

**CITY OF MERIDIAN,
ADA COUNTY, IDAHO**

**LIFT STATION
SPECIFICATIONS
AND DRAWINGS**

2008 EDITION

PUBLIC WORKS DEPARTMENT

MERIDIAN, ID 83642

PREFACE

These Lift Station Specifications and Drawings are intended to supplement the current edition of the Idaho Standards for Public Works Construction (ISPWC) and the City of Meridian Supplemental Specifications and Standard Drawings.

All construction within the City of Meridian, or within the jurisdiction of the City of Meridian, shall be completed in accordance with the ISPWC, the City of Meridian Supplemental Specifications and Standard Drawings, the approved Construction Plans, all applicable State, Federal, County and local district regulations and Specifications; and in compliance with the City of Meridian Subdivision Ordinance. The more stringent of any of these standards shall be the controlling standards or specifications. The City of Meridian recognizes that the ISPWC and the Supplemental Specifications may not cover all situations that might be encountered; however, this does not release the CONTRACTOR from properly constructing the work.

Any supplemental specification the applicable City of Meridian Superintendent and/or CITY ENGINEER deem necessary for the proper construction of any work shall be prepared and issued to the CONTRACTOR prior to commencing construction

CITY OF MERIDIAN, IDAHO

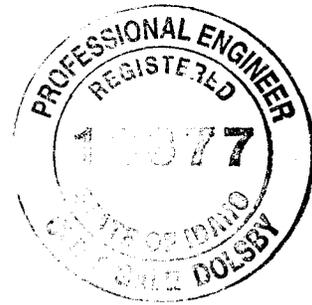
LIFT STATION SPECIFICATIONS AND DRAWINGS

These Lift Station Specifications and Drawings were prepared for, and apply to general conditions only. The need may arise to alter them to meet a specific design condition. If this occurs, all alterations, substitutions or variances shall be approved in writing by the City Engineer or designated representative.

In the event an error or omission is discovered in these Specifications and Drawings, whether through an oversight or a change in technology, the finder shall notify the City Engineer in writing so that the proper steps may be taken to make corrections.

It is further understood that the City of Meridian or its authorized agents are not responsible for errors or omissions.

By: Clint Dolsby
Clint Dolsby, P.E.
Interim City Engineer



Date: 7/25/08

LIFT STATION SPECIFICATIONS AND DRAWINGS

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LIFT STATION SPECIFICATIONS AND DRAWINGS

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**DWG
NO**

DRAWING TITLE

SEWER LIFT STATION DRAWINGS

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SEWER LIFT STATION SPECIFICATIONS

SEWER LIFT STATION CONSTRUCTION

SECTION 512

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section covers duplex lift stations which have a single pumping capacity that meets one of the following criteria:
 - 1. 400 gallons per minute or less.
 - 2. Projected peak inflow of less than 0.8 CFS.
 - 3. Approximately 500 equivalent residential units (ERU's).
- B. Lift stations with unique site characteristics may be required to meet additional requirements not contained in this specification. Some examples are as follows:
 - 1. Exceptional depth.
 - 2. Pumping into gravity sewer served by another existing lift station.
 - 3. Wide range of initial and ultimate inflows.
 - 4. Larger lift stations may be subject to additional requirements not included in this section.
- C. Lift stations shall comply with City of Meridian Standard Drawings LS1 through LS5.

1.2 RELATED ISPWC DIVISIONS

- A. Division 300 - Trenching
- B. Division 400 - Water
- C. Division 500 – Sewer
- D. Division 700 – Concrete
- E. Division 2000 – Miscellaneous

SEWER LIFT STATION SPECIFICATIONS

1.3 REFERENCES

- A. All references listed in the ISPWC for Divisions shown in Item 1.2 above are applicable to Lift Station construction.

If there is any conflict between these specifications or drawings and any local, state or federal code, standard or requirement, the codes, rules and regulations shall take precedence.

