

PROJECT SERVICES:

PARTNERING PROGRAM:

This project shall be designed, fabricated and installed using the GFC Partnering Program. Our Partnering Program is a strategy of commitment, communication and trust for all parties involved in the project to ensure a well-coordinated "Turnkey" project.

PROJECT MANAGEMENT SERVICES BY GFC:

GFC shall provide a Project Engineer for this project to insure that there is a single point communication with the customer. Also, the Project Engineer will keep the project schedules up-to-date to insure schedule is met. The Project Engineer shall also coordinate all activities with all trades, suppliers and customer for the installation of this equipment.

INSTALLATION & "ON SITE" SUPERVISION BY GFC:

GFC shall provide one (1) working Mechanical Supervisor & one (1) Electrical Installation Supervisor during the installation of this equipment. RCO Engineering shall provide two (2) mechanical personnel & one (1) electrical personnel to install equipment with our supervisors. Our quotation includes unloading the equipment, moving equipment to the job site, leveling the equipment, complete installation, electrical field wiring and start-up.

Our quotation includes all required field tools and installation support equipment.

SAFETY:

When installing new equipment or modifying existing equipment, GFC field personnel shall have all the required PPE (Personal Protective Equipment) required, such as breathing dust masks, gloves, safety glasses, hard hats, ear plugs, etc. All safety procedures are followed on a daily and ongoing basis.

OPERATION AND MAINTENANCE MANUALS BY GFC:

GFC shall provide two (2) sets of operation manuals, electrical drawings and recommended spare parts.

TRAINING:

Upon completion of installation and start-up, GFC shall train your appointed personnel as to the operation, trouble shooting, and preventative maintenance of the system.

INSURANCE CERTIFICATES:

Upon receipt of your formal purchase order and prior to the start of installation, GFC shall submit the required Certificate of Insurances and Workman's Compensation Certificates.

PROJECT SCHEDULE, SYSTEM APPROVAL DRAWINGS & UTILITY DRAWINGS:

Upon receipt of your formal purchase order, GFC shall submit within 10 – 14 days after receipt, required Project Schedule, Approval Drawings and required Utility Requirement drawing.

WARRANTY: (TEN YEAR TANK AND HOUSING WARRANTY)

All spray washer tanks and upper housing, heated and unheated, regardless of material used, supplied by GFC, under normal use and operating conditions in the plant of the original purchaser, proves to be defective within ten (10) years from date of installation, will be repaired and/or replaced by GFC without charge to the purchaser.

Purchaser is required to notify GFC of the defect and to establish that the tanks and upper housing have been properly maintained and operated within the original process parameters under normal usage.

All other equipment supplied by GFC shall carry the standard one-year warranty against defect and operation. This warranty shall be valid as long as proper maintenance has been performed and equipment operates under normal design conditions.

ENGINEERING SPECIFICATIONS**EQUIPMENT TO BE SUPPLIED:**

- Four (4) Stage Stainless Steel Spray Washer
- Reverse Osmosis System
- Heated Blow-Off System
- Enclosed Track Overhead Conveyor System
- Exhaust Stack for Spray Washer
- Exhaust Stack for Burner Tube Vent
- Roof Penetrations/Curbing for All Exhaust Stacks
- Electrical

PRODUCT WEIGHT:	50 Pounds Per Rack
HOOK CLEARANCE:	30" top Of Track To Top Of Part
MAXIMUM PART SIZE:	48" Long x 72" High x 18" Wide
SILHOUETTE OPENING:	84" High x 24" Wide
CONVEYOR SPEED:	2 FPM (Variable)
CONVEYOR TYPE:	Enclosed Track
ELECTRICS:	240 Volt, 3 Phase, 60HZ.
ELECTRICAL CONTROLS:	Allen Bradley or Equal
FUEL:	Natural Gas
AIR:	90-100 PSI (Clean & Dry)
WATER:	Standard Tap Pressure
REQUIREMENTS:	FM, NEC, NFPA, and OSHA.

