Industrial Monitoring Station Requirements

The Division of Industrial Waste (DIW) has requirements for an industrial wastewater monitoring station. These requirements are specified to minimize safety risk to employees and to reduce the cost of operating a monitoring station. DIW periodically monitors wastewater discharges by collecting representative samples using flow proportional composite sampling techniques. DIW may perform this monitoring 24 hours a day seven days a week with automated equipment for the purposes of determining compliance and surcharges. Applicable sections of MSD Rules and Regulations include 1502, 1507, 1508, 1510, 1520, and 1521 (www.msdgc.org). All required documents, including plans and specifications must be submitted to MSD (two copies to DIW) for approval in advance of construction. The requestor must also contact Mr. Dan Johns of MSD Wastewater Engineering at 244-1350 and satisfy all pertinent requirements including tap permits, etc.

A. Evaluation Requirements
    a. Identification by the company of the source and destination of all wastewater flows; DIW requires a current sewer survey that specifies the internal drainage system of the facility (plumbing diagrams) and the approximate flows (process and dilute) entering each tap into the public sewer system. In addition, the following four drawings are required.
    b. A vicinity map showing location of the plant site. (A typical street guide sufficient.)
    c. An overall facility site plan locating monitoring stations. The site map must show security stations, safety requirements (including required personal protective equipment), check-in procedures, travel routes, destinations, types and meaning of alarms, assembly points and any other emergency information unique to the site.
    d. A plot plan of the area immediate to the monitoring station (locate parking, electrical outlets, lighting, concrete pads, nearby chemical storage, safety restrictions, etc).
    e. Elevation detail of monitoring station describing primary measuring device (flume) including k and n constants in the flow equation Q=kHn.

B. Installation Requirements for a Pre-cast Concrete Structure
    a. A five foot diameter Sampling and Gauging Manhole ACC. NO. 49059-C with an aluminum 3’-6” square single leaf hinged door (Bilco J-5AL or equal) cast-in-place in the slab cover. A 3’-0” door shall be allowed in a precast top. The hinged side of the square lid must be oriented parallel to the downstream flow direction.
    b. The steps in the barrel section of the pre-cast manhole must be installed in alignment with the downstream corner of the square lid on the opposite side from the lid hinge.
    c. One 4-inch diameter PVC conduit with threaded adapter and plug centered over the inlet channel and approximately six inches from the outside edge of the square lid.

C. Installation Requirements for a Prefabricated Fiberglass Structure
    a. Prefabricated fiberglass manhole meeting the requirements of ANSI/ASTM D-3753 "standard specifications for fiber-reinforced manholes".
    b. The top opening shall be a full opening hinged lid. The hinge shall be positioned parallel to the flow through the metering manhole.
    c. The top rim of the prefabricated manhole shall not exceed 18 inches above ground level.
    d. One 4-inch diameter PVC conduit with threaded adapter and plug centered over the inlet channel placed through the side wall above the inlet pipe near ground level such that overland stormwater flow cannot enter.

Industrial Monitoring Station Requirements

D. General Physical Structure Requirements

a. A seven by eleven foot 5-inch thick concrete pad, level with the top of the slab cover shall be constructed such that the 4-foot section is oriented over the inlet pipe.

b. Allowable pipe slope is limited to a specific maximum and minimum.

Pipe size	Minimum slope %	Maximum slope %
6”	2.00	2.2
8”	0.70	2.0
10”	0.50	1.8
12”	0.40	1.6
15”	0.30	1.5
18”	0.24	1.4
21”	0.19	1.4

c. No bends, drop manhole, or flow junctions, etc., shall be located within 25 pipe diameters upstream of the center of the manhole.

d. Downstream slope shall be greater than or equal to upstream slope with no obstructions within 10 pipe diameters.

e. Suitable barricades shall be positioned near the edges of the concrete pad to prevent vehicular damage to the metering manhole.

f. An appropriately sized flume installed according to manufacturer's specification - typically a PlastiFab Palmer Bowlus flume with the following built-in attachments: one 1/8" stainless steel bubble line and one 3/8" stainless steel sample line for exclusive use by the MSD (additional bubble and sample lines maybe added for private use). In some circumstances a Parshall flume may be appropriate, Parshall flumes often require a larger influent pipe to maintain open channel flow through the design area.

g. A two outlet GFIC 110 volt AC electrical supply for exclusive use by MSD located at the safety pad or within fifty feet provided the route of the extension cord does not cross a traffic zone.

h. General area lighting that illuminates the work area.

i. Parking within 100 feet for two MSD confined space entry support vans provided the route of breathing airlines does not cross a traffic zone.

j. Any locking mechanism shall provide for dual locks using an MSD supplied lock in addition to any placed by the user. A piece of bar stock drilled at both ends for locks and slid through the latch may be used.

