



DESIGN AND STANDARDS MANUAL

Eastern Idaho Regional Sewer District
Revision Date: June 17, 2024



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1 GENERAL

1.1 Introduction

The Eastern Idaho Regional Sewer District (EIRSD) provides regional conveyance to, and treatment at, the Oxbow Water Reclamation Facility (WRF) which is located west of Shelley, Idaho. The service area for the Oxbow WRF includes the cities of Ammon and Shelley as well as portions of Bingham and Bonneville Counties.

1.2 Definitions of Terms as Used Herein

- Owner: EIRSD
- District Manager: EIRSD's District Manager
- Engineer: EIRSD's authorized engineer
- Design Engineer: The Idaho licensed professional engineer of record for the project
- Contractor: The individual, partnership, firm, or corporation executing a Contract and who is primarily responsible for the acceptable design and performance of the construction, licensed in the State of Idaho as a public works contractor with a specialty license for installation of sewer lines and appurtenances
- ISPWC: Idaho Standards of Public Works Construction (latest version)

1.3 Purpose and Use

The purpose of this Design and Standards Manual (DSM) is to set forth EIRSD's engineering design criteria and policies and EIRSD's standard drawings and specifications for projects.

The DSM is not intended duplicate or include all federal, state, and local codes, standards, and regulatory requirements including the Idaho Administrative Code (in particular, IDAPA 58.01.16 – Wastewater Rules), and should the DSM conflict with these requirements, the former will prevail. The DSM is also not intended to supplant the application of engineering standards of care by the Design Engineer.

The requirements described in this policy and standards are general and are not intended to cover every detail. EIRSD reserves the right to add or modify as required to address specific situations.

This policy and standards may change without notice, and EIRSD may grant variances from individual requirements on a case-by-case basis. All deviations from EIRSD standards shall be clearly identified in a written transmittal attached to preliminary, design, construction, and record "as-built" drawings or plans. Project approval by EIRSD is independent of any other agency approval, and it is the responsibility of the Design Engineer and/or Contractor to secure approvals and permits from all other regulatory agencies.

1.4 Responsibilities

The ultimate responsibility for the proper design and construction of the project lies with the licensed Design Engineer and Contractor. In addition, the Design Engineer or Contractor are responsible for the following at no cost to EIRSD:

- Apply for and obtain all required permits and right-of-way for the project
- Provide material testing and quality assurance/quality control testing as required by the approved drawings and specifications to validate the acceptability of the work.
- Provide design and construction surveying as required.

1.5 Inspections

A EIRSD representative shall make all inspections, authorize taps, specify special requirements, and enforce these policies. Calls for inspection of sewer tap in shall be made at least forty-eight (48) hours in advance. Notices given on any Saturday or legal holiday will not be accepted. Calls for inspections and matters pertaining to methods of construction shall be to the EIRSD representative. Any damage to sewer mains causing failures shall be repaired at the owner' s expense. An inspection fee shall be payable to EIRSD prior to inspection. See EIRSD Bylaws and Policy Manual.

EIRSD or its Engineer may make periodic visits to the site of the project to observe the progress and quality of the work and to determine if the work is proceeding in accordance with the requirements of this DSM. EIRSD and its Engineer are not responsible for construction means, methods, techniques, sequences, or procedures or for safety precautions and programs in connection with the work.

Visits and observations made by EIRSD or its Engineer shall not relieve the Contractor of their obligation to conduct comprehensive inspections of the work, to furnish materials and perform acceptable work, and to provide adequate safety precautions in conformance with the intent of the contract. Any Contractor's error going undetected during a design or construction review by EIRSD or its Engineer does not relieve the Contractor of the responsibility or the discovery of his own errors and the correction of them or of the responsibility for properly performing the work.

Upon completion of the entire project and when all deficiencies have been corrected to EIRSD's satisfaction, the EIRSD District Manager will issue a letter of acceptance.

1.6 Warranty Period

The Contractor shall warranty all work and materials for a period of two (2) years from the date that EIRSD issues the letter of acceptance for the project.

2 STANDARD SPECIFICATIONS AND DRAWINGS

2.1 Introduction

EIRSD has adopted the latest edition of the Idaho Standards for Public Works Construction (ISPWC) as its standard drawings and specifications with the modifications listed in the following Standard Revisions and Special Provisions. In the event of a conflict with the ISPWC and EIRSD's Standard Revisions and Special Provisions, the latter shall prevail.

2.2 Standard Revisions to ISPWC

The following supplement or revise the ISPWC.