PROCESS CYCLE

<u>STAGE</u>	<u>PROCESS</u>	<u>TIME</u>	<u>TEMPERATURE</u>
	Load	-	-
1	Chemical Wash	90 Seconds	135-153 Deg. F.
	Drain	90 Seconds	-
2	City Water Rinse	60 Seconds	Ambient
	Drain	90 Seconds	-
3	Recirculated R.O Rinse	30 Seconds	Ambient
4	Final R.O Halo	Pass	-
	Heated Blow-Off	Pass	150 - 200 Deg. F.
	Cool Down	5 Min.	Ambient
	Unload	-	-

INVESTMENT SUMMARY

FOUR (4) STAGE STAINLESS STEEL SPRAY WASHER.....

REVERSE OSMOSIS SYSTEM.....

HEATED BLOW-OFF SYSTEM.....

ENCLOSED TRACK OVERHEAD CONVEYOR SYSTEM.....

SUBMERSIBLE SUMP PUMPS & HEADER
 PIPING FOR STAGES 1, 2 & 3.....

MATERIALS AND INSTALLATION LABOR
 FOR EXHAUST STACKS, ROOF PENETRATIONS
 & ALL REQUIRED FLASHING FOR SPRAY
 WASHER EXHAUST FAN & STAGE #1
 BURNER TUBE VENT

ELECTRICAL.....

GFC INSTALLATION SUPERVISION.....

TOTAL INVESTMENT.....\$ ██████████

*GFC shall provide one (1) GFC Mechanical Installation Manager & one (1) GFC Electrical Installation Supervisor. ██████████ shall provide two (2) mechanically inclined personnel & one (1) electrical technician to work under our working supervisors to install all equipment.

FOB: Original shipping location (Customer responsible for all freight on this project)

DELIVERY:

We are quoting delivery of equipment to be 12 - 14 weeks after receipt of Purchase Order, Down Payment, and Approved Drawings. Actual delivery to be confirmed at receipt of order.

PAYMENT TERMS: (BASED ON APPROVED CREDIT)

- THIRTY PERCENT (30%) DUE WITH PURCHASE ORDER.
- MONTHLY PROGRESS PAYMENTS, BASED ON WORK COMPLETED, UP TO 90% OF PROJECT TOTAL COST, NET 10.
- TEN PERCENT (10%) DUE UPON COMPLETION OF INSTALLATION AND START UP, NET 30

**EQUIPMENT SPECIFICATIONS: FOUR (4) STAGE STAINLESS STEEL
SPRAY WASHER**

GFC shall design and fabricate one Four (4) Stage Stainless Steel Spray Washer as described in the following specifications.

<u>STAGE</u>	<u>ZONE</u>	<u>TIME</u>	<u>TEMPERATURE</u>	<u>BURNER CAPACITY</u>
1	Chemical Wash	90 Seconds	135 – 153 Deg. F.	607,500
2	City Water Rinse	60 Seconds	Ambient	-
3	Recirculated R.O. Rinse	30 Seconds	Ambient	-
4	R.O. Halo	Pass	Ambient	-

TANKS:

The solution tanks for all stages shall be fabricated of 3/16" type 304 stainless steel. All tanks shall be structurally reinforced with all seams continuously welded inside and out for liquid tight construction. The tank extension will extend beyond the upper housing for access to pump suction screens and for mounting of the pumps.

Each tank extension to have a minimum of one stainless steel access lid and liquid seal frame. Each access lid assembly is constructed entirely from stainless steel components including the access lid, safety handle, hinges, and frame.

All tanks are sized for a minimum of three times the capacity of the pump. Tank base support structure will be on a maximum of 3' 0" centers for weight distribution and the tank bottom sloped a minimum of 1/8" per foot, back to front for ease of cleaning the tank.

Fiberglass walk grating will be provided over the tank, in the spray zone, in each stage for servicing of nozzles. Walk grating shall be designed for easy removal for maintenance and/or tank cleaning.

