

**MUNICIPAL STORM WATER POLLUTION PREVENTION PLAN  
INSTANT WASH RACK SPECIFICATIONS**

**General Specifications**

Supplier shall furnish a complete self-contained integrated wash rack system to include above ground wash pad, 2-station de-mucking system, 2-station high-pressure hot water dispensing system and complete recycle wastewater processing system.

System must be modular, self-contained, all above ground, and designed to meet or exceed Federal and State mandated Storm Water Management regulations for washing vehicles.

Wash rack shall be supplied as a packaged system such that all de-mucking pumps, wash/rinse equipment, fluid management systems and wastewater processing equipment is mounted, plumbed, and wired as a system inside an insulated and environmentally controlled equipment enclosure for on site placement and connection interface with wash pad system.

Supplier shall furnish all equipment, components and supplies required to assemble and make system totally functional.

Supplier shall provide experienced staff to assist site personnel with equipment off load, placement and connection.

Supplier shall provide an experienced team of factory service technician and project manager to provide startup plus operational and maintenance training.

Subsequent to installation, supplier shall provide a factory service specialist on site for 1-day, every 3-months (quarterly), for the first year of operation to perform preventative maintenance, inspection, calibration and operational training of owner's personnel as required.

**Supplier Qualifications**

All equipment shall be manufactured and serviced by a single supplier who is exclusively responsible for design, engineering, manufacturing and service of the complete system.

Supplier shall have at minimum 15-years experience engineering, manufacturing, supplying and servicing similar systems to government entities.

Supplier shall have a minimum of twenty (20) similar systems in operation and references available for contact and possible site visit.

Supplier shall have registered certification as conforming to the requirements of ISO 9001.

CE Certification Certificate of Conformance shall cover all equipment including but not limited to the factory supplied washing/recycling equipment enclosure.

All high pressure wash equipment shall be certified to the UL-1776 Standard

All wastewater processing equipment shall be certified to the UL-979 Standard

Supplier shall warrant that no product supplied is in violation of any patents rights and shall indemnify the buyer from all actions arising out of infringement of any patent by the supplier and/or its agents.

**Equipment Warranty**

Supplier shall provide a warranty for entire system to be free of defects. Warranty period shall be 12-months from startup or 14-months from receipt at location, whichever occurs first.

**Wash Pad System**

Wash pad system shall be modular, all steel, with each platform module measuring no more than 8-foot long by 17-foot wide to facilitate transport, handling and assembly as required.

Completed wash pad system shall have a total platform surface area dimension of 40' long and 16' wide.

Wash Pad System design must be capable of future length modification in 8-foot increments by simply adding or subtracting platform modules with include an integral side gutter. All platform sections shall be fitted with forklift pockets to facilitate placement.

Wash pad platform modules shall have a "Safety Rail" undulating top surface to optimally benefit evacuation of fluid and contaminants from wash pad surface. Flat steel or diamond plate is not acceptable.

Wash pad platform modules shall have an integral side gutter designed to facilitate course solids precipitation and must incorporate controlled pumping provisions for wastewater transfer. Vacuum transfer of solids is unacceptable.

Wash pad shall have an integral side gutter system, which will accept all spent washing fluids and contaminants. The side gutter shall not exceed 10" width and designed to the manufactures standard to best suit the application.

Wash Pad System shall have proven structural design integrity sufficient for continuous use by vehicles weighing up to 12-tons/axle and/or 6,000 pounds per square foot.

Wash Pad System shall include modular ramp sections designed for placement at either end of the completed wash pad assembly. The modular ramp sections designed with a weight rating commensurate with the wash pad.

Supplier shall provide enough modular ramps to form a total ramp width of 10' at **each end** of wash pad.

Wash pad end platforms shall include provisions for corner point installation of Remote Equipment Modules (REM) for process interface and control of de-mucking system and high-pressure wash/rinse system.

Wash Pad System shall have 10' high walls and shall be placed on 2-sides of the completed wash pad platform in a drive on drive off configuration.

Walls shall be of modular design to include formed steel uprights, which allow the horizontal wall panels to be clamped in place allowing longitudinal conformation to an unprepared site surface.