2.2.1 Division 500 Sewer – Standard Specification Revisions

- None at this time

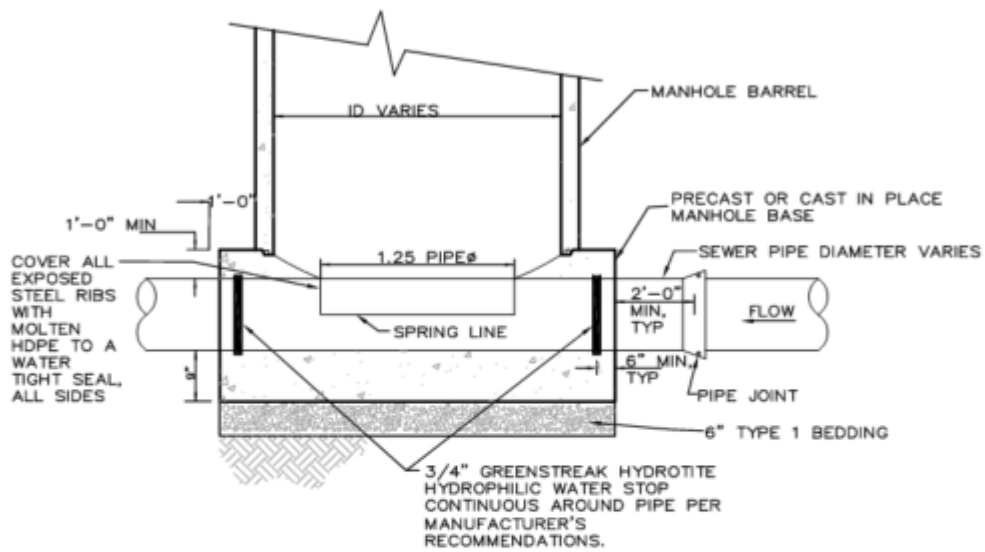
2.2.2 Division 500 Sewer – Standard Drawing Revisions

- Add Standard Drawing, EIRSD-501B (Standard Manhole Base with Steel-Reinforced Polyethylene Pipe) – Included at end of Section 2.
- Add Standard Drawing, EIRSD-508A (Manhole Collar in Field or Ditch Locations) – Included at end of Section 2.

2.3 Special Provisions

Include special provisions for specifications covering all project components not addressed in the ISPWC or required modifications to the ISPWC.

EIRSD-501B (Standard Manhole Base with Steel-Reinforced Polyethylene Pipe)



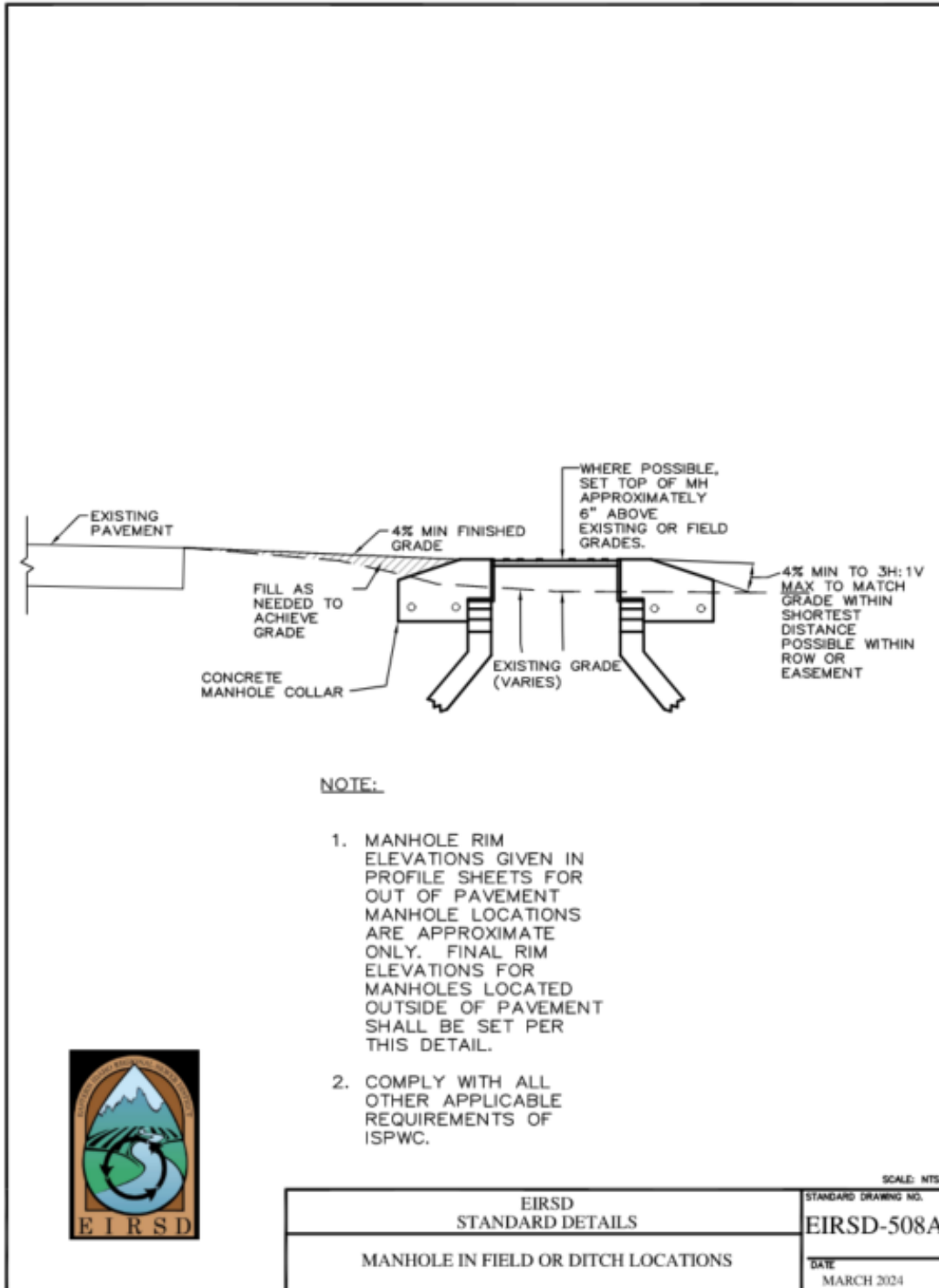
NOTES:

