SECTION 11370

COARSE BUBBLE DIFFUSER AERATION SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

This section includes requirements for providing fixed header, stainless steel coarse bubble diffused aeration equipment complete with all appurtenances as indicated in the Contract Documents.

1.2 QUALITY ASSURANCE

A. All equipment in this section shall be furnished by a single supplier. The Contractor shall be responsible for the installation and proper operation of the entire system. Equipment shall be fabricated, assembled, erected, and placed in proper operating condition in shall be in full compliance with the drawings, specifications, and recommendations of the equipment manufacturer.

B. The manufacturer shall be experienced in the design and construction of course bubble aeration systems for a period of not less than five (5) years and shall provide proof of such installations upon request by the project Engineer.

1.3 SUBMITTALS

(insert Engineer's standard)

1.4 DELIVERY, STORAGE, AND HANDLING

A. Parts and assemblies shall be packaged and tagged in a manner that will protect the equipment from damage and facilitate final assembly in the field.

B. Equipment shall be protected from exposure to the elements and kept dry at all times. Handle and store equipment on site to prevent damage and in accordance with manufacturer's recommendations.

C. Equipment damaged by handling and storage shall be repaired or replaced by the Contractor as directed by the Engineer.

PART 2 - PRODUCTS

1.1 MANUFACTURER

The project design is based upon Stamford Scientific International (SSI). No substitution of the listed manufacturer shall be allowed.

1.2 EQUIPMENT

A. Diffusers shall consist of a balancing nozzle with orifice insert if required, an inverted air reservoir, air exit ports, cast end cap at inlet and full length deflector.

B. Diffuser is to provide wide band aeration. Release air uniformly along a minimum 2 ft band.

C. Locate exit ports discharging air into liquid on horizontal planes at two levels

D. Deflector is to be provided below each diffuser for full length and width.

E. Deflector to direct the liquid being aerated along the diffuser reservoir walls so that the air exits through the ports and is sheared into small bubbles and distributed into the liquid.

F. Deflector is to prevent stringy material from wrapping around or entering diffuser bottom. Deflector may be integral with the diffuser and supported by diffuser end-caps

G. Open bottom diffusers allowing liquid and debris to enter the bottom of the diffuser shall not be permitted.

H. Air release shall be along the 48” perimeter uniformly at air rates from 8 to 40 SCFM with no disproportionate airflow from any single point.

I. Cast the diffuser inlet end cap with an alloy equivalent to 316 or 304L SS. Provide inlet end cap with Sch. 80, ¾"male pipe thread connection and integral hex head nut. Fabricate diffuser body and outboard end cap from 316/304L SS.

J. 3” or 4" diameter air headers are to be a minimum of Sch 10 304L SS. Sch. 80 SS NPT threaded couplings to be welded to the side centerline of the SS pipe, or elbows or tees welded to the bottom centerline of a gusseted pipe. Stainless steel pipes to be welded in the factory. No site welding permitted. Stainless pipe to be wire brushed to remove weld splatter then acid washed or full immersion pickled in a nitric-hydrofluoric solution. After pickling rinse it with clean water.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install equipment in accordance with the configuration shown on the drawings and per manufacturer’s recommendations.

B. Concrete anchors shall not be installed within six inches of any concrete expansion joint.

C. Air distribution headers shall be leveled so that air release elevation of the diffusers is plus or minus ¼ inch of the elevation shown on the drawings.

3.2 FIELD TESTING

A. The Contractor shall inspect the aeration system installation in the presence of the Engineer to verify conformance with these specifications and manufacturer’s recommendations.

B. The Contractor shall perform a leakage test for all drop legs and distribution headers. Fill the aeration zones with test water to approximately one foot above the diffuser heads and visually observe that air flow is evenly distributed across the zones. Visually inspect each drop leg and verify that no air leaks are present, paying particular attention to joints and connections.

3.3 MANUFACTURER'S FIELD SERVICES

A. Provide the services of a manufacturer trained representative at the jobsite for a minimum of one (1) eight hour work day to inspect and certify the installation and to train the Owner's operations staff in proper operation and maintenance of the equipment.

END OF SECTION