SECTION 11052 - AUTOMATIC REFRIGERATED SAMPLERS

City of San Diego, CWP Guidelines

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

A. The WORK of this Section includes providing automatic refrigerated wastewater samplers and all necessary piping, pumps, connections, controls, mounts, valves, motors, and appurtenances, complete and operable.

1.2 RELATED SECTIONS

A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 11000 Equipment General Provisions

1.3 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Complete data and shop drawings with detailed specifications for all samplers, refrigerated sample collectors, and manufacturer's published specifications.

1.4 SERVICES OF MANUFACTURER

A. **Inspection, Startup, and Field Adjustment**: An authorized service representative of the manufacturer shall visit the site for not less than [one] day to check the installed units and instruct the OWNER's operating personnel.

PART 2 - PRODUCTS

2.1 GENERAL

A. Equipment provided under this Section shall be specifically designed for continuous, time composite, flow paced, and flow paced split sampling of process streams from a municipal wastewater treatment plant.

B. The fluids to be sampled may contain up to [250] milligrams per liter of suspended solids, soft biological floc, industrial solvents, petroleum products, grease, grit, and varying amounts of chlorine.

C. In split sampling applications, the sampler shall be capable of collecting equal sized samples in two 2-1/2 gallon glass or polyethylene containers. In continuous sampling applications, the sampler shall be capable of filling one 2-1/2 gallon container, then rotating the distributor to fill the second container, and automatically continuing this process as full containers are replaced by empty containers.

D. An adjustable weight-activated mechanism shall automatically terminate sampling when a container is filled to a predetermined level and energize an indicator light.

E. The sampler shall be a refrigerated, self-contained unit, designed for continuous operation indoors and outdoors and exposure to corrosive gases without a protective enclosure.

2.2 SAMPLER SCHEDULE

A. Samplers shall be installed in locations identified as follows:

Identification Number	Location
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]

2.3 FLOW-THROUGH SYSTEM

A. The intake pipe in the process stream shall be [2] inches diameter, 316 stainless steel. The transport pipe shall be 316 stainless steel, Teflon, or non-phthalate plastic.

B. Flow of fluid from the process stream to the sampler shall be supplied by [submersible pump] [suction pump] [gravity flow]. [The pump shall have a 316 stainless steel body, Teflon seals, and be capable of discharging [ ] gpm at [ ] ft head.

C. The sampler shall have a fiberglass reinforced polyester flow chamber with chemical and ultraviolet resistant gel coat through which the sampled fluid passes and returns to the process stream. The flow chamber shall be capable of flows between [5 and 35] gpm without excess pressure loss or deposition of solids.

D. Discharge from the flow chamber to the process stream shall pass through a 3-inch gravity line.

E. A sample probe constructed of 316 stainless steel shall be mounted in-line with the flow chamber.

2.4 SAMPLE PUMP

A. Sampled fluid shall only contact the sample probe, the sample pump tubing and the sample container.

B. The sample pump shall be peristaltic type having a capacity of at least 3000 ml/minute through a 3/8-inch Dow Corning Silastic Rx50 medical grade silicone rubber tubing.

C. The peristaltic pump shall air purge the sample line before and after each sample is collected. Purging shall be automatically controlled without adjustment.

2.5 REFRIGERATION SYSTEM

A. The refrigerator shall be self-defrosting type and shall use a forced air condensing coil with filtered front ventilation. The copper refrigeration lines shall be protected with polyester

tubing. The condenser coil shall be coated with polyurethane and the refrigerator evaporator plate shall be aluminum with a food grade epoxy coating for corrosion protection.

B. The exterior and base of the refrigerator shall be constructed of fiberglass reinforced plastic with a UV-resistant gel coat.

C. The refrigerator power supply and solid state electronic thermostat shall be contained in a sealed NEMA 4 aluminum enclosure inside the refrigerator base.

2.6 OPERATING REQUIREMENTS

A. The sampler system shall meet the following requirements:

1. Sample temperatures, degrees F - 32 to 46

2. Ambient temperatures, degrees F - 32 to 120

3. Sample size, mL - 10 to 999 (adjustable in 1 mL increments)

4. Interval between samples

   a. Time composite mode - 1 to 9,999 minutes (1 minute increments)

   b. Flow paced mode - 1 to 9,999 pulses

5. Analog input signal - 4 to 20 mA, proportional to external flow rate (with interface)

6. Power supply - 120 VAC, 60 Hz

7. Alarm conditions - Peristaltic pump jammed, sample container error, flow through pump failure

2.7 CONTROLLER

A. The controller shall consist of a microprocessor linked to a Programmable Read Only Memory (PROM) and supporting electronics. Sampling programs shall be entered via a key pad. A liquid crystal display (LCD) shall display the status of the sampler and shall prompt the user through the programming sequence. Program parameters shall be maintained through a power loss by a lithium battery.

2.8 NAMEPLATES, TOOLS AND SPARE PARTS

A. The following spare parts shall be furnished for each sampler unit:

1. One peristaltic sampling pump including motor.
2. A 10-foot length of tubing corresponding to each different diameter of tubing in the sample collector.
3. One container of refrigerant and necessary tubing, valves, and fittings to connect the refrigerant container to the refrigeration system.

B. All spare parts shall be labeled with the name and identification number of the sampler to which they correspond.

2.9 MANUFACTURERS

A. Products shall be manufactured by one of the following (or equal):

1. American Sigma
2. Isco, Inc. [model 3760 Stinger Flow-Through Sampler]

PART 3 - EXECUTION

3.1 INSTALLATION

A. All equipment shall be installed in accordance with the manufacturer's printed instructions.

B. All anchor bolts, nuts, and washers shall be [hot-dip galvanized] [stainless steel].

C. The CONTRACTOR is cautioned to use care during installation to avoid damage to the protective coatings on this equipment. If the coating is damaged during installation, the CONTRACTOR will be required to return the equipment to the manufacturer for recoating. Field touchup will not be acceptable.

3.2 OPERATIONAL TESTS

A. Upon completion of the installation, each piece of equipment and each system shall be field-tested for satisfactory operation without excessive noise, vibration, overheating, etc. All equipment must be adjusted and checked for misalignment, clearances, supports, and adherence to safety standards.

** END OF SECTION **