1. CUT OUT PIPE AS SHOWN.
2. COMPLY WITH ALL OTHER APPLICABLE REQUIREMENTS OF ISPWC.



EIRSD STANDARD DETAILS		SCALE: NTS
STANDARD MANHOLE BASE WITH STEEL-REINFORCED POLYETHYLENE PIPE		STANDARD DRAWING NO. EIRSD-501B
		DATE MARCH 2024

EIRSD-508A (Manhole Collar in Field or Ditch Locations)



3 DESIGN POLICY

3.1 Project Submittal Requirements

3.1.1 General

The Design Engineer shall submit project drawings and specifications meeting the requirements of this DSM. The submittal shall be provided in both hard copy (two (2) paper copies) and electronic format (via email or on USB drive). CAD files of the drawings shall be provided to EIRSD. Paper copies of drawings shall be 11x17.

EIRSD will review the submittal and provide review comments or acceptance generally within forty-five (45) calendar days. To facilitate and expedite the review, the Design Engineer should include with the submittal a marked-up copy of applicable DSM sections with check marks and notes indicating compliance or non-compliance with the requirements of each paragraph.

Copies of all submittals and documents pertaining to the sewer system required by the Idaho Department of Environmental, city, or county shall be provided to EIRSD.

Drawings, specifications, reports, and calculations shall be prepared and signed by a licensed Idaho Professional Engineer.

3.1.2 Basis of Design Report

A report outlining the scope of the project shall be submitted to EIRSD for review. The report shall include the following, at a minimum:

For Main Extensions

- Name and address of owner and engineer.
- Number of dwelling units, ERUs, and population for residential connections, and/or population equivalents, ERUs, for industrial or commercial connections.
- Area to be served by extension
- Flow projections (average day, maximum day, and peak hour flows at start-up and build-out) and supporting calculations for sizing
- Construction schedule.
- For non-residential users, see EIRSD's sewer ordinance for submittal requirements including identification of key constituents and pretreatment report requirements

For Pumping and Lift Stations

- Design assumptions
- Area to be served by extension

- Flow projections and supporting calculations for sizing; show pump station performance during average day, maximum day, and peak hour flows at start-up and build-out. A design life of 20 years minimum shall be used
- Pump(s), motor, suction and discharge pipe, and wetwell sizing
- Pump cycle times
- Pump selection with system curves superimposed on pump curves for each critical flow condition
- Storage capacity during projected peak hourly flows from high water alarm elevation to overflow conditions through collection lines to the nearest manhole or dwelling sewer stub
- Factor of safety against buoyancy
- Control strategy description with water level and pump control elevations
- Analysis showing impact of discharge on EIRSD's existing collection system
- Construction schedule.

3.1.3 Drawings

Drawings shall be 11x17 and include the following:

- Cover sheet with table of contents
- Contact information for EIRSD's District Manager
- Vicinity map clearly showing the project location relative to surrounding roads and prominent geographic features
- North arrows and scales
- Plan and profile sheets for sewer lines with stationing
- Coordinate and benchmark information
- Existing utility information
- Legend
- Site plan, layout, plan view, and sections for pump stations
- Details (EIRSD or ISPWC standard details may be incorporated by reference)
- General Notes (see below)

The following general notes shall be included on the drawings at a minimum:

1. All work shall be done in accordance with the ISPWC Standard Specifications and Drawings (latest edition), EIRSD Standard Specifications and Drawings, and other local, state, and federal authorities having jurisdiction.
2. EIRSD reserves the right to complete spot observation and inspections. The Contractor will notify the EIRSD District Manager forty-eight (48) hours prior to start of construction. Sewer work must be approved by EIRSD's District Manager prior to backfilling trenches

for pipe. Work done without such approval does not relieve the Contractor from the responsibility of performing the work in an acceptable manner.

3. The Design Engineer shall submit record drawings to EIRSD before final approval is given to the project.
4. The Contractor shall test all sewer lines in accordance with ISPWC and shall be observed by the EIRSD District Manager. The Contractor shall remove all manhole covers prior to inspection.
5. All sewer lines shall be cleaned with a hydro-cleaner, or other Engineer approved cleaning equipment prior to television inspection and final acceptance of the sewer.
6. A television inspection shall be conducted by a qualified, properly equipped independent contractor upon completion of the sewer lines and provide a video file of the inspection to EIRSD prior to final acceptance of the sewer, as specified in these standards.
7. The Contractor shall warranty all work and materials for a period of two (2) years from the date that EIRSD issues the letter of acceptance for the project.

3.1.4 Submittals Required Prior to Final Acceptance

The applicant shall be the owner, and shall be responsible for all repair, replacement, and maintenance, on the extension for a period of two (2) year. Prior to the EIRSD finally accepting the extension, the two-year ownership by the applicant shall have elapsed, and the applicant shall have thoroughly washed the extension to allow the EIRSD to make a television inspection of the extension.

Prior to accepting the proposed extension or pump station to the EIRSD sewer system, the applicant shall submit the following:

1. **Test and Certifications** - Results of the testing, inspections and engineer's certification that the system passed all tests. After the construction of any EIRSD Sewer System trunk line extensions or pump station, it shall be the obligation of the owner, or his agent, to have a licensed Idaho Professional Engineer certify to the EIRSD and to the Idaho Department of Environmental Quality that the System extensions were installed in accordance with the approved plans and specifications, including all approved change orders thereto, on file with the respective agencies. The applicant shall maintain the line extension to the standards of the EIRSD during the applicant' s ownership of the line extension.
2. **Ownership Dedication** - Dedication of the ownership of the lines and appurtenances to the EIRSD, free and clear of all liens and encumbrances.

3. **Record Drawings** - DEQ-approved record (as-built) drawings and approval by the EIRSD representative. The submittal shall be provided in both hard copy (paper) and electronic format (via email or on USB drive). Drawings shall be 11x17.
4. **Operation and Maintenance Manuals** - Upon project completion and prior to EIRSD issuing the letter of acceptance, the Design Engineer shall submit operation and maintenance information and manuals to EIRSD for any mechanical, electrical, instrumentation/control, or other materials when requested by EIRSD. The submittal shall be provided in both hard copy (paper) and electronic format (via email or on USB drive). Submit electronic PDF and six (6) paper copies of the Operation and Maintenance Manuals approved by EIRSD. Operation and Maintenance Manuals shall contain operation and maintenance instructions, repair data, parts lists, manufacturer's warranty, record drawings, permits, easements, photographs, test results, schematics for mechanical, electrical, and civil design components, and other pertinent information.
5. **Rights-of-Way and Easement Documentation** - All rights-of-way and/or easements for construction, operation and maintenance of new, existing and/or future sewer systems. Right-of-ways and/or easements for construction, operation and maintenance of the system shall be recorded with the County Assessors Office and copies placed in the Operation and Maintenance Manuals.
6. **Payment of Fees** - Documentation that all applicable fees as may be required by the EIRSD have been paid.
7. **Application for Final Acceptance** - An application for final acceptance shall be submitted to EIRSD. The EIRSD shall consider the application at its next regularly scheduled meeting, at which it shall either accept or decline the application by resolution duly adopted by the EIRSD. The application shall be considered declined unless there is contained in the minutes of that meeting of the EIRSD a duly-adopted resolution that the application has been accepted. The effective date of such acceptance shall be as stated in the resolution, or, if no effective date is stated in the resolution, then the effective date shall be the date of the meeting at which the resolution was adopted.

3.2 Design Criteria

3.2.1 Pipe Sizing and Slope

In general, sewer systems shall be designed for the estimated ultimate build-out flow in the sewer. Manning's Formula shall be used in computing depth of flow and velocities of all sanitary sewer conduits with the roughness coefficient "n" value equal to 0.013. Sewer lines shall be designed to give mean velocities of not less than 2 feet per second based on calculated peak or half-full flow, whichever yields the lower velocity.

Minimum slope requirements in feet/feet for nominal sewer pipe diameters are as follows:

- 8 inch (200 mm) 0.0040
- 10 inch (250 mm) 0.0028
- 12 inch (300 mm) 0.0022
- 15 inch (375 mm) 0.0015
- 18 inch (450 mm) 0.0012
- 24 inch (600 mm) 0.0008
- 30 inch (750 mm) 0.00058
- 36 inch (900 mm) 0.00046
- 42 inch (1050 mm) 0.00038

The pipe diameter and slope shall be selected to obtain the greatest practical velocity to minimize settling problems. Oversized sewer lines will not be approved to justify using flatter slopes. The Design Engineer shall submit computations of the mean velocities during peak flows. The depth of the design peak flow shall not exceed one-half full. All permanent dead end sewer lines (e.g., in a cul-de-sac) shall be installed with a minimum of 1.0% slope in the upstream end segment.

No sewer main shall have a pipe diameter of less than 8 inches.

3.2.2 Pipe Design

Cover

Sewer pipe including mains and service laterals installed in a traveled way shall have a minimum coverage of 5 feet from the top of the pipe to the bottom of the existing pavement. Sewer mains and service laterals installed outside the traveled way shall have a minimum cover of 4 feet. Pipe with less than 2 feet of cover shall be Class IV or V reinforced concrete or Class 50 ductile iron pipe.

Materials

Steel-reinforced polyethylene (Duromaxx or pre-approved equivalent) pipe may be used for gravity flow sewer extensions in 24" through 120" nominal diameters where this pipe material is already used for the existing pipe. Pipe shall be installed in accordance with manufacturer's recommendations.

Otherwise, ISPWC requirements for all materials will apply.

Miscellaneous

When a smaller sewer flows into a larger sewer, the invert of the larger sewer shall be sufficiently lower to maintain the same hydraulic gradient.

Sanitary sewer mains installed as part of a subdivision or development shall be extended with to the adjacent undeveloped property for future extensions in accordance with approved plans. A sanitary sewer manhole shall be placed at the terminus of the main line at the property line of the adjacent undeveloped property. Pipe extensions out of the base of the terminus manhole shall have the end properly capped and a mechanical plug installed in the manhole.

Sanitary sewer pipes that are abandoned must be removed from the public right-of-way.

3.2.3 Sewer Service Laterals

All connections to the sanitary sewer shall have a minimum diameter of four inches (4"), and shall be made of concrete, cast iron, ductile iron or acrylonitrile butadiene styrene (ABS) Schedule 40 or polyvinyl chloride (PVC) schedule 40.

Service laterals shall have a minimum pipe diameter of 4 inches with a minimum slope of 1/4 inch per foot (unless otherwise approved by the Building Official) and be constructed to the property line.

Private service laterals to a public main shall be provided for each individual lot or parcel. Private service laterals shall not be directly connected to the manhole.

3.2.4 Backwater Valves

Any replacement of sanitary sewer service piping serving any and all fixtures, which have elevations lower than the upstream manhole rim elevation, of any public or private sewer shall be protected from backflow of sewage by installing an approved full house backwater valve.

3.2.5 Manholes

Manhole cones shall be concentric unless approved by the Engineer prior to installation. Manholes shall be located at junction points, changes in horizontal and/or vertical alignment, changes in conduit size, and at the end of public lines unless approved otherwise by the Engineer.

Sanitary sewer pipe shall be installed in straight line segments. Vertical and horizontal curves shall not be permitted.

Manholes shall be spaced at intervals not greater than 400 feet for all lines smaller than 24 inches and 500 feet maximum for lines 24 inches and larger.

The minimum diameter for manholes shall be 48 inches for pipes 24 inches and smaller. Larger diameters manholes are required for large diameter sewers.

A minimum of 16.5 feet of overhead clearance shall be provided at all manholes.

Within sewer manholes, the difference between the invert elevations of the inlet and outlet pipes shall create a minimum fall of one-tenth (0.1) of a foot through the manhole and two-tenths (0.2) of a foot at angle points greater than 45 degrees.

Manholes should not be designed or constructed in the wheel path of the travel lane or at any location within a bike lane.

Concrete collars shall be placed around all manholes, valves or other appurtenances within any right-of-way or easement. Such collars shall encircle all casting with a minimum width of one (1) foot. Manhole collars shall conform to standard details and shall extend to a minimum depth of one (1) foot.

A drop connection shall be provided for a sewer entering a manhole at an elevation of two (2) feet or more above the manhole invert. Drop manholes require written approval from the Engineer and shall not be permitted unless unusual circumstances are present.

The interior of manholes on interceptor sewers shall be coated or lined, and EIRSD may require manholes on other sewers to be coated or lined, especially where there is potential for corrosion. Contact EIRSD for allowable coating or lining systems.

3.2.6 Pressure Mains

Pressure main piping shall be installed with a metal tracer wire over the entire length of the run for future location via metal detection devices. GPS data shall be provided for all installed pressure main and connecting vaults/manholes, along with GPS data points at a minimum of every two hundred feet (200') along the pressure main piping running straight and at every vertical or horizontal change.

Force mains should be not less than 4 inches in diameter. At projected peak pumping capacity (with one pump running), a minimum self-scouring velocity of 3.5 feet per second (fps) should be maintained. Alternatively, this velocity should be provided by automatically cycling two pumps simultaneously according to a programmable schedule. Design velocity should not exceed 5 fps.

Uniform grade and straight alignment between high and low points, fittings, and appurtenances shall be maintained in new force mains. The force main shall be installed at a positive grade so that it can be drained and emptied if necessary. A combination air valve, Apco or approved equivalent, shall be placed at all high points in the force main to release trapped air and relieve vacuums during draining.

Force main piping shall be constructed of C-900 and C-905 PVC water pipe, although epoxy-lined ductile iron may be allowed on a case-by-case basis. Fittings shall be ductile iron. All nuts, washers, bolts and other steel hardware shall be stainless steel.

Resilient wedge isolation gate valves shall be installed in the force main at a minimum of 1,000-foot intervals or where required by EIRSD.

3.2.7 Lift Stations

General

Any proposed lift stations will require pre-approval from the EIRSD District Manager. Lift stations shall be designed in accordance with EIRSD's Standard Specifications. These standards provide minimum requirements and generally apply to typical residential pump stations, and EIRSD reserves the right to impose other requirements as necessary. Also, additional requirements may apply to pump stations receiving commercial or industrial sewage.

Individual sewage pump stations will not be allowed unless pre-approved by EIRSD.

Lot and Site Layout

EIRSD shall have full ownership of the pump station lot and access from the public right-of-way to the lot. Easements are not acceptable.

The minimum lot size shall be 50' by 50'. The lot shall be of sufficient size to meet all zoning setbacks from lot lines and roadways and shall allow a minimum of 20' from structures (below and aboveground) to lot lines. The lot size and layout shall allow parking of maintenance vehicle out of the public right-of-way and provide safe access for maintenance vehicles.

The lot shall be fenced with commercial-grade 6 foot chain link fence with privacy slats. A double swing gate (20 foot opening) with locking mechanism.

Access to the lot shall be directly from a public right-of-way. Approach from public right-of-way into lot shall be approved by roadway governing authority. Access drives and parking areas shall be constructed with a minimum of 12 inches of pit run subbase and 8 inches of aggregate road base and have a drivable width at least 12' wide. If subgrade soils are soft, a geotextile fabric/geogrid below the gravel shall be provided. Unpaved finish grade surfaces (non-traffic areas) inside the pump station site shall be finished with a 4-inch layer of crushed ¾" minus gravel over subgrade all compacted to 95% maximum density. Drainage facilities shall be constructed so that the access road, pump station, and surrounding properties are not subject to flooding from stormwater runoff.

If water supply is reasonably available nearby, a 1-inch-diameter, non-freeze, post water hydrant and lock with approved cross connection prevention device, 42 inches minimum bury depth, and greater than 10 feet horizontal separation from the wetwell and control panels shall be required within the pump station site. The water source shall be required all year. An irrigation water source will not be a suitable equivalent unless provided continuously year-round.

Any potable water sources shall be protected by a reduced pressure backflow preventer installed in an above-ground (heated) hot box. All underground water lines shall conform to minimum separation distances per code requirements.

Pumps

The pump station shall utilize a submersible pump and wetwell configuration with a separate valve vault.

The lift station design shall include a minimum of two (2) pumps (i.e., duplex) each capable of handling, at a minimum, the expected maximum peak hourly flow. If the 20-year projected peak flow hourly exceeds 500 gpm, three (3) pumps (i.e., triplex) shall be provided.

The pumps and wetwell should be sized to limit the number of starts per hour to less than or equal four (4) per pump. In addition, the pumps and wetwell should be sized to limit the maximum cycle time to less than 30 minutes to avoid septic conditions.

Pumps shall be submersible sewage pumps capable of passing spheres of at least 3 inches in diameter. Pump suction and discharge openings shall be at least 4 inches in diameter.

Grinder or chopper pumps and masticators will not be allowed as they can create sharp debris potentially damaging to the membranes in the treatment process at the WRF.

The following pump manufacturers are acceptable:

- Flygt
- Fairbanks Morse

Building, Wetwell, and Valve Vault

A building shall be provided for the lift station of concrete masonry unit (CMU) block and metal roof construction. Alternative construction materials may be considered by EIRSD on a case-by-case basis. The building shall house the electrical and control panels and discharge piping including isolation and check valves and a port with a cam-lock coupling to be used for flushing, pig-launching, or a bypass connection. The wetwell and backup power generator (if required by EIRSD) shall be located under an overhang of the building roof. A davit crane with mounting accessories shall be provided for removal of the pumps.

The wetwell shall be adequately sized to accommodate the pumps and any other required equipment and piping. If additional pumps are planned to be added in the future to serve the ultimate flow projections, the wetwell shall be upsized appropriately. The storage capacity in the wetwell shall be sized to provide 30 minutes minimum response time during projected peak hourly flows between the high-water alarm elevation and overflow conditions at the nearest manhole or dwelling sewer stub. The wetwell shall be a minimum of 72 inches in diameter.

The discharge connection elbows shall be permanently installed in the wetwell, and the pumps shall be automatically connected to the discharge connection when lowered into place and shall be easily removed for inspection or service. There shall be no need for personnel to enter the wetwell to remove or install the pumps.

Hatches shall be designed to be watertight and for AASHTO H-20 traffic loads. Hatches shall be sized to encompass and fully expose the entire interior to the atmosphere when opened.

All interior surfaces of the wetwell shall be lined or coated with a non-corrodible system pre-approved by EIRSD.

The wetwell design shall provide for confined space entry by including a core mount sleeve base with sleeve cap. The components shall be incorporated into the design and installed per the manufacturer's instructions.

The corners of the wetwell bottom shall be filleted to minimize solids accumulation at the pump intakes at the bottom of the wetwell.

Pipe inverts entering and exiting the structures, top slabs, and base elevations shall be shown on design drawings.

Only rigid, ductile iron piping (Class 52) shall be used within and between the wetwell and building. Where possible, interior fittings shall be flanged fittings with manufacturer-approved gaskets for sewage applications. Ductile iron piping and fittings shall have an interior and exterior epoxy coating.

All materials shall be corrosion resistant. All lifting chains, pipe supports, nuts, washers, bolts and other steel hardware inside the structures shall be stainless steel.

A dual flexible coupling system shall be provided between the wetwell and building and connection to pressure main to accommodate differential settlement between structures.

Mechanical restraint of pipe joints shall be provided within the footprint of the lift station lot.

The pressure main from the lift station shall enter the discharge manhole on the opposite side of the manhole outlet and the pressure pipe outlet shall be directed to flow directly to the manhole outlet.

Motors and Electrical

All sewage pump motors shall be rated explosion-proof and meet National Electrical Code (NEC) requirements.

Motors shall be 3 phase, 60 Hz. 480 volt is the preferred voltage.

The electrical system shall include, but shall not be limited to, electrical service, service equipment, power distribution equipment, motor control equipment, as well as control, instrumentation and telemetry equipment.

The Motor Control Panel shall be separate from the Telemetry Control Panel. If outdoors, these enclosures shall be NEMA 3R/12 construction and shall be freestanding enclosures mounted adjacent to each other on a concrete pad.

A 110 volt receptacle shall be provided at the electrical cabinet.

The electrical installation shall meet NEC and other applicable codes in effect at the station location. No electrical connections, splices, or junction boxes shall be inside wetwell. All electrical/control conduit to be sealed between wetwell and control building.

Surge protection is required at all voltage levels.

Instrumentation and Controls

Controls for the lift station shall be provided to cause the pumps to cycle on and off based on wetwell level. The controls shall be able automatically to alternate some or all the pumps, or always operate in a fixed sequence. Motor starters shall be across the line starters or solid-state soft starters or variable frequency controllers, depending on motor size and EIRSD preference. If variable frequency controllers are used, the electrical system shall comply with the serving utility's harmonic requirements. Variable frequency controllers shall be programmed to quickly ramp up to full speed at starting and then back down to desired setpoint. Minimum frequency shall be set to be 5 Hz above minimum pump speed and flow required to fully open check valves and avoid clogging.

Controls shall be provided for redundant means of starting and stopping pumps. The primary means shall be a level transducer (radar preferred) mounted in the wetwell and connected to the level controller with programmable start and stop levels for lead and lag pumps. The secondary (backup) means shall be float switches with programmable start and stop levels for lead and lag pumps.

SCADA equipment shall be provided to permit EIRSD to monitor the lift station over the existing SCADA system. If cellular connection is required, Contractor shall pay for the cellular bill through the warranty period of the lift station. Contractor shall also pay SCADA-related coordination costs incurred by EIRSD's control system integrator.

A flow meter (magnetic) on the lift station discharge shall be provided.

Contact EIRSD for specific instrumentation, control, and SCADA system requirements.