1.4 SUBMITTALS

In addition to subdivision development plan approval, preliminary equipment submittals must be approved by the PUBLIC WORKS DEPARTMENT, prior to construction. The submittals shall include, at a minimum, the following:

- A. Lift Station Design Drawings including:
 - 1. Site Plans depicting plan, elevation and section views.
 - a. All proposed structures.
 - b. Mechanical Plans (including HVAC Fans)
 - c. All electrical components.
 - d. All electrical control diagrams.
- B. Proposed landscaping plans.
- C. Design criteria and calculations including:
 - 1. Initial and ultimate service area flows (in coordination with Public Works)
 - 2. Wet well volume, basis for sizing:
 - a. Five (5) pump starts per hour maximum per pump.
 - b. 15 minutes emergency storage above high water alarm, and below incoming gravity sewer invert, at peak effluent inflow.
 - c. Maximum fill time at average design flow less than 30 minutes.

SEWER LIFT STATION SPECIFICATIONS

3. Pump and pressure main sizing including system curves for initial pump installation and ultimate size pumps. Minimum pressure main size is four (4) inch diameter. Minimum velocity at design pump rate is 2 feet per second.
 4. Uplift or buoyancy potential of wet well. The minimum factor of safety is 2.0.
- C. Catalog cut sheets
1. Structures.
 2. Pumps and related appurtenances.
 3. Electrical Components.
 4. Fencing Materials.
- D. Other Agencies
1. Lift stations that will become a part of the City of Meridian wastewater collection system must be approved by the Idaho Department of Environment Quality prior to construction. DEQ may have additional requirements not contained in this specification. The engineer of any proposed lift station should consult with DEQ and obtain their Wastewater Pump Station Checklist prior to design.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one (1) set of the following documents, which shall show all recorded measurements (Per Item 1.4, B. of this section.) that vary from the approved plans:
1. Contract Drawings.
 2. Specifications.
 3. Addenda.
 4. Change Orders and other Modifications to the Contract.
 5. Reviewed shop drawings, product date, and samples.

SEWER LIFT STATION SPECIFICATIONS

- B. Record Documents and Shop Drawings shall show actual construction of the following items (as a minimum):
1. Measured depths of foundations in relation to finish floor datum.
 2. Measured horizontal and vertical locations of underground utilities and appurtenances referred to permanent surface improvements.
 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
 4. Field changes of dimension and detail.
 5. Details not on original approved Contract Drawings.
 6. Product substitutions or alternates utilized.

Submit Final documents to DESIGN ENGINEER and PUBLIC WORKS DEPARTMENT with written request for final approval and acceptance.

1.6 PERMITS, FEES AND INSPECTIONS

- A. The Developer shall obtain and pay for all required permits, fees and inspections in connection with this work.

PART 2 MATERIALS

2.1 WET WELL

- A. The wet well shall consist of the following components:
1. 72-inch diameter pre-cast concrete manhole base and barrel sections.
 2. Lid shall be ASTM A-48, HS-25 load rating.
 3. Interior steps must meet or exceed ASTM C-478, AASHTO M-199 and other applicable OSHA requirements.

SEWER LIFT STATION SPECIFICATIONS

4. A pressure transducer, KPSI, MODEL 750 (scaled to 15 psi), shall be installed in the wet well (for monitoring of the wet well liquid levels). It shall be self cleaning, maintenance free, FM approved for Class I, DIV 1, A, B, C, D hazardous locations. It shall be supplied with a minimum of forty (40) feet of cable for connection to the microprocessor located in the pump control panel.
5. All interior fasteners, anchors and miscellaneous hardware shall be stainless steel.
6. Flowmeter
 - a. The flow meter shall be a magnetic flowmeter with 150lb. flanges, 316 stainless steel self cleaning electrodes, be compatible with wastewater and have the ability to be submerged underwater, The device must have the ability to read GPM and total gallons pumped on a display in the swing out panel. It must be compatible with the city's SCADA system.

2.2 DISCHARGE MANHOLE

- A. The discharge manhole shall be constructed in accordance with Division 500, Section 502, Part 2.