The walls shall included; panel compression brackets, 2' wall panels, base wall deflector, installation gussets, and corner brackets as required plus corrosion resistant fasteners for field assembly.

Wall panels must interlace vertically to retard leaks and slide horizontally to accommodate offset position if required at installation. Fasteners shall penetrate the top panel only for attachment.

Wall modular panel material shall be 18 gauge galvanized steel corrosion resistant material.

Wall compression brackets shall be 14-gauge galvanized steel corrosion resistant material.

Wall uprights shall be minimum 11-gauge mild steel, primed and epoxy painted to retard corrosion.

Sidewall modular panels shall be no more than 8' x 2' in dimension and employ interlacing bends to join with adjacent panels and provide leak prevention.

End wall modular panels shall be 8' x 2' in dimension and have interlacing angular bends on both long sides to prevent leaks.

Wall modular gusset brackets shall bolt together to sandwich compression brackets vertically on 2' centers. The base of each gusset bracket member shall have multiple bolt attachments to support gussets at platform sectional joining points yet facilitate pivot as necessary.

All wall sections shall incorporate a base deflector attached to bottom panel with stainless fasteners at 2' centers and rest flush with top of wash pad platform.

#### **De Mucking System Equipment**

Each De-mucking System shall include the following at a minimum.

- Flow delivery capability of 30-gpm at 200-psig
- Pedestal Mount Remote Equipment Module (REM) bolt mounted at opposing corners of the wash pad
- NEMA 4X Start/Stop control button with status light indication
- 100', 1" pressure rated flow hose on locking hand crank reel
- Trigger actuated flow wand with variable pattern nozzle
- Automatic line blow down capability

#### **High-Pressure Hot Water Wash/Rinse System**

Each High-Pressure Hot Water Wash Rinse System shall include the following at a minimum.

- High-pressure hot water generating equipment must be certified to UL1776
- Flow delivery capability of 5-gpm at 3,000-psig
- Gas Fired Burner System, LP at 400,000 btu
- Pedestal Mount Remote Equipment Module (REM) bolt mounted at opposing corners of the wash pad
- Trigger actuated, variable pressure, dual wand with spin on hose connection and quick connect nozzles
- Undercarriage wand with turbo nozzle and assembly travel plate
- REM Wand holsters
- Remote and Local NEMA 4X Start/Stop control button with status light indication
- Remote and Local NEMA 4X Burner control with status light indication

- Automatic line blow down capability

#### **Soap/Foam Application System**

The soap/foam mix and application system shall have the following features at minimum.

- Automatic concentrate proportioning mix system
- Pneumatic soap mix distribution with central pressure regulation
- Dual hose distribution to perform separate soap mix and air transfer
- Remote Station mounted air mix regulators
- Soap/Air mix shall be performed at trigger wand

#### **Wash/Rinse Wastewater Processing System Overview**

All wastewater treatment/recycling processing equipment must be certified to UL-979

Wastewater processing system shall be capable of full recycle, closed-loop operation and employ cascade control to maximize environmental responsibility.

Wash/rinse wastewater processing shall function automatically and employ energy save mode saving 75% of power used in this mode, and shall feature on demand automatic restart in to high filter rate mode when the washing equipment is activated.

System shall employ low energy solids/liquid separation to 5-micron nominal, free oil coalescing recovery/collection, and dual high-rate polishing contaminant removal using separate target specific granular media products for each polishing loop.

System shall be capable of removing solids to less than 1-micron, oils and hydrocarbons to less than 10-ppm, dissolved heavy metals and chemicals to a trace levels.

Wastewater Processing System shall be designed so that no portion of system will ever exceed 30-psig to ensure personnel and equipment safety.

Operation of control valves shall be either electrically actuated or manually operated. Air operated valves are not acceptable.

All tanks shall be manufactured of non-corrosive material; stainless steel or polyethylene with a cone (not sloped) bottom self-cleaning design, and incorporate seismic band mounting restraints.

System shall include biological product injection for control of odor and organics accumulation. Use of ozone corrosive oxidizing agents or chemical injection will not be accepted.

System shall be designed to be naturally aspirating for benefit of biological treatment.