Standby Power

For lift stations where EIRSD and/or DEQ do not require permanent standby power, the standard design shall include a manual transfer switch and generator connection device to allow EIRSD's portable generator to be connected to the station. Standby power will be via EIRSD's portable generator set. Include a manual transfer switch and generator connection device (matching the Owner's generator set) to permit operation of the station when utility power fails.

For lift stations where EIRSD and/or DEQ do require permanent standby power, EIRSD will require a permanent onsite standby power generator including an automatic transfer switch. The highest standard offering of sound attenuation shall be provided. The engine shall be connected to natural gas if available; otherwise, it shall use diesel with a tank providing a minimum of 24 hours of operating storage volume.

Other Considerations

The following is a partial list of additional items that may be considered or required on a case-by-case basis:

- Screening and/or grit removal
- Grease handling/removal
- HVAC
- Odor control
- Hydrogen sulfide corrosion control
- Noise control

Startup, Commissioning, and Training

Provide up to four (4) hours of complete training and instruction of EIRSD's personnel by a qualified instructor covering the operation and maintenance of the entire system. Schedule the training session at least one (1) week in advance with the EIRSD District Manager.

Complete a performance test as a condition of substantial completion for the entire project:

- The complete PLC control and SCADA system must run continuously for the duration of the performance test. During this period, exercise all system functions, and log for cause of failure, any system interruption and accompanying component, subsystem, or program failure. Include time of occurrence and duration of each failure.
- Provide a competently trained technician or programmer on call for the project site during all normal working days and hours from the start of the performance test until final acceptance of the system. Response time to the project site: 24 hours or less, for a major failure.
- Performance Test duration: 7 days.

- Perform test of the system under standard operating conditions.

Classify failures as either major or minor:

- Minor Failure:
 - A small and non-critical component failure or software problem that can be corrected by EIRSD's operators.
 - Log this occurrence but this is not a reason for stopping the test and is not grounds for non-acceptance.
 - Should the same or similar component failure occur repeatedly, this may be considered as grounds for non-acceptance.
- Major Failure:
 - Considered to have occurred when a component, subsystem, software control, or program fault causes a halt in or improper operation of the system and/or when a technician's work is required to make a repair or to re-initiate operation of the system.
 - Cause termination of the performance test.
 - Start a new acceptance test when the causes of a major failure have been corrected.
 - A failure is also considered major when failure of any control system that results in an overflow, underflow, overdose, or under dose condition occurs.

Provide a Technician Report:

- Each time a technician is required to respond to a system malfunction he or she must complete a report which includes details concerning the nature of the complaint or malfunction and the resulting repair action required and taken.
- If a malfunction occurs which clears itself or which the operator on duty is able to correct, no report is required or logged as specified above.
- If a technician has performed work but no report is written, then a major failure is considered to have occurred.
- Each report shall be submitted within 24 hours to the Engineer and EIRSD, or its representative.

3.2.8 Easements

Sewer easements for public improvements shall be a minimum width of 20 feet. The final easement width shall be determined by pipe width, required trench clearance, and excavated trench side slopes not less than 1:1 horizontal to vertical, from top of pipe, unless approved by the Engineer. Pipe shall be placed in the centerline of the easement.

Written copies of all easements and rights-of-way shall be provided to the EIRSD, shown on all drawings, and recorded with the County Assessors Office.

All sewer pipelines to be owned by the EIRSD shall be located in public right-of-way, permanent utility easements, or on land owned by the EIRSD. Prior to construction of pipelines in public right-of-way, all approvals of governing authority shall be received.

- Easements shall be in the name of the Eastern Idaho Regional Sewer District.
- Prior to final acceptance of pipelines in easements, the easements shall be filed with the respective county and the paperwork delivered to the EIRSD.
- Easements shall prohibit the construction of structures, fences or other facilities that will block complete and perpetual access to the entire alignment of the sewer line.
- EIRSD shall be given keys to any locked gates blocking access to easement.
- Easements shall allow EIRSD to maintain, replace, or upgrade sewer line.
- Minimum width of easement shall be 10' feet from centerline of sewer line to each edge of easement for pipelines with diameter 12" and smaller. For pipelines greater than 12" diameter, easement shall extend at least 10' from outside wall of pipe.

3.2.9 Land Ownership Transferred to EIRSD

- Prior to final acceptance of pipelines, the transfer of title shall be filed with the respective county and the paperwork delivered to the EIRSD.
- Title shall be transferred to the Eastern Idaho Regional Sewer District.
- Minimum width of alignment shall be 10' feet from centerline of sewer line to each edge of property for pipelines with diameter 12" and smaller. For pipelines greater than 12" diameter, alignment shall extend at least 10' from outside wall of pipe.

DESIGN AND STANDARDS MANUAL