2.3 ACCESS DOORS

- A. Wet Well, Valve Vault and Flowmeter Vault Access Doors and Frame.
 1. The frame and door shall be aluminum with mill finish and shall be capable of supporting a live load of 300 pounds per square foot, with a deflection of the door not to exceed 1/180th of the span.
 2. The frame shall include accessories for attachment of the stainless steel pump removal guide rails and must have attached anchor rods to secure its placement in the concrete cover. The exterior surfaces of the aluminum frame shall be coated with bituminous coating where it comes in contact with concrete.
 3. The aluminum cover must be equipped with a hasp lock to accept the lock standard to the WASTEWATER DIVISION.

SEWER LIFT STATION SPECIFICATIONS

2.4 PUMPS

- A. Must have a duplex pumping arrangement with a backup pump for redundancy.
- B. Must be explosion-proof and capable of producing 110% of the projected peak flow generated by its service area.
- C. Must operate on three phase power (if available), with a minimum of single phase 230 volt, 60 Hz.
- D. Must be submersible, non-clog, capable of passing three-inch solids.
- E. Must be open CB impeller type.
 - 1. The impellers shall be single channel with sloped deflector edge at the impeller blade.
 - 2. Adjustable bottom plate with spiral shearing edges.
 - 3. Suction inlet with wave shaped tearing edges and coarsely toothed shearing ring on the upper side of the impeller.
- F. Carrier-sealing flange, base plate-elbow and single rail (stainless steel) guide assembly must be supplied by the pump manufacturer.
- G. Pump lifting chain with w/ 4-inch (minimum) diameter stainless steel connecting ring to pump (cables not allowed).
- H. Must contain an identifying, attached tag showing manufacturer's name, model number and rating/capacity.

ABS Pump systems are preferred for use in the sewer lift stations to be maintained by the City of Meridian. Other manufacturers may be considered if they substantially conform to the requirements listed in this specification. Such proposals must include the following submittals as a minimum for consideration:

- 1. Complete manufacturer's literature.
- 2. Exceptions to the specifications listed herein.
- 3. Reference list of similar installations in place at least five (5) years.
- 4. Location of nearest service facility.

SEWER LIFT STATION SPECIFICATIONS

Review and approval must occur prior to development plan approval. No substitutions will be considered after PUBLIC WORKS DEPARTMENT review and approval of the development plans.

2.5 PUMPING SYSTEM COMPONENTS

A. Supports and Anchors

1. All pipe, other supports and anchors, lifting chains, excepting the supports integral with the pump and base plate-elbow, shall be stainless steel.

B. Sleeves

1. Where piping penetrates the wall or ceiling of the wet well or valve vault, the space between the pipe and adjacent surface shall be closed off with a watertight flexible connector. The connector shall be Kor-N-Seal® as manufactured by NPC, Inc., Milford, New Hampshire, or approved equal. No adhesives or lubricants shall be employed in the installation of the connector. The rubber for the connector shall comply with ASTM C443 and ASTM C923 and consist of EPDM and elastomers designed to be resistant to the corrosive atmosphere of a pumped effluent environment.

2.6 PIPE AND FITTINGS

A. Pipe

1. From the valve manhole to the point of discharge to a gravity sewer - polyvinyl chloride (PVC) water class pipe Class 150, DR18.
2. From outside the wet well to and through the adjacent valve manhole - Cement mortar lined ductile iron.
3. Inside the confines of the wet well - Stainless Steel Pipe 304, Schedule 10, connected with stainless steel bolt pack.

B. Pipe Joints

1. Joints shall be flanged and connected with-bolts, rated for 250 psi. Rubber gaskets shall be used as supplied by the manufacturer.

SEWER LIFT STATION SPECIFICATIONS

C. Ductile Iron Fittings

1. Pressure Class: Class 250
2. Inside Lining: Cement mortar lined.

2.7 VALVES

A. Resilient Seated Gate Valves

1. Flanged, cast iron body, non-rising stem. Minimum working pressure of one-hundred and fifty (150) psi. Valves shall be as manufactured by Waterous, Clow or Tyler and shall have manufacturer's name and pressure rating marked on the body.

