

PLANS OF PROCESS OPERATIONS

The information with an "X" before it must be shown on the plan or submitted before the plans of the wet process operations can be approved.

1. **X** All tanks, their contents and volume. Please note compartmentalized tanks must be indicated as such.
2. **X** Any other water using processes (i.e. rectifiers, tubbing, cooling water, etc.).
3. **X** Whether each tank will be batch discharged, continuously discharged, or not discharged.
4. **X** Where the tank discharges to (i.e. pH neutralization, cyanide destruct, A/A treatment, process operation tank, etc.).
5. **X** The volume and dump frequency of each batch discharge.
6. **X** The flow rate for continuous discharges.
7. **X** All floor drains, trenches, berms, sumps, pump stations, piping, valves, and the point of discharge of each tank or pipe.

Please note, process operation and pretreatment system plans must be at least 11" x 17" and cannot exceed 36" x 24" in size.

ZERO DISCHARGE PRETREATMENT SYSTEM PLANS

The information with an "X" before it must be shown on the plan or submitted before the pretreatment system plans can be approved.

1. **X** All wastewater treatment tanks/component equipment, including filters, ion exchange columns, membrane-type equipment etc., their size, material of construction, and the projected daily flows to each treatment process including backwash, regeneration rinse, maintenance, and cleaning flow rates and duration of each.
2. **X** All pumps, piping, valves, mixers, controls, instrument probes, etc. Valve schedules referencing all operational modes of equipment, etc. All tanks and discharges must be hard-piped with PVC, CPVC or other chemically compatible piping. The firm may apply for special case variances to use short sections of flexible hose. These requests will be reviewed on a case by case basis.
3. **X** A description of the treatment procedure for each treatment process including but not limited to acid/alkali, cyanide destruct, pH adjustment, ion exchange column regeneration, and backwash procedures. Procedures must include valve sequences showing all operational modes.
4. **X** A process schematic of the pretreatment system. For pretreatment systems which utilize filter and/or ion exchange columns, include all pretreatment operations and components thereof.
5. **X** The type, volume and/or quantity of ion exchange resin or other media must be provided. Manufacturer's specification data for all pretreatment process components (i.e. resins, membranes, etc.) must be provided for all pretreatment components utilized.
6. **X** A plant layout showing the pretreatment system, water using process tanks, and location of each in the facility.
7. **X** All sump pumps or effluent transfer stations, including size of transfer station, flow rate, and pump capacity.
8. **X** Views of elevations of all inlet and outlet connections on treatment tanks. This information must be provided for the internal components of pretreatment systems including but not limited to all filter and ion exchange columns in the form of cut-away views, including all distribution manifolds and resin/media heights.

ZERO DISCHARGE PRETREATMENT SYSTEM PLANS (CONT.)

9. Minimum rate of evaporation for each evaporator.*
10. A Rhode Island Professional Engineer's (P.E.) stamp and signature (a xerox copy is not acceptable).

Please note, process operation and pretreatment system plans must be at least 11" x 17" and cannot exceed 36" x 24" in size.

* Please note that the minimum rate of evaporation for any atmospheric evaporator must be equal to or greater than twice the rate of wastewater fed to the evaporation system.