Wastewater treatment/recycling system shall function 100% automatically by use of a Programmable Logic Controller (PLC) and Data Logging System (DLS). It shall be designed for continuous operation as needed.

#### **Wastewater Treatment/Recycling System Description**

The wastewater treatment/recycling and wash wastewater management system shall utilize the following technologies; solids pre-treatment, oil/water separation, dual media filtration and polishing. The Wastewater treatment/recycling process filtration/polishing system shall be capable of remove particulates in the wash water down to one (1) micron, remove hydrocarbons, trace quantities of solvents, dissolved heavy metals and separate both free oils and emulsified oils from the water. The Wastewater treatment/recycling wash wastewater management process shall produce a treated effluent suitable for recycled water washing operations.

The treatment/recycling system shall be designed to function either as a closed-loop recycle system or approved pretreatment discharge to sanitary sewer. Plumbing and PLC/DLS operations shall be engineered to accommodate either mode of operation depending upon the mission and location requirements. Mode of operation shall be toggle switch selectable.

#### **Solids Recovery Management System:**

The wastewater treatment/recycling system shall include a solids recovery management system, which employs a "Solids Settling Tank" in combination with a Continuous Media Automatic Filtration Unit for active solids removal. This Solids Management System is designed for removal of particulate solids down to 5 microns nominal. It shall use a rayon filter media 18' wide supplied in a 100-yard roll of 5-micron nominal filter media.

The Continuous Media Automatic Filtration Unit shall be of stainless steel construction, incorporating an automatic filter media advance, cascade electrical float controls, auto discharge, integral spent filter media collection tray, and shall be factory assembled, installed and tested. A lightweight removable, see-through cover shall be included and installed to capture water spray and provide visual observation of the process.

The Continuous Media Automatic Filtration shall operate in conjunction with an "SST" Solids Settling Tank. Fluid from the wash pad shall be pumped to the "SST". Fluid shall then be transferred from the SST to the Continuous Media Automatic Filtration solids filter then returned to the SST. This is a continuous process of solids removal with volume through the system a function of process displacement.

**Wastewater recycling Polishing Filtration/Recycle System:**

The Wastewater treatment/recycling system shall include a filtration/polishing recycle system to remove particulate solids down to 1-micron nominal and free oil levels down to less than 10-ppm. The filtration/polishing system consists of three complete modules; 1) oil coalescing and active skimming; 2) a polishing loop for secondary solids recovery plus emulsified oil, hydrocarbon and solvent recovery; 3) a polishing loop for heavy metals removal.

**Description of Wastewater Treatment/Recycling System Operation:**

As effluent liquid from the solids recovery management system enters the filtration/polishing recycle system, it shall be slowed down through a quiescent tube to allow for solids to fall to the bottom of the coalescing tank where oil/water separation shall commence. Free-floating oils are naturally transferred through a minimum 76,896 square inches of oil coalescing (oileophilic) plates. These plates shall be self-cleaning and slanted at 15 degrees, and constructed of high impact polycarbonate, allowing for oils to coalesce whereby they float to the surface and can be mechanically skimmed from the water.

An active- oil belt skimmer (with oil/water decanter) shall be provided and used to collect the coalesced oils and discharge to an end user provided plastic storage bucket or similar containment for oil collection. Virtually water free of oil shall then flow to a primary media polishing loop, which is designed to reduce light and emulsified hydrocarbons to less than 10 ppm and suspended solids to less than 1 micron. A secondary media polishing loop shall be supplied using a filter media suitable for removal of dissolved heavy metals.

The Wastewater treatment/recycling system shall incorporate fully automatic backwash operation. This removes contaminants from the polishing filter(s) and significantly extends life of the media. Collected solids are returned to the wash pad sump area and subsequently to the solids management system for removal.

The Wastewater treatment/recycling system shall have the following features as a minimum:

- Overflow protection
- Self-cleaning polypropylene tanks with sludge purging valves
- Gravity flow through design
- Secondary solids collection cone bottom tanks
- Minimum 76,896 square inches of oil coalescing plates
- Oil belt skimmer with oil/water decanter
- Polishing loop for emulsified oils and hydrocarbon removal
- Polishing loop for heavy metals removal
- Automatic Backwash
- Biological odor control system with injection and auto-dosing
- Programmable Logic Control (PLC) management
- Data Logging System (DLS) with programmable touch screen
- Remote internet access to DLS functions and data
- DLS Email fault notifications
- Automatic discharge for cleaning system, on demand use
- Controlled discharge to sanitary sewer as required
- Automatic external notification warning Beacon when filtration service is required
- Factory assembled and tested prior to shipment
- Electrical requirement: 208/230-volt, single phase, internally wired
- All piping, fittings, tubing, valves and controls to include a treated/recycled water-sampling line off the polishing loops prior to the filtered water storage tank.
- All safety certifications required by OSHA, which include all washing and filtration equipment.

**Data Logging System Description**

The DLS shall be owner programmable allowing programming of filtration system operational parameters using a touch screen; backwashing, system polish, day/date/clock, etc. The Adjust Hour buttons shall allow changes for daylight savings time.

The DLS shall include simple to navigate menus on a programmable touch screen that help guide changes to system parameters and controls.

Filtration system status messages shall be displayed during normal and energy saving operation. These messages shall include; 'Polishing', Energy Save Mode', 'Discharge to Drain', 'Backwashing', and others required for complete operation of the system. Maintenance advisory and error messages shall also be displayed to assist with maintenance and service tasks as required.

The touch screen shall contain switch and indicator icons to be used in making changes to the backwash settings. The backwash shall be programmable to commence on specific days and at specific times as prescribed by the owner. The touch screen shall include seven simulated LED's showing the scheduled backwash days.

The touch screen shall include switch and indicator icons used to make changes to the System polishing settings. The filtration system shall produce maximum flow and the highest quality filtration when operated in the high polish mode. The unit shall be programmable to operate in this mode during peak production hours and in the energy saving mode during off peak hours. Seven simulated LED's shall be supplied which illuminate on the days where high polish is programmed to perform.

#### **Remote Internet Access Web Application**

The DLS system shall log the entire filtration system logic controller input and output activity along with the filtration system operating states. The system shall transmit a log file nightly to a secure database at the monitoring station. Software shall be supplied which parses and will perform analyses of the data.

Trend analysis software shall be supplied which creates reports and graphs of the wastewater treatment/recycling system operation. The data shall be designed to diagnose system problems and forecast unscheduled maintenance requirements.

Any error that occurs is shall be logged. An error notification message, shall be included in an updated data log, and shall be immediately sent to the monitoring station. The error shall analyzed by the software and If designated to do so, an 'alert' email messages shall be sent to the Owner's service personnel.

The DLS combined with monitoring service shall; provide error notification, advise when it is time to replace consumables, provide a charting tool that allows the log of machine operation to be presented over various time periods, and provide a weekly summary reports via email.

#### **Biological Odor Control System:**

A biological product shall be supplied which includes; microencapsulated, targeted, naturally occurring bacteria, lab grade purified enzymes with micro and macronutrients. The product shall have bacterial strains, which are FDA/GRAS and AFCC listed as safe. The product shall be provided in a stabilized liquid form with a minimum cell count of 450,000,000,000 (billion) cells per gallon and with a guaranteed cell count for not less than one year. The biological product shall be certified by its manufacturer to be pathogen free.

This product shall be capable of not only controlling odors by organic control but must also prevent contaminant buildup within the wastewater treatment/recycling processing system and wash pad area. The system shall include a peristaltic dosing system with low voltage power supply. Dosing shall be controlled through the treatment system's PLC and based on total water volume of the processing system.

#### **Submersible Sump Pumps:**

The system shall include one (1) sump pump and wastewater transfer box for installation at the wash pad gutter to provide wastewater for recycling/pre-treatment.

The wash pad gutter sump pump shall be factory tested for operation under water. This wastewater feed supply pump shall be complete with sealed housing, polymer impeller, stainless steel shaft, sealed heavy-duty ball bearings, water-cooled hermetically sealed motor, built-in automatic reset thermal protection, float switch and waterproof three-conductor cable and grounding plug. This pump shall be capable of pumping more than 25-gpm at 25' of total dynamic head.