B. Check Valves

1. Cast iron body with stainless steel disc plate arm and replaceable seat ring, EPT seals and resilient seat, all suitable for clear cold water service.
2. Equipped with external adjustable high-tensile strength steel outside lever and weight.
3. The disc shall be easily removable without the need of any special training or tools.
4. All the check valves shall be installed between flanges drilled to 125-pound ANSI Standard.
5. The check valves shall be Clow Style F-5382, Kennedy Figure 106W; or approved equal.

C. Air and Vacuum Relief Valves

1. May be required depending on project specific design. Combination air/vacuum valves shall be manufactured by Val-matic or approved equal.

2.8 LOCATING TAPE

- A. Material: Two inch green 4 mil polyethelene.
- B. Labeling: "Caution – Buried Sewer Line Below" in 1 ½-inch minimum black lettering.

SEWER LIFT STATION SPECIFICATIONS

PART 3 WORKMANSHIP

Installation requirements of all items not addressed in this section shall be accomplished by either the manufacturer's instructions, applicable codes or the Divisions of the ISPWC as stated in Part 1, 1.2, Related Divisions / Sections, of this section.

3.1 WET WELL

- A. The entire wet well shall be coated, prior to exposure of any effluent, with a smooth coating of Elastomeric Polyurethane, 100% Solids, ASTM D16, Type V or prior approved equal.
- B. All electrical equipment in the wet well must meet National Electrical Code (NEC) for Class I, Group D, Division 1 locations and be suitable for corrosive conditions.
- C. Flow meter will be installed in an additional vault down stream from the valve vault.

3.2 DISCHARGE MANHOLE

- A. The discharge manhole must be installed upstream of the gravity sewer.
- B. Discharge will not be allowed into existing manholes.
- C. Effluent shall flow from the discharge manhole to the gravity sewer by an appropriately sized sewer pipe.
- D. The discharge manhole shall be smoothly coated (prior to discharge of any effluent into the manhole) with Strong Seal Sewper Coat®, or prior approved equal.

3.3 ACCESS DOORS

- A. The CONTRACTOR shall:
 - 1. Submit shop drawings showing the exact location of all access units and complete product data.
 - 2. Verify that rough openings for the door and frame are correctly sized and located, if not cast into the concrete cover.
 - 3. Install units in accordance with the manufacturer's instructions.
 - 4. Install frames level and secure rigidly in place.

SEWER LIFT STATION SPECIFICATIONS

5. Position frames to provide convenient access to the concealed work requiring access.

3.4 PUMPS

- A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations.
- B. The pump shall operate at the specified system fluid temperature without vapor binding and cavitation, is non-overloading in operation and operates within twenty-five (25) percent of the midpoint of the published maximum efficiency curve.
- A. The piping adjacent to the pumps shall be supported such that no weight is carried on the pump casings. The CONTRACTOR shall align the pump and piping prior to start up.

●● END OF SECTION ●●

SEWER LIFT STATION SPECIFICATIONS

SECTION 512A

ELECTRICAL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electrical materials, installation, testing and miscellaneous.

1.2 STANDARDS AND REFERENCES

- A. All electrical work shall be executed in strict accordance with the following standards:
 - 1 National Electrical Code (NEC)
 - 2 Underwriters Laboratory (UL Listings)
 - 3 Local, State and Federal rules and regulations

1.3 TESTING

- A. The CONTRACTOR shall completely test the electrical system to assure that circuits are wired as called for on the drawings, and shall test the system for grounds and short circuits.