TANK CLEAN-OUT DOORS:

A 14" x 14" marine type clean-out door, fabricated out of type 304 stainless steel, will be supplied in each heated tank. Clean-out door has a neoprene rubber seal and four- (4) heavy duty bolts for equal holding pressure.

GFC has quoted as an option to provide submersible sump pumps in each of the three (3) washer stages. Sump pumps will be piped to a main header to where the customer will be responsible for tying into.

WASHER HOUSING:

The washer upper housing for shall be fabricated of 12-gauge type 304 stainless steel. Drain areas between stages to be fabricated of 3/16" stainless steel and will be sloped a minimum 1/4 inch per foot. Baffles will be installed in each stage to prevent splashing and over-spray.

A 24" X 60", watertight, hinged man access door will be provided between each stage. Each door will be complete with stainless steel hinges, rubber gaskets, and a 2-point cam-locking device. Each door will be complete with a bottom drain trough to return any solution back to the tank. Each access door shall be complete with removable access stairs. Located by each access door, GFC shall provide one (1) swing in light. Light shall be 500-watt halogen light complete with separate on/off switch located by the access door.

Conveyor track guarding shall be provided in each spray zone. Conveyor track guarding shall be fabricated from 16 – 18 gauge stainless steel.

The roof of the washer shall be tapered to each side to prevent condensation from dripping back down onto the parts, which could leave water and/or chemical spots.

PUMP AND PUMP SUCTION SCREENS:

Pumps for all stages shall be Gusher, or equal, vertical immersion barrel mount type to eliminate leakage and shall be cast iron construction with stainless steel shaft and impeller. Each tank shall have a series of double removable, 18 gauge, stainless steel filter screens complete with stainless steel frames, handle, and screen slides. Screens are sized for 1 square foot of filter screen per 100 GPM of pump capacity.

WASHER SPECIFICATIONS:

<u>STAGE</u>	<u>GPM</u>	<u>HD</u>	<u>H.P.</u>	<u>NOZZLES</u>	<u>RISERS</u>	<u>NOZZLE TYPE</u>	<u>APPROX. TANK CAPACITY</u>
1	180	55'	7 ½	60	5	6540 V-JET	700 Gallons
2	144	55'	7 ½	48	4	6540 V-JET	585 Gallons
3	108	55'	5	36	3	6540 V-JET	585 Gallons
4	-	55'	-	24	2	6540 V-JET	

WASHER SPRAY:

Spray coverage of the product in each stage is accomplished by using Bex, or equal, plastic snap-on spray nozzles. Nozzles in all stages shall be V-jet, rated at 3 GPM.

All risers shall be fabricated out of schedule 80 CPVC complete with quick release cam locks. The spray nozzles shall be on 12" vertical staggered centers. The spray risers shall be spaced on 9" horizontal centers. Nozzles shall be located at each side of the product. This spacing provides the best impingement and coverage of the product.

Risers shall be complete with a removable end cap(s). Headers shall be bottom entry in design and be fabricated out of stainless steel. Exterior pump piping shall be schedule 80, CPVC. All interior submerged piping shall be stainless steel schedule 10.

R/O WATER HALO RINSE (STAGE 4):

Stage 4 shall consist of a Reverse Osmosis water halo rinse stage shall following stage 3. R/O halo shall incorporate two single risers with 6 nozzles rated at 1-1/2 GPM. One solenoid valve will be supplied and wired in to the start relay of stage one (3) pump control. This riser shall operate only when the washer is in use.

GAUGES:

Each pump outlet piping shall be equipped with one (1) pressure gauge for reading pump pressure.

SOLUTION LEVEL CONTROLS:

For each tank, GFC shall provide one (1) Warrick, or equal, electronic liquid level control for controlling the solution level in each tank. Controls shall operate a solenoid valve in each tank to add water as needed.

Level control for the rinse tanks shall have two (2) probes to monitor and control high and low solution levels. The level control for the heated tanks shall be equipped with three (3) probes. Level probes shall monitor high solution level, low solution level, and the third to ensure that the solution level does not drop below the burner firing tube without first shutting down the system. All level probes shall be stainless steel.

GFC shall provide one (1) 1-1/4" quick water fill line for each tank. Water fill line shall be complete with shutoff valve and be used for "Fast Fill".

Stage 2 City Water Rinse shall counter flow to stage 1 and be used for solution make up.

EXHAUST:

At the entrance end of the spray washer, GFC shall provide one (1) exhaust fan. Exhaust fan shall be Cincinnati Fan or equal; designed to rid the washer housing of spray mist and vapors. Fans shall be constructed for areas of high moisture content and fabricated using stainless steel construction. Fan shall be 15" diameter, developing 2,800 CFM @ 1 1/2 HP. Bearings shall be externally lubricated.

EXHAUST STACKS AND ROOF PENETRATIONS:

GFC shall provide the following:

- Spray Washer Exhaust Stack Materials
- Spray Washer Exhaust Stack Installation
- All Required Roof Penetrations, Curbing & Flashing for Spray Washer Exhaust

- Spray Washer Burner Tube Exhaust Stack Materials
- Spray Washer Burner Tube Exhaust Stack Installation
- All Required Roof Penetrations, Curbing & Flashing for Spray Washer Burner Tube Exhaust

TANK HEAT:

GFC will furnish Maxon, or equal, gas fired tube burners complete with gas trains and controlling equipment for each heated stage. The temperature controlling equipment will consist of a Future Design, or equal, digital lock out type, indicating and controlling unit with its element installed in the tank to sense temperature. All gas safety equipment and controls to meet F.M. requirements.

HEAT REQUIREMENTS: (GAS FIRED TUBE BURNER)

All firing tubes shall be schedule 10, stainless steel. Tubes shall be latterly supported leaving the bottom of the tank clear for ease of tank cleaning.

Stage	Temperature	BTU'S/Hr.
1	135 - 153 Deg. F	607,500

CONTROL PANEL:

All electrical controls for the spray washer will be in one common master control panel.

PAINTING & SHIPPING:

Washer is fabricated of stainless steel, no painting required. Washer shall ship complete.

R/O WATER SUPPLY SYSTEM:

GFC shall design and install one (1) R/O water treatment system. The Reverse Osmosis System shall be sized to provide permeate quality R/O water. R/O water shall be used for Stage # 3 recirculated RO and Stage #4 final halo rinse.

Preliminary System Data:

- Prefilter: 1 – 20” (5 micron)
- Membrane Quantity: 5
- Membrane Size: 4” x 40”
- Pump Motor HP: 3

System Requirements:

- Feed Water Pressure: 20 psi minimum (50 psi maximum)
- Operating Pressure: 200 psi maximum
- Product Water Pressure: maximum 40 psi
- Voltage Requirement: 220/1/60

Unit uses a thin film composite (TFC) membranes housed in PVC modules and operates at 200 PSI maximum pressure. Pump is rotary vane type complete with required pressure switches.

A liquid filled gauge continuously displays system pressure. A 5-micron pre-filter is provided to remove suspended matter to protect the membranes and pump from damage.

Prior to the R.O. system, GFC shall provide the following.

- One (1) - Model No. S-700-TC Dual Vessel Water Softener
- One (1) - C-166B-TC Dual Vessel Carbon Filter With Time Clock Controls

A holding tank, horizontal pump and all required piping to be provided.

EQUIPMENT SPECIFICATIONS: HEATED BLOW-OFF SYSTEM

GFC shall incorporate a Heated Blow-off System as described in the following specifications. Blow-off system shall be installed at the end of the pre-treatment process. The system shall be designed to deliver heated air through a series of air knives, or air cannons and shall remove the excess water and moisture from the product surfaces.

Blow-off shall be fabricated of structural tube and 14 gauge, type 304L stainless steel. The air knives shall be constructed of stainless steel and be located within the blow-off housing.

A stainless steel drain pan shall be provided in the enclosure, tapered back to the washer for complete drainage.

Blow-off system consists of the following:

- Regenerative high impact pressure blower powered by a 240/3/60, TEFC motor.
- Blower outlet stainless steel air distribution plenum.
- Stainless steel air knives and flex hose.
- Required blower inlet silencer and air filter, complete with all mounting hardware.
- Required electrical conduit & wiring.
- One (1) exhaust blower NYB, or equal, B/C type.
- Watlow, or equal, air duct style heaters, resistance type.

EQUIPMENT SPECIFICATIONS: OVERHEAD CONVEYOR SYSTEM

GFC to provide Webb Unibilt Heavy Duty Enclosed Track Conveyor for conveying the parts through the system. Enclosed track is an excellent type of conveyor for this operation. Conveyor speed to be set at 2 feet per minute (Variable). Hanging attachments shall be on 16" centers.

CHAIN AND WHEELS:

Conveyor chain is designed to provide maximum flexibility in all directions. Chain is completely heat-treated to assure strength and long life. Wheels are ball bearing style, with heat-treated balls. All wheel parts are heat treated to provide maximum life.

TRACK:

Track is fabricated of square tubular sections formed to 5/32" high strength steel. This assures long life under most service conditions. This special alloy steel has greater abrasion resistance and better load carrying characteristics assuring longer life.

TURNS - HORIZONTAL:

Horizontal curves are formed of low alloy high strength steel. All turns are heat-treated in areas of wheel contact to ensure a hard, tough surface for added anti-wear qualities.

CONVEYOR TO BE PROVIDE:

Unibilt Universal Link Chain and Wheels
Unibilt Carbon Steel Enclosed Straight Track
Unibilt 24" Radius 90 Degree Horizontal Turns
Unibilt 24" Radius 30 Degree Upper Vertical Curve
Unibilt 24" Radius 30 Degree Lower Vertical Curve
Unibilt Enclosed Track Air Assisted Take-up @ 180 Degrees
Unibilt Enclosed Track 300 LB Drive 3 FPM (Variable)
Standard "H" Attachments
Start/Stop Station
V/S Drive
Installation Gate
Conveyor Support Structure

PAINTING:

All structure shall be painted "Safety Blue".

SHIPPING:

Conveyor to be shipped in sections for field assembly.

CUSTOMER (END USER) TO PROVIDE:

Please note that all equipment supplied by GFC, shall be maintained as required by local, state and federal codes and requirements as they relate to end user (customer) responsibilities.

1. All sales, use taxes, education taxes, etc. as applicable to this project.
2. Required permits to install and operate, including all permit fees, licenses, etc.
3. Installation personnel to work with GFC Installation Supervision. Including two (2) mechanical persons and one (1) electrical personnel.
4. Secure holding area for installation materials, equipment, tools, etc. for the duration of the installation portion of the project.
5. Clear area (installation site) for the installation of the equipment to include proper lighting for safe equipment installation. .
6. Dumpster or staging area for disposal of required construction debris and disposal of same.
7. All required facility modifications required for equipment installation.
8. Movement of all equipment and/or utilities in the way of equipment installation.
9. Utilities such as electrical power (460/3/60, 120/1/60) and compressed air to job site for installation tools and equipment.
10. Air make-up supply to replace the air being exhausted from the building per applicable codes and requirements.
11. Drains piping to tie into GFC provided sump pump piping header.
12. Sprinkler and fire protection equipment as required per local, state and federal codes and requirements.
13. Utilities to the equipment and the hookup to GFC supplied equipment. All utilities must meet all OSHA, NEC, NFPA, State & Federal codes and requirements as they apply.
 - a. Natural Gas (2 – 5 LBS)
 - b. Electrical Power (460 & 120)
 - c. Air (Clean, Dry & Oil Free)
 - d. Water (Standard Tap Pressure)
14. Waste water treatment equipment as required per local, state and federal codes and requirements.
15. Exhaust stacks to the atmosphere per local, state and federal codes and requirements. Provided by GFC.
16. Holes in exterior walls or roof, to include all flashings, roof curbs and sealing for make-up and exhausts stacks. Provided by GFC.
17. Required part hangers.
18. Start-up and production chemicals, paint, powder, etc. as they apply to the equipment purchased.