NOTES:

AN ALUMINUM 3'-6" SQUARE SINGLE LEAF HINGED DOOR (BILCO J-5AL, OR EQUAL) SHALL BE INSTALLED IN THE MANHOLE SLAB TOP. A 3'-0" DOOR SHALL BE ALLOWED IN A PRECAST TOP. THE HINGED SIDE OF THE SQUARE LID IS TO BE ORIENTED PARALLEL TO THE DOWNSTREAM FLOW DIRECTION.

STEPS IN THE BARREL SECTION OF THE PRE-CAST MANHOLE ARE TO BE INSTALLED IN ALIGNMENT WITH THE DOWNSTREAM CORNER OF THE SQUARE LID ON THE OPPOSITE SIDE FROM THE LID HINGE.

A SEVEN BY ELEVEN FOOT CONCRETE PAD, FIVE INCHES THICK AND LEVEL WITH THE MANHOLE SLAB TOP, SHALL BE CONSTRUCTED SUCH THAT A MINIMUM FOUR FOOT SECTION IS ORIENTED OVER THE INLET PIPE.

ALLOWABLE CONDUIT SLOPE ENTERING AND EXITING THE MANHOLE SHALL BE LIMITED TO A SPECIFIC MAXIMUM AND MINIMUM AS PER THE FOLLOWING TABLE:

PIPE SIZE	MIN. % SLOPE	MAX. % SLOPE
6"	2.00	2.2
8"	0.70	2.0
10"*	0.50	1.8
12"	0.40	1.6
15"	0.30	1.5
18"	0.24	1.4
21"	0.19	1.4

* 10" CONDUIT NOT APPROVED FOR NEW INSTALLATIONS

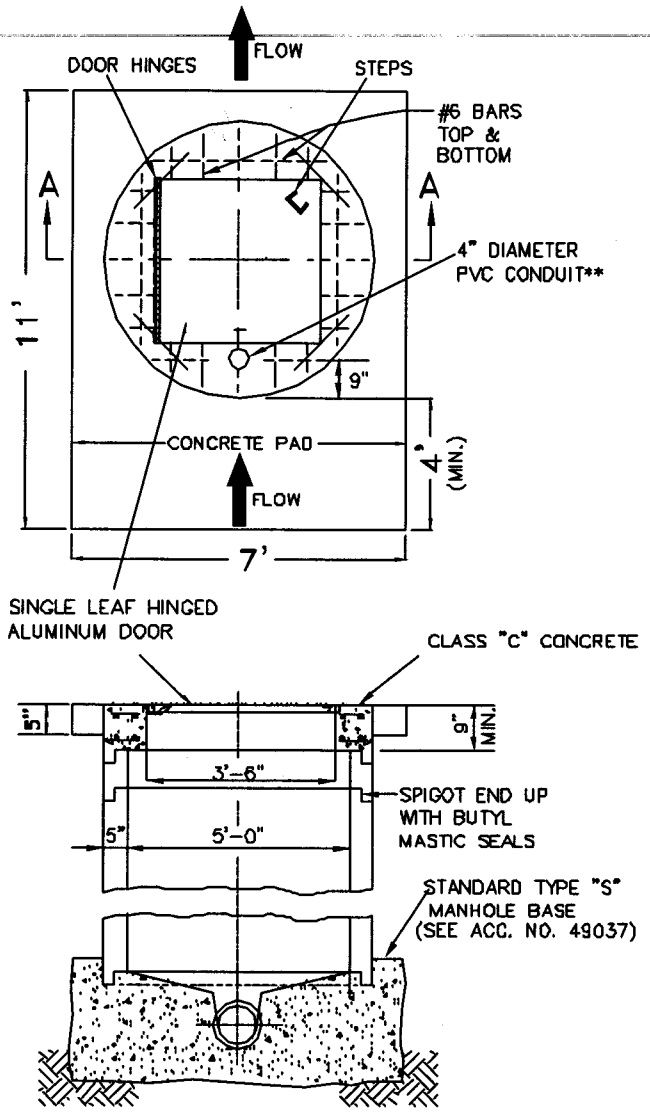
NO BENDS, DROP MANHOLES, FLOW JUNCTIONS, ETC., SHALL BE LOCATED WITHIN 25 PIPE DIAMETERS UPSTREAM OF THE CENTER OF THE MANHOLE.

DOWNSTREAM CONDUIT SLOPE SHALL BE GREATER THAN OR EQUAL TO UPSTREAM CONDUIT SLOPE WITH NO OBSTUCTION WITHIN TEN PIPE DIAMETERS DOWNSTREAM OF THE CENTER OF THE MANHOLE.

AN APPROPRIATELY SIZED FLUME (PLASTIFAB WITH INTEGRAL APPROACH, OR EQUAL) SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS WITH THE FOLLOWING BUILT-IN ATTACHMENTS: ONE 1/8" STAINLESS STEEL BUBBLE LINE; ONE 3/8" STAINLESS STEEL SAMPLE LINE.

A TWO OUTLET, GFIC, 110 VOLT, AC ELECTRICAL SUPPLY SHALL BE SUPPLIED FOR EXCLUSIVE USE BY MSD AT THE CONCRETE PAD, OR WITHIN FIFTY FEET SO THAT THE ROUTE OF AN EXTENSION CORD WILL NOT CROSS A TRAFFIC ZONE.

GENERAL AREA LIGHTING SHALL BE PROVIDED TO ILLUMINATE THE VICINITY OF THE METERING MANHOLE.



SECTION A-A

NOTES:

**4" DIAMETER PVC CONDUIT, WITH THREADED ADAPTORS AND PLUGS (CENTERED OVER THE INLET CHANNEL), SHALL EXTEND THROUGH THE MANHOLE SLAB TOP.

6' LONG, 4" I.D. CAST IRON PIPE GUARD POSTS SHALL BE INSTALLED, AS DIRECTED BY THE ENGINEER, TO PREVENT VEHICULAR DAMAGE TO THE METERING MANHOLE. GUARD POSTS SHALL BE FILLED WITH CONCRETE AND INSTALLED 4' DEEP.

PARKING SHALL BE PROVIDED WITHIN 100 FEET OF THE MANHOLE FOR TWO MSD CONFINED SPACE ENTRY SUPPORT VANS. THE ROUTE FROM PARKING TO THE MANHOLE, FOR BREATHING AIR LINES, SHALL NOT CROSS A TRAFFIC ZONE.

ALL LOCKING MECHANISMS SHALL UTILIZE DUAL LOCKS, ONE SUPPLIED BY MSD AND THE OTHER SUPLIED BY THE OWNER.

ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2" BOTH FACES

JOINTS ON MANHOLE SECTIONS SHALL BE MADE WITH A RUBBER GASKET MEETING THE REQUIREMENT OF ASTM C-443, EXCEPT THAT ONLY "O" RING AND PROFILE GASKETS ARE ACCEPTABLE.

LIFT HOLES IN MANHOLES TO BE SEALED WITH HYDRAULIC CEMENT.

1' PRECAST MANHOLE SECTION TO BE SET WHEN MANHOLE TOP IS POURED.

ALL OTHER CHARACTERISTICS ARE SIMILAR TO STANDARD MANHOLES.

ALL CONCRETE SHALL BE CLASS "C".

PRECAST CONCRETE BARRELS SHALL BE IN ACCORDANCE WITH ITEM 706.13 OF THE SPECIFICATIONS.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI

STANDARD TYPE "C" SAMPLING & GAUGING MANHOLE

(FOR USE IN NON-TRAFFIC AREAS ONLY)

NO SCALE DATE: APRIL, 1995

APPROVED: _____
SEWERS CHIEF ENGINEER

SMS

REV. 9/12/200 C.H.
REV.

ACC. NO. 49059-C