1.4 MISCELLANEOUS

- A. Provide storage for materials and assume complete responsibility for losses. Protect completed work, work underway and materials against loss or damage. Close circuit openings with caps or plugs during installation. Cover fixtures and equipment and protect against dirt or damage caused by water, chemicals or mechanical accident.
- B. The CONTRACTOR shall coordinate the work under this section with the work being done under other sections. The CONTRACTOR shall promptly notify the DESIGN ENGINEER of any conflicts within the Plans and Specifications. All changes required in the work of the CONTRACTOR as a result of his failure to notify the DESIGN ENGINEER shall be made by the CONTRACTOR at his own expense.
- C. The developer and/or CONTRACTOR shall coordinate with the telephone company as to the termination point at the property line of a black one (1) inch PVC, with pull wire, for their service.

SEWER LIFT STATION SPECIFICATIONS

- D. The developer and/or CONTRACTOR shall coordinate with the power company for permanent power service and, if necessary, temporary power. The developer and/or CONTRACTOR shall be solely responsible for any and all costs associated with providing temporary and permanent power to the lift station.
- E. The DESIGN ENGINEER shall be responsible for review of shop drawings and equipment submittals. Two complete sets of the shop drawings and other submittals shall be submitted to the PUBLIC WORKS DEPARTMENT prior to installation of the lift station and equipment.
- F. Should the CONTRACTOR fail to comply with the requirements of this section regarding Record Drawings, final approval and acceptance shall be delayed.

PART 2 MATERIALS

2.1 SERVICE ENTRANCE AND EQUIPMENT

- A. CONTRACTOR must provide the following signs at all confined space entry points. They must be on 5"x7" aluminum plates, with permanent weatherproof lettering and attached with S.S. fasteners.
 - 1. DANGER CONFINED SPACE; ENTER BY PERMIT ONLY
 - 2. FALL PROTECTION REQUIRED

2.2 CONTROL PANEL

- A. Furnish and install a duplex pump station control panel as shown on DWG No. LS4. It must include all requirements and items as listed below and must be sized large enough to provide unused space for future equipment installed by the City.
 - 1. The starter panel must be NEMA 4X Stainless steel with latches that require no tool to open, padlocking hasp and matching S.S. drip shield.

SEWER LIFT STATION SPECIFICATIONS

2. The panel must include the line power components, with the following switches accessible without opening the swing out panel door:
 - a. Main breaker
 - b. Generator breaker
 - c. Manual transfer switch of the slide bar/breaker type
 - d. Phase/power monitor (Motor Saver 777)
 - e. Lighting/surge protection.
3. Motor feed components; one for each pump circuit breaker, overload (resettable without opening the swing out panel door), contactor, and pump manufacturer's required capacitors, start relays, and auxiliary contacts.
4. The panel must include control and monitoring components on a separate circuit breaker (accessible without opening the swing out panel) as noted below;
 - a. Micrologic 1100 PLC
 - b. HMI screen mounted in the front of the swing-out panel
 - c. IO block and Analog input module
 - d. 120V control transformer, pin type relays
 - e. Oil tight Hand/Off/Auto switch
 - f. A timer to prevent more than one (1) pump from trying to start at the same time after a power outage.
5. Pressure transducer.
 - a. The 15 PSI pressure transducer shall be a KPSI Model 750 with more than adequate cable to reach inside the panel.
6. Back-up high level float switch that meets the following requirements:
 - a. When level in the wet well rises to the float elevation, a timer will prevent more than one (1) pump from trying to start at the same time after a power outage and providing a float operation alarm.
 - b. An adjustable panel mounted timer will enable the pumps to run for a preset time.
 - c. The float will be mounted for easy removal, cleaning, and adjustment.

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- B. All components shall be identified with engraved nameplates with a white background. Lettering shall be black and at least 1/4" high.
- C. Install 20 amp GFCI receptacle in swing out panel on a separate circuit breaker (accessible without opening the swing out panel).
- D. Install a Panel heater in back panel on a separate circuit breaker (accessible without opening the swing out panel).

2.3 FLOW METER

- A. The flow meter shall be installed in a vault adjoining the valve vault. Piping shall be provided that shall have a straight run with no valves or fittings. A Min. 6 x ID. upstream and a Min. 4 x ID. downstream. Piping shall be laid out to insure a full pipe in normal operation. The flow meter vault is to have the same hatch assembly as the wet well.
- B. A schedule 80 PVC conduit shall run from the flow meter vault to the junction box to the control panel with appropriate seal off. The flow meter manufacture's shielded cable shall be installed from the flow element to the transmitter with no splices and 2' of extra cable.

2.4 CONDUIT

- A. All exposed conduit to be rigid galvanized.
- B. All underground conduit to be schedule 80 PVC.
- C. Minimum conduit size for motor feeders is one and one-half inch (1 1/2").

2.5 CONDUCTORS

- A. Conductors shall be copper unless otherwise specified.
- B. The insulation for conductors, size #8 and smaller, shall be type THWN or THHN.
- C. Conductors shall be sized according to the drawings. Wire size #8 and larger shall be stranded. Minimum wire size shall be #12 except where specified for signal and pilot control conductors.
 - 1. Motor feeders shall be copper, type RHW or TW for sizes 10 and 12, and THWN for larger sizes, installed in rigid galvanized metal conduit. Motors shall be grounded with a visible green ground wire

SEWER LIFT STATION SPECIFICATIONS

2. Internal panel wiring shall be color-coded and any wiring leaving the panel shall pass through properly numbered or coded terminal strips. Every switch, control relay, circuit breaker, wiring and other component, either inside or outside the control panel shall be visibly identified by permanently attached phenolic plates.

PART 3 WORKMANSHIP

3.1 SERVICE ENTRANCE AND EQUIPMENT

A. Signs

1. Signs as specified in section 2.1 must be posted at all confined space entry points.
2. They must not pose a tripping hazard.

B. Grounding

1. All electrical panelboards and equipment shall be grounded in accordance with the requirements of the NEC. The neutral bus of panelboards shall be grounded to the system ground and adjoining sections of switchgear bonded together.
2. No portion of the electrical system shall be energized until the service ground has been connected.

3.2 CONTROL PANEL

- A. Safety features shall include the ability or devices to Lock Out/Tag out all breakers, all resets and controls accessible with out opening swing out panel.

3.3 CONDUIT

- A. All systems of conduit must be installed completely before conductors are pulled in.
- B. Raceway ends shall be capped during construction. Conduits in which water or foreign matter has accumulated shall be thoroughly cleaned to the satisfaction of the Engineer or be replaced.

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- C. A tagged #12 AWG galvanized, or nylon, pull wire shall be provided in all empty conduits with at least eighteen (18) inches coiled free at each end. Only tags with a metal rim, made for this purpose, shall be used.
- D. All conduit joints shall be cut square, threaded, reamed smooth and made up tight. Bends or offsets shall be made with standard conduit ells. Field bends shall be made with approved hickey, and conform to NEC limitations.

3.4 CONDUCTORS

- A. All conductors shall be installed in conduit.
- B. Conductors shall not be pulled into conduit until cabinets and outlet boxes are free of foreign matter and moisture.
- C. Conductors shall be continuous from outlet to outlet.

3.5 SUPERVISORY CONTROL AND DATA ACQUISITION - SCADA

- B. SCADA will be provided with a Datalink SRM 6210 E RADIO through a 10 element antenna mounted at an adequate elevation. SCADA controls and alarms will be determined by the City of Meridian. SCADA programming will be preformed by a specialist selected by the City of Meridian.
- B. Monitoring shall be provided with wrap around current transducers for alarm and monitoring of each pump's amps through SCADA. Hour meters for each pump in swing out panel and through SCADA. Monitoring for each pump, shall be provided by an hour meter, Run indicator lamp (green) Seal Fail lamp (red), Overtemp lamp (red). High Level Alarm lamp (red), Low Level Alarm lamp (red); all lamps oil tight, heavy duty. High and low level alarms to be nonlatching.

●● END OF SECTION ●●

SEWER LIFT STATION SPECIFICATIONS

SECTION 512B

SITE IMPROVEMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Site improvements to be installed as part of lift station construction.

PART 2 MATERIALS

2.1 FENCING

- A. The lift station site shall be enclosed with a six feet high chain link fence.
 - 1. Minimum dimensions of the fence must be 16' x 24' but may be larger depending on location, orientation and configuration of lift station site.
 - 2. All fittings (i.e. sleeves, bands, clips, rail ends, tension bars and fasteners) shall be steel.
 - 3. All components and fabric shall be galvanized per ASTM A123, 2.0 oz/sq. ft. coating. Hardware shall be galvanized per ASTM A153, 2.0 oz./sq. ft. coating.
 - 4. Gates
 - a. One double leaf 16' gate and one 3' single leaf gate shall be provided.
 - b. Gates shall be equipped with center gate stop and drop rod, three 180 degree hinges per leaf and hardware for padlock.

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B. Component materials and dimensions are as follows:

1.	Gate Posts	Class 1, round	3.5 inch
2.	Gate Frame	Class 1, round	1.66 inch
3.	Line Posts	Class 1, round	1.9 inch
4.	Corner/End Posts	Class 1, round	2.875 inch
5.	Top/Brace Rail	Class 1, round	1.66 inch
6.	Fabric	9 gage, 2 inch mesh	
7.	Tension Wire	6 gage, steel	
8.	Tie Wire	Aluminum alloy steel wire	
9.	Caps	Cast steel, galvanized, w/ set screw retainer	

2.2 LIGHTING

1. One 1500 watt Quartz flood light, vandal resistant, shall be installed within the fenced lift station area.

2.3 GRAVEL ACCESS ROAD AND INTERIOR AREA

1. Gravel for Lift Station access road and interior area shall be $\frac{3}{4}$ " (Type 1) as specified in Division 800, Section 802, Crushed Aggregates, of the ISPWC.

2.4 YARD HYDRANT

1. A 3/4 inch water service (see City of Meridian Standard Drawings W1 and W2), including a reduced pressure backflow assembly shall be installed to the lift station lot.

PART 3 WORKMANSHIP

3.1 FENCING

- A. Install framework, fabric, accessories and gates in accordance with ASTM F567 and Division 2000, Section 2040, Fencing, of the ISPWC.
- B. The entire fencing system is to be grounded in accordance with the most stringent applicable code.
- C. Gate Posts
 1. Gate posts shall be installed in holes that are drilled in undisturbed earth and shall be 16" in width by 3' in depth and filled with concrete.
 2. If gate posts are to be set in loose (or disturbed) material, a

SEWER LIFT STATION SPECIFICATIONS

sona tube of the listed dimensions shall be used to contain the concrete. Once the concrete has cured, the material around the sona tube shall be compacted to 95% of maximum dry density.

D. Line Posts

- a. Line posts shall be set in concrete.
- b. Spacing shall not exceed ten feet.

3.2 LIGHTING

- A. The light shall be mounted on a 15 foot pole adjacent to the control panel and shall be operated by a weather-proof manual one way switch and by motion detector. The exact location will be determined during plan review and approval.

3.3 GRAVEL ACCESS ROAD AND GRAVELED INTERIOR AREA

A. Access Road

1. An all-weather gravel access road shall be constructed from the street to the lift station with 10" of ¾" (Type 1) aggregate base, per City of Meridian Standard detail G2.

B. Lift Station Site

1. The entire area within the fenced lift station shall consist of 6" of ¾" (Type 1) aggregate base. Shape, compact and slope a minimum of 2% away from the Wet Well, Valve and Flowmeter Access.

3.4 YARD HYDRANT

- A. A non-freeze, yard hydrant shall be installed at a location to be determined during plan review and approval.

3.5 LANDSCAPING

- A. Landscaping on the lift station lot shall not be installed without review approval from the PUBLIC WORKS and Planning Departments.

●● END OF SECTION ●●

SEWER LIFT STATION SPECIFICATIONS

SECTION 512C

COMPLETION REQUIREMENTS

Prior to Lift Station approval and acceptance the CONTRACTOR shall complete the following:

1.1 FINAL CLEANING

- A. Prior to final inspection, execute the following final cleaning items.
 - 1. Clean site.
 - 2. Sweep paved areas.
 - 3. Rake and clean landscaped surfaces.
 - 4. Remove waste, surplus materials and construction debris from the site.

1.2 ADJUSTMENTS

- A. Adjust equipment to ensure smooth and unhindered operation.

1.3 OPERATION AND MAINTENANCE DATA

It is recommended that the Engineer submit one (1) copy of completed manual in final form fifteen (15) days prior to the final inspection. This copy will be returned after the final inspection, with PUBLIC WORKS comments. Revise content of documents as required prior to final submittal.

- A. Prior to final acceptance the following copies of the Operation and Maintenance manuals are required.
 - 1. Four (4) Hard Copies.
 - 2. Two (2) complete copies on CD.
- B. The manuals must be presented as follows:
 - 1. Bound in D-size, three ring binders with durable plastic covers.
 - 2. Binder covers must be titled "OPERATION AND MAINTENANCE INSTRUCTIONS" and include the name of project.

SEWER LIFT STATION SPECIFICATIONS

3. Internally subdivide the binder contents with permanent page dividers, logically organized as described in this section with tab titling clearly printed under reinforced laminated plastic tabs.
4. Text pages must be on 8-1/2" x 11" sheets on thirty (30) pound bond white paper.

C. TABLE OF CONTENTS

1. Prepare a Table of Contents for each volume, with each product or system description identified. Organization must be in the following general layout:

PART 1: Directory listing names, addresses, and telephone numbers of DESIGN ENGINEER, CONTRACTOR, subcontractors, and major equipment suppliers.

PART 2: Operation and maintenance instructions must be arranged by process flow and subdivided by specification section. For each category, identify names, address and telephone numbers of subcontractors and suppliers. Identify the following:

- a. Significant design criteria.
- b. List of equipment.
- c. Parts list for each component.
- d. Operating instructions.
- e. Maintenance instructions for equipment and systems.
- f. Electrical to include: switchgear, manufacturer's recommended maintenance and operation instructions, parts list with name, address and phone number of local source of replacement parts

PART 3: Project documents and certificates, including the following:

- a. Shop drawings and product data.
- b. Certificates.
- c. Photocopies of warranties.

1.4 WARRANTIES

A. Warranties must be provided for the entire lift station for one (1) year from the final date of acceptance.

1. Additional manufacturer's warranties must be submitted for all components:

B. Provide duplicate notarized copies.

SEWER LIFT STATION SPECIFICATIONS

- C. Submit prior to request for final approval and acceptance.
- D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.

1.5 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.
- B. Deliver spare parts, extra materials and other required products to WASTEWATER DIVISION; obtain receipt prior to final approval and acceptance.

1.6 STATEMENT OF COMPLIANCE

THE DESIGN ENGINEER MUST SUBMIT A LETTER OF COMPLIANCE TO THE CITY OF MERIDIAN PUBLIC WORKS DEPARTMENT PRIOR TO REQUESTING A CERTIFICATE OF OCCUPANCY FOR ANY BUILDING.

●● END OF SECTION ●●

SEWER LIFT STATION SPECIFICATIONS

SECTION 512D

SYSTEM START UP

1.1 GENERAL

The CONTRACTOR shall:

1. Coordinate a schedule for start-up of various equipment and systems.
2. Notify the DESIGN ENGINEER, the PUBLIC WORKS DEPARTMENT and WASTEWATER SUPERINTENDENT seven (7) days prior to start-up of each item.
3. Clean wet well of all construction debris prior to starting pumps.
4. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.
5. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
6. Verify wiring and support components for equipment are complete and tested.
7. Execute start-up under supervision of responsible Manufacturer's representative, City Representative and CONTRACTOR'S personnel in accordance with manufacturer's instructions.
8. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.2 DEMONSTRATION AND INSTRUCTION

In addition to the requirements of Section 1.1 above, the CONTRACTOR shall:

1. Demonstrate operation and maintenance of the system to City personnel prior to final acceptance. The CONTRACTOR shