

HAMILTON SOUTHEASTERN UTILITIES, INC.

**MAINTENANCE SPECIFICATIONS
FOR
SANITARY SEWER FACILITIES**

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Hamilton Southeastern Utilities, Inc.

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SECTION 1 - GENERAL

1.01 Definitions

For the purposes of these Maintenance Specifications for Sewer Facilities (Maintenance Specifications), the following definitions shall apply:

- A. "HSE" shall mean Hamilton Southeastern Utilities, Inc., the certificated sanitary sewer utility for the Project area. HSE's address is 11901 Lakeside Drive, Fishers, Indiana 46038, and HSE's phone number is (317) 577-2300.
- B. "Engineer" shall mean the engineer for HSE, which is Sanitary Management & Engineering Co., Inc. ("SAMCO") or SAMCO's engineers. SAMCO's inspector shall be Engineer's representative for the Project. Engineer's address is 11905 Lakeside Drive, Fishers, Indiana 46038, and Engineer's phone number is (317) 577-1150.
- C. "Subscriber" shall mean those signatories identified as Subscribers under that Special Contract for Extension of Sewer Mains and Facilities with HSE through which this Project is being undertaken. Subscriber is generally the Owner under a construction contract.
- D. "Project" shall mean any sanitary sewer facilities constructed under a distinct set of contract documents and shall include all work necessary for the Complete and operable installation of all sanitary sewer infrastructure and appurtenances in conformity with the plans and details of the HSE approved construction drawings.
- E. "Conveyed" with regards to sanitary sewer facilities means Projects for which HSE has received legal title. Generally, HSE assumes all maintenance responsibility after a project is conveyed.
- F. "Private" Projects shall mean Projects which are permanently connected to HSE's sanitary sewer facilities, but will not be conveyed to HSE. The Subscriber (owner) is responsible for all maintenance as described in these specifications.
- G. "Completed" with regards to Projects shall mean any Projects that are acceptably constructed, tested and through which customer service has been authorized by HSE, but have not been conveyed to HSE. All applicable fees will need to be paid to HSE prior to a Project being deemed completed.

- H. “Emergency” shall mean any situation that does or threatens to impair or discontinue the service of HSE, harm any property, public or private, or injure any person.
- I. “Manhole” in reference to maintenance requirements shall mean any sanitary sewer structure including, but not limited to gravity sewer manholes, Type 1, Type 2 and Type 3 cleanouts, I&A Tanks, grinder pumps, air release manholes, force main cleanouts, service valves, and isolation valves.

1.02 Liability and Costs For Work

- A. No direction, field directive or other instruction contemplated by these Maintenance Specifications and/or conducted by others shall accrue any liability, charge or cost to HSE, Engineer or SAMCO's inspectors.
- B. All monitoring, sampling, analysis or testing of the sanitary sewer infrastructure shall be at the sole direction of HSE's Engineer.

1.03 Repair and Test Requirements

- A. Only HSE and Engineer shall repair, test and maintain Projects that have been Conveyed to HSE. Only HSE, Engineer or a maintenance company operating under an HSE approved maintenance agreement shall repair, test, or maintain Completed Projects or Private Projects.
- B. Only HSE shall perform monitoring, sampling, analysis or testing of Wastewater streams within HSE's service area. HSE shall determine the frequency and laboratory analysis requirements for all applications on an individual basis.
- C. All repairs performed on Projects shall, to the extent feasible, meet HSE's standards, specifications and details applicable at the time of the repair. Engineer shall ascertain the appropriate material, workmanship and standards that should be met in all repairs that cannot feasibly be performed in accordance with HSE's standards, specifications and details.
- D. HSE and Engineer shall be afforded the opportunity to observe all repair work and all tests being performed by others on Projects that have been Completed. Notice shall be provided to HSE and Engineer at least three working days prior to any repair work or tests not being conducted on an emergency basis. Emergency repairs shall be conducted only after making reasonable attempts to notify HSE or Engineer. Continuing attempts shall be made to notify HSE during and after the emergency repairs until notification is actually made.

- E. Engineer shall determine the repair compliance tests and acceptance criteria that must be achieved to confirm that the repair is acceptable. The type of test(s) to be conducted, and the specific requirements of the test setup shall be determined by Engineer. A report of all test(s) shall be provided to HSE, and shall be subject to acceptance by Engineer.

1.04 Defect Testing

The types of defect testing and repairs described in these sections are only examples of typically required defect testing. Engineer shall define the defect testing, and acceptable test results on a case-by-case basis, and may require tests and repairs of a different type depending on the specific circumstances.

1.05 Specifications and Details Sheets

- A. These Maintenance Specifications and HSE's other standards, specifications and details are subject to revision at any time and HSE reserves the right to modify or waive any of these specifications in its best interest.
- B. These Maintenance Specifications are intended to define the maintenance requirements of sanitary infrastructure which are designed, constructed and operated under typical conditions in HSE's service area. Depending on field conditions and the composition and characteristics of the sanitary sewer flow, different or unusual conditions may occur that cannot be anticipated in a document of this nature. Additional or special operating requirements may be imposed by HSE under these circumstances.

1.06 Notices

All notices required by these Maintenance Specifications shall be given to both HSE and to SAMCO at their respective business offices.

1.07 Governing Laws, Codes and Regulations

These Maintenance Specifications shall not be considered as a substitute, nor shall they supersede, the laws, codes and regulations related to the work. In the event of a conflict between any laws, codes or regulations governing the work and these Maintenance Specifications, the more stringent requirement shall apply.

1.08 Confined Spaces Entry

All persons, including but not limited to Subscribers, maintenance workers, contractors, subcontractors and engineers shall abide by HSE's "General Procedures for Manhole Opening and Entry" or the latest I.O.S.H.A. confined space entry standards, which ever is

more stringent. Also, all persons on site must abide by all I.O.S.H.A. standards, including but not limited to, "General Construction Practices" and "Trench Safety Standards".

SECTION 2 - SPECIAL REQUIREMENTS FOR COMPLETED AND PRIVATE PROJECTS

2.01 Responsibility for Maintenance

HSE will be responsible for regular and emergency maintenance; however, subscriber shall be responsible for the costs of regular and emergency repairs, as well as defect testing, associated with a Project from the time of Completion until the time that the Project is Conveyed to HSE. In the case of Private Projects, the subscriber shall be responsible for the cost of regular and emergency maintenance, defect testing, and repairs so long as the project remains connected to HSE's sewer facilities.

2.02 Notification

Subscriber shall notify HSE at least three working days prior to any regular maintenance or defect testing or repairs on a Project that has not been Conveyed to HSE. Notification shall be in writing if required under any Special Contract or Maintenance Agreement with HSE.

2.03 Access

Subscriber shall provide all-weather access to the sanitary sewer infrastructure for HSE and Engineer at all times. Access shall be available for inspections, maintenance and emergency services and defect testing and repairs through the all-weather access, and shall be adequate for equipment and personnel required for these purposes. Access shall meet HSE's then current standards, specifications and details. Keys to any gates, control panels, wet wells or other locked (or otherwise inaccessible) facility shall be provided to HSE prior to Completion and at any time the locks are changed.

2.04 Observation

HSE shall be afforded the opportunity to observe all maintenance work conducted on any Project that has not been Conveyed to HSE.

2.05 Costs

The Subscriber constructing any Project shall be responsible for all costs associated with repairs, losses, and damages, both direct and consequential, arising from defects in design, or workmanship and materials in that Project prior to Conveyance. This provision shall in no way limit Subscriber's or other's responsibilities and liabilities at law for such costs after Conveyance.

2.06 Emergency Response

A. If circumstances are determined by HSE to have (or threatened to have) created an

Emergency necessitating immediate response, HSE may make repairs and take other actions as are deemed necessary to maintain its service and minimize any personal, property, or environmental damages related to the Project. The costs attributable to these repairs and actions shall be billed to the Subscriber if facilities have not been conveyed to HSE.

- B. In the event the circumstances have created an Emergency (or an Emergency situation has been remedied to the extent of the immediate necessity) not necessitating immediate response, HSE shall notify the Subscriber of the defects and provide seventy-two (72) hours to correct (or make arrangements acceptable to HSE to correct) the defects. If Subscriber has not corrected the defect or is not making an acceptable, continuing effort to correct the defect, HSE may take the corrective actions and invoice Subscriber for these actions. All invoices 30 days past due shall accrue interest at a rate of 1 ½ % compounded monthly until paid in full. HSE may terminate service according to the approved Rules and Regulations or Special Contract.

2.07 Routine Or Other Maintenance

Routine maintenance or minor repairs on Completed or Private Projects coming to the attention of HSE or Engineer shall be finished within thirty (30) days of date of notice from HSE or Engineer to Subscriber.

2.08 Industrial/Commercial Grinder Pump Stations (Private)

All maintenance, defect testing and repairs shall comply with the Duplex Lift Stations section of these Maintenance Specifications. HSE may waive any or all of the specific requirements that are not applicable or beyond the scope of maintenance based on the size or use of the facility.

2.09 Operations of Completed Projects

No operations, connections, cleaning or other work shall be done on Completed Projects except in accordance with the express consent of HSE and (at HSE's option) in the presence of Engineer. No excavations shall be conducted near Completed Projects except in accordance with the express consent of HSE and (at HSE's option) in the presence of Engineer. Highest priority shall be given to maintaining service to customers when considering the operations. HSE may revoke all approvals and authorizations to the person operating a Completed Project.

2.10 Flow to Projects Providing Service

No person, including but not limited to Subscribers, maintenance workers, contractors, subcontractors and engineers shall, directly or indirectly, allow flow to occur from any Project which is not Completed to HSE's sanitary sewer infrastructure.

SECTION 3 - GRAVITY SEWER LINES

3.01 - Regular Maintenance

A. Gravity Sewer Line Cleaning

- (1) All sewer cleaning shall be conducted by jetting with a high pressure sewer cleaning system, combined with all solids being removed with a vactor truck. Lines 12-inches and smaller, and no longer than 400 feet may use a jetting system capable of producing at least 1,500 psi. Lines longer than 400 feet or larger than 12-inches shall use a jetting system capable of 3,000 psi. Root cutting may be required at HSE's discretion. Root cutting shall not be initiated without written authorization from HSE.
- (2) Lines with no industrial/commercial flow shall be cleaned at a minimum of every three (3) years or more frequently on an "as-needed" basis as determined by the Engineer. "As needed" shall be defined as complaints from customers or nearby residents concerning odors, evidence of solids deposits or surcharging in manholes or other evidence of unusual or improper operation. (such as grease, tree roots, etc.)
- (3) Lines receiving contributory flow of which any could be characterized as being Industrial/Commercial Flow shall be cleaned on a more frequent basis as determined by Engineer.
- (4) HSE shall be notified prior to any cleaning of sewers.

B. TV Inspection

- (1) Lines of all sizes without substantial industrial/commercial flow contributions shall be visually inspected with the use of a closed-circuit television camera on an as-needed basis.
- (2) Lines of all sizes with substantial (as determined by Engineer) flow contributions from Industrial/Commercial Flow shall be visually inspected with the use of a closed circuit television camera on a bi-annual basis. The frequency of closed circuit television camera inspection may be reduced by Engineer based on a history of inspections indicating satisfactory conditions.
- (3) A video tape of the inspection and the inspection logs shall be provided to HSE.

3.02 Defect Testing and Repairs

A. Flow Monitoring

- (1) Any sewer facilities may require flow monitoring at periods deemed necessary by Engineer to assure the protection of the sewer facilities or any property, to determine the sources of any clear water (inflow/infiltration), or to determine whether the capacity in the sewer facilities is adequate.
- (2) Flow monitoring shall be conducted with the use of meters that combine depth and velocity to determine total flow, shall be subject to Engineer's approval, and shall be installed and maintained in accordance with manufacturer's directions. The data collection setup and frequency of data downloading shall be determined by Engineer.
- (3) Reports shall be provided to Engineer on a periodic basis (at time intervals acceptable to Engineer) showing raw data and an engineering analysis of the various flow characteristics (per EPA or other regularly accepted standards) certified by an engineer in accordance with Indiana law.

B. Other Tests

Smoke, infiltration, exfiltration, vacuum, low pressure air, TV inspection, deflection testing or any other test deemed necessary by Engineer shall be conducted as directed by Engineer on sewer facilities to identify suspected defects.

SECTION 4 - DUPLEX LIFT STATIONS

(Triplex Lift Station maintenance programs will be developed on a case-by-case basis)

4.01 Weekly Maintenance

A. Weekly Logs

Weekly logs of the recent operation and maintenance shall be filled-out and kept at the Engineer's office. Previous weekly logs may be kept at the business office but shall be available for review and copying during normal business hours. The logs shall be of the form provided by HSE.

B. Visual Inspection

All equipment will be visually inspected each week to be sure it is in good working order.

C. Cleaning

Clean floats while raised for checking of alarm and automatic pump operation.

- D. Verify Alarm Operation
- (1) Press Alarm Test button to confirm operation
 - (2) Tilt the high water alarm float to confirm alarm operation.
- E. Electrical
- (1) Check and record voltage readings for each leg (L1/GND, L2/GND, L3/GND, L1/L2, L2/L3, L1/L3)
 - (2) Check and record each motor leg amp draw
 - (3) Note any variations in readings
- F. Pump and Motor Controls
- (1) **Check that control panels are locked**
 - (2) Confirm proper H-O-A switch settings
 - (3) Place each pump momentarily (for no less than 30 seconds) to Hand and confirm proper operation
 - (4) Read and record run-time hour meter of each pump
 - (5) Verify Automatic pump operation
 - a. Turn pump switches OFF
 - b. Turn pump power supply breakers OFF
 - c. Leave pump control breaker ON
 - d. Turn pump **H-O-A** switches to AUTO
 - e. Tilt “Off” (**lowest**) float switch and “Lead” (**second lowest**) float switch to activate lead pump motor starter
 - f. Lower float switches to de-activate contactor
 - g. Repeat e. And f., making sure that other pump contactor activates and de-activates
 - h. Tilt “Off”, “Lead” and “Lag” (**second highest**) float switches to activate both contactors
 - i. Lower floats to de-activate contactors
 - j. Replace float switches in wet well
 - k. Turn pump **H-O-A** switches to OFF
 - l. Turn pump power supply breakers back ON
 - m. Turn pump **H-O-A** switches back to AUTO
- G. Wet Well
- (1) Confirm proper wet well level
 - (2) Confirm that floats are hanging free
 - (3) Confirm physical characteristics of influent wastewater are normal (identify abnormalities; i.e., grease, odors, grit, etc.)
 - (4) Pump out grease or solids from wet well.
 - (5) Confirm operating pump(s) are running quietly without excessive vibration

4.02 Quarterly Maintenance

- A. Perform all Weekly Maintenance
- B. Pump Down Test
Perform pump down test, and provide the results to HSE within 30 days
- C. Valves
 - (1) Exercise discharge plug valves
 - (2) Inspect (and repair as required) check valves
 - (3) Inspect (clean and repair as required) air/vacuum release valves

4.03 Semi-Annual Maintenance

- A. Perform all Weekly and Quarterly Maintenance
- B. Wet Well Cleaning
Wet well and valve vault shall be washed down with a pressure washer and vactored out
- C. A meter shall be used to meg all pumps. Each pump should be checked from leg to leg to leg and readings should be the same. The pumps should also be checked from each leg to ground and the readings should be infinite.
- D. The battery back-up power supply should be checked for proper operation.

4.04 Annual Maintenance

- A. Perform all Weekly, Quarterly Maintenance and Semi-Annual Maintenance
- B. Annual Inspection
 - (1) Pull pumps up rail and remove
 - (2) Visual inspection of pumps
 - (3) Visual inspection of impeller for unusual wear (i.e., pitting, scorching, ovality, etc.)
 - (4) Visually check cords for cuts
 - (5) Reinstall pumps on rail system
 - (6) Inspect controls for operation and defects (i.e. corrosion)
 - (7) Go through inspection reports, analyze data, and run test
 - (8) Operate all valves

4.05 Other Maintenance

A. Mechanical and Electrical Equipment Maintenance

- (1) Pump seals, motors, impellers, wear plates, float switches, motor starters, contactors, and relays shall be replaced as necessary to maintain a properly functioning facility
- (2) Provide notification to HSE of the repair or replacement of any of the above items and suspected cause of failure.

B. Flow Monitoring

- (1) Any lift stations may require flow monitoring at periods deemed necessary by Engineer to assure the protection of the sewer facilities or any property, to determine the sources of any clear water, or to determine whether the capacity in the sewer facilities is adequate.
- (2) Flow monitoring shall be conducted with the use of Doppler or magnetic meters, shall be subject to Engineer's approval, and shall be installed and maintained in accordance with manufacturer's directions. The data collection setup and frequency of data downloading shall be determined by Engineer.
- (3) Reports shall be provided to Engineer on a periodic basis (at time intervals acceptable to Engineer) showing raw data and an engineering analysis of the various flow characteristics (per EPA or other regularly accepted standards) certified by an engineer in accordance with Indiana law.

4.06 Defect Testing and Repairs

Pump-down tests of the lift station, hydrostatic testing of the lift station piping or force main, pump certification tests or electrical troubleshooting or other similar tests are the types of tests or analyses that may need to be conducted as directed by Engineer to identify suspected defects.

SECTION 5 - MANHOLES/CLEANOUTS

5.01 - Regular Maintenance

A. Visual Inspection

- (1) Manholes and all cleanouts (except Type I building cleanouts) on laterals shall be visually inspected monthly until building construction on 95% of the lots or pads is completed or as determined by the Engineer. However, any manholes or cleanouts on undeveloped lots or pads will continue to be inspected monthly. Inspect castings, riser rings, barrel sections and barrel joints, base joint, base, flow volume and quality, solids, debris or grease in manhole and pipe penetrations for damage, buildup, inflow or infiltration, or

other unusual conditions.

- (2) Manholes with little or no industrial/commercial flow contribution shall be visually inspected semi-annually when there is no construction in the area.
- (3) Manholes with substantial industrial/commercial flow contribution (as determined by Engineer) shall be visually inspected monthly.
- (4) A walk-through inspection will be conducted each 6 months on all off-site gravity sewer lines, as well as all on-site gravity sewer lines after subdivision build-out, or as determined by Engineer.
- (5) However, at the discretion of SAMCO, any manholes subject to damage by construction will continue to be inspected monthly regardless of whether construction and final grading is completed within the Development or the respective phase thereof.

5.02 - Defect Testing and Repairs

- B. Vacuum Testing
Vacuum Test manholes as requested by HSE to identify suspected defects
- C. Other Tests
Any other tests deemed necessary by Engineer to identify suspected defects.

SECTION 6 - COMMON FORCE MAINS

6.01 - Regular Maintenance

- A. Walk-Through Inspection consisting of visual inspection of all valve boxes shall be conducted as follows:
 - (1) A walk-through inspection shall be conducted monthly on on-site Common Force Mains until construction on 95% of the lots or structures is finished (subdivision build-out), or as determined by the Engineer.
 - (2) A walk-through inspection will be conducted each 6 months on all off-site Common Force Mains, as well as all on-site low pressure sewer lines after subdivision build-out, or as determined by Engineer.

6.02 Defect Testing and Repairs

- A. Pressure Tests
Hydrostatic Pressure test Common Force Mains as Requested by HSE
- B. Other Tests
Any other tests deemed necessary by Engineer to identify suspected defects.

SECTION 7 - AIR RELIEF VALVES

7.01 Regular Maintenance

A. Semi-Annual Maintenance

(1) Logs

Logs of the air relief valve operations and maintenance shall be filled-out and sent to HSE. The logs shall be of the form provided by HSE.

(2) Inspection

- a. Check drainage around structure
- b. Remove lid and inspect for internal damage
- c. Visually inspect air relief valves for signs of obstruction or leakage
- d. Clean lid and rim

(3) Testing and Flushing

- a. Field test Air Relief Valves (both air & vacuum if applicable)
- b. Back flush Air Relief Valves

B. Annual Maintenance

Other maintenance in accordance with manufacturer's recommendations

7.02 Defect Testing and Repairs

A. All defects identified within air release valve or appurtenances shall be repaired as directed by Engineer. Clean and rebuild valve at a frequency indicated by Engineer

B. Other tests and repairs as directed by Engineer

SECTION 8 - FORCE MAIN CLEANOUTS

8.01 Regular Maintenance

A. Semi-Annual Maintenance

(1) Logs

Logs of the cleanout operations and maintenance shall be filled-out and sent to HSE. The logs shall be of the form provided by HSE.

(2) Inspection

- a. Check drainage around structure
- b. Remove lid and inspect for internal damage
- c. Visually inspect force main cleanouts for signs of leakage
- d. Clean lid and rim

- B. Annual Maintenance
Other maintenance in accordance with Engineer's requirements

- C. Periodic Maintenance
 - (1) Testing and Flushing as deemed necessary by Engineer
 - a. Lock-out and tag-out lift station in accordance with Engineer's directions before maintenance on force main cleanouts
 - b. Exercise force main cleanout valve
 - c. Back flush force main through cleanout

8.02 Defect Testing and Repairs

- A. Clean and rebuild valve at a frequency indicated by Engineer

- B. Other tests and repairs as directed by Engineer

SECTION 9 - PRETREATMENT SYSTEMS

9.01 Cleaning and Maintenance Requirements

Pretreatment systems, such as grease traps, oil/water separators, grit traps, and similar systems, will be cleaned and maintained in accordance with manufacturer's recommendations and the additional guidelines determined by Engineer. Due to the variation in flows and wastewater quality, oils recycling systems and other factors, guidelines will be developed on an individual basis for each pretreatment system.

9.02 Record keeping

Records of all cleaning and maintenance work will be maintained by the Subscriber at the site, and will be available to HSE for inspection and copying. Copies of receipts from all pumping/cleaning activities will be provided to HSE within 30 days after the work is performed.

9.03 Enzyme and Chemical Cleaners

No enzymes, chemical cleaners or bacteriological agents will be used in the pretreatment system without the prior approval of Engineer.

SECTION 10 - INDUSTRIAL/COMMERCIAL/NON-RESIDENTIAL FLOW

10.01 Flow characteristics and sampling frequency

A. Any flows from an industrial/commercial/non-residential source with any of the following characteristics shall be tested on a daily basis with an 8 hour composite flow-proportioned sample and fifteen minute samples to determine the peak concentration of the following:

- (1) Cyanide in concentrations greater than 1.0 mg/l
- (2) Gasoline, benzene, naphtha, fuel oil, or other flammable or explosive liquid, solid or gas
- (3) Strong acids, iron pickling wastes, or concentrated plating solutions, whether neutralized or not
- (4) inert suspended solids greater than 250 mg/l including but not limited to:
Fuller's earth;
lime slurries; and
lime residues,
solid or viscous substances, including
ashes;
cinders;
sand;
mud;
straw;
shavings;
metal;
glass;
rags;
feathers;
tar;
plastics;
wood;
unground garbage;
whole blood;
paunch manure;
hair and fleshings;
entrails;
paper products,
slops;
chemical residues;
paint residues, or
bulk solids
- (5) dissolved solids greater than 1,600 mg/l including but not limited to:

sodium chloride; and
sodium sulfate,

- (6) fats, wax, grease or oils, whether emulsified or not, in excess of one hundred (100) mg/l or containing substances which may solidify or become viscous at temperature between thirty-two (32) and one hundred fifty (150) degrees Fahrenheit (0 and 65 degrees Centigrade)
- (7) obnoxious, toxic, or poisonous solids, liquids, or gases in quantities sufficient to violate the provisions of this article
- (8) Any liquid which has a pH lower than 5.5 or higher than 9.5, or
- (9) Any other corrosive property capable of causing damage or hazard to structures, equipment, and/or personnel
- (10) Any radioactive wastes or isotopes

B. Flows from an industrial/commercial/non-residential source with any of the following characteristics shall be tested on a weekly basis with an 8-hour composite flow-proportioned sample and fifteen minute samples to determine the peak concentration of the following:

- (1) Particles greater than ½ inch in any dimension
- (2) Any waters or wastes containing odor-producing substances exceeding limits which may be established by HSE
- (3) Five day biochemical oxygen demand greater than 208 ppm
- (4) Contains more than 240 ppm of suspended solids