Diagram: N/A

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Loaded pallets
Specific Gravity	N/A
Temperature	Ambient
Pressure	Atmospheric

SCOPE

General Description	Hydraulic hand pallet jack (truck)

CAPACITY/THROUGHPUT

Lifting Capacity	5500 lbs.

PERFORMANCE

Fork Dimensions (W x L)	27" x 48"
Height, lowered	2 7/8"
Height, raised	7 3/4"

CONSTRUCTION

Frame material of construction	Carbon steel
Fork material of construction	Reinforced triple formed steel
Description:	Hydraulic pump w/ relief valve Lever control for selecting high, neutral, low positions Articulating steering wheel Handle returns to upright position when not in use

FINISHES & PROTECTIVE COATINGS

Exterior Coating	Manufacturer's Standard

ELECTRICAL DATA

N/A

CONTROL

N/A

Preferred vendor, but not limited to:
Manufacturer: Dayton

Other Manufacturers
1. Approved equal

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Technical Specification

Section 14200

Material Handling System

Equipment Specification Data Sheet 14200 - MATERIAL HANDLING S

Area/Location Stabilization B

Equipment No. **TT-04-F-0401** **Polymer Pellet Feeder**

Process and Instrumentation Diagram **31001-P-025**

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Polymer pellets
Bulk Density	20 lbs/ft^3
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	55-gallon drum unloader with volumetric feeder suitable for batch operation.

CAPACITY/THROUGHPUT

Processing	Batch operation with a maximum batch of 55 gal.
Feed Rate	180 ft^3/hr

PERFORMANCE N/A

CONSTRUCTION

Casing	Carbon steel construction
Auger	316 SST construction
Drive Shaft and Seal Components	304 SST construction
Feeder	Volumetric type with constant speed drive. Feeder shall be sized to deliver the conveyed material to the required height.

FINISHES AND PROTECTIVE COATINGS

Exterior coating	N/A
Interior coating	N/A

ELECTRICAL DATA

Motor horsepower	3 hp
Enclosure	NEMA 7
Voltage/Phase/Hz	480/3/60

CONTROLS

Operation:	On/Off Duty. Unit shall operate until 55 gallon drum is empty. A photoelectric beam senses when drum is empty.

Preferred vendor, but not limited to:
Manufacturer: ABR Corporation
Model No Drum Unloader

Other Manufacturer

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Equipment Specification Data Sheet 14200 - MATERIAL HANDLING S

Area/Location Stabilization B

Equipment No. **TT-01-F-0103** **Waste Feeder (High Capacity Solids Mixing)**
TT-02-F-0203 **Waste Feeder (Low Capacity Solids Mixing)**

Process and Instrumentation Diagram **31001-P-022; 31001-P-023**

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Soil, gravel, sand, filter cake
Maximum Solid Size	3/8-Inch
Avg Bulk Density	60 lbs/ft^3
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Gravimetric feeder suitable for batch operation. Maximum batch volume is 62 ft^3.

CAPACITY/THROUGHPUT

Processing	Batch operation with a maximum batch of 62 cu. ft.
Feed Rate	2000 lb/hr (35 ft^3/hr)

PERFORMANCE

Weighing System Gain in weight measuring system with weight gain measured at the mixer as indicated.
Screw Diameter 3-inch

CONSTRUCTION

Casing	Stainless steel construction
Auger	316 SST construction
Drive Shaft and Seal Components	304 SST construction
Hopper	1 ½ ft^3 capacity, flanged feed chamber with cover having a circular inlet. Provide flexible coupling to connect feeder inlet to bin discharge.
Outlet	Downspout type outlet with end bearings.

FINISHES AND PROTECTIVE COATINGS

N/A

ELECTRICAT DATA

Motor Horsepower	1 Hp
Enclosures	NEMA 7
Voltage/Phase/Hz	480/3/60

CONTROLS

Controller Microprocessor control combining keyboard, display and motor control mounted in a NEMA 7 enclosure. Controller capable of multiple feeder control

Load Cells Compression strain gauge load cell system with an accuracy of +/-0. 1%

Preferred vendor, but not limited to:
Manufacture/Vendor: Vibra Screw

Other Vendors;
Manufacture/Model No. _____
1. Acrison, Inc.

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Equipment Specification Data Sheet 14200 - MATERIAL HANDLING S

Area/Location Stabilization B

Equipment No. **TT-01-F-0106** **Reagent Feeder (High Capacity Solids Mixing)**
TT-02-F-0206 **Reagent Feeder (Low Capacity Solids Mixing)**

Process and Instrumentation Diagram **31001-P-022; 31001-P-023**

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Cement
Bulk Density	70 lbs/ft^3
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Gravimetric feeder suitable for batch operation.

CAPACITY/THROUGHPUT

Processing	Batch operation with a maximum batch of 62 cu. ft.
Feed Rate	2000 lb/hr (35 ft^3/hr)

PERFORMANCE

Weighing System Gain in weight measuring system with weight gain measured at the mixer as indicated.
Screw Diameter 3-inch

CONSTRUCTION

Casing	Stainless steel construction
Auger	316 SST construction
Drive Shaft and Seal Components	304 SST construction
Hopper	1 ½ ft^3 capacity, flanged feed chamber with cover having a circular inlet. Provide flexible coupling to connect feeder inlet to bin discharge.
Outlet	Downspout type outlet with end bearings.

FINISHES AND PROTECTIVE COATINGS

N/A

ELECTRICAL DATA

Motor horsepower	1 Hp
Enclosure	NEMA 7
Voltage/Phase/Hz	480/3/60

CONTROLS

Specified with waste feeder

Preferred vendor, but not limited to:
Manufacture/Vendor: Vibra Screw

Other Vendors;
Manufacture/Model No. _____
1. Acrison, Inc.

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Equipment Specification Data Sheet 14200 - MATERIAL HANDLING S

Area/Location Stabilization B

Equipment No. **TT-04-F-0407** **Waste/Polymer Feeder**

Process and Instrumentation Diagram **31001-P-025**

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Soil, gravel, sand, filter cake and polymer mix
Bulk Density	60 lbs/ft^3
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Gravimetric feeder suitable for batch operation.

CAPACITY/THROUGHPUT

Processing	Batch operation with a maximum batch of 62 cu. ft.
Feed Rate	500 lb/hr (8.5 ft^3/hr) Feed rate to match Extruder.

PERFORMANCE

Weighing System Loss in weight measuring system with weight loss measured at the Waste/Polymer Mixer as indicated.

Screw Diameter 2-inch

CONSTRUCTION

Casing	Stainless steel construction
Auger	316 SST construction
Drive Shaft and Seal Components	304 SST construction
Hopper	1 ½ ft^3 capacity, flanged feed chamber with cover having a circular inlet. Provide flexible coupling to connect feeder inlet to bin discharge.
Outlet	Downspout type outlet with end bearings.

FINISHES AND PROTECTIVE COATINGS

N/A

ELECTRICAL DATA

Horsepower	3/4 Hp
Enclosure	NEMA 7
Voltage/Phase/Hz	480/3/60

CONTROLS

Controller Microprocessor control combining keyboard, display and motor control mounted in a NEMA 7 enclosure. Controller capable of multiple feeder control

Load Cells Compression strain gauge load cell system with an accuracy of +/-0. 1%

Preferred vendor, but not limited to:
Manufacturer: Vibra Screw
Model No

Other Manufacturers
1. Acrison, Inc.

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Equipment Specification Data Sheet 14200 - MATERIAL HANDLING S

Area/Location Stabilization B

Equipment No. **TT-04-F-0413** **Waste Feeder (Polymer Mixing)**

Process and Instrumentation Diagram **31001-P-025**

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Soil, gravel, sand and filter cake
Bulk Density	60 lbs/ft^3
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Volumetric feeder suitable for batch operation.

CAPACITY/THROUGHPUT

Processing	Batch operation with a maximum batch of 62 cu. ft.
Feed Rate	2000 lb/hr (35 ft^3/hr)

PERFORMANCE

Screw Diameter 3-inch

CONSTRUCTION

Casing	Stainless steel construction
Auger	316 SST construction
Drive Shaft and Seal Components	304 SST construction
Hopper	1 ½ ft^3 capacity, flanged feed chamber with cover having a circular inlet. Provide flexible coupling to connect feeder inlet to bin discharge.
Outlet	Downspout type outlet with end bearings.

FINISHES AND PROTECTIVE COATINGS

N/A

ELECTRICAL DATA

Horsepower	1 Hp
Enclosure	NEMA 7
Voltage/Phase/Hz	480/3/60

CONTORLS

Control SCR motor controller for variable speed operation mounted in a NEMA 7 enclosure. Feeder and motor controller shall be capable of a 20:1 turndown.

Preferred vendor, but not limited to:
Manufacture/Vendor: Vibra Screw

Other Vendors;
Manufacture/Model No. _____
1. Acrison, Inc.

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Equipment No. TT-03-F-1306 Reagent Feeder (In Container Mixing)

Process and Instrumentation Diagram 31001-P

Process Media

Liquid	N/A
Gasses	N/A
Vapors	N/A
Solids	Cement
Bulk Density	70 lbs/ft^3
Temperature	Ambient
Pressure	Atmospheric

SCOPE

Unit Description	Volumetric feeder suitable for batch operation.

CAPACITY/THROUGHPUT

Processing	Batch operation with a maximum batch of 62 cu. ft.
Feed Rate	2000 lb/hr (30 ft^3/hr)

PERFORMANCE

Screw Diameter – 3 inch

CONSTRUCTION

Casing	Stainless steel construction
Auger	316 SST construction
Drive Shaft and Seal Components	304 SST construction
Hopper	1 ½ ft^3 capacity, flanged feed chamber with cover having a circular inlet. Provide flexible coupling to connect feeder inlet to bin discharge.
Outlet	Downspout type outlet with end bearings.

FINISHES AND PROTECTIVE COATINGS

N/A

ELECTRICAL DATA

Horsepower	1 Hp
Enclosure	NEMA 7
Voltage/Phase/Hz	480/3/60

CONTORLS

Control – SCR motor controller for variable speed operation mounted in a NEMA 7 enclosure. Feeder and motor controller shall be capable of a 20:1 turndown.

Preferred vendor, but not limited to:
Manufacture/Vendor: Vibra Screw

Other Vencors:
Manufacture/Model No. _____
1. Acrison, Inc.

1. Approved _____ Date _____ 4. Approved _____ Date
2. Approved _____ Date _____ 5. Approved _____ Date
3. Approved _____ Date _____ 6. Approved _____ Date

Comment [LM11]: Basis for removing all of
Comment [BN12]: Reagent feeder has been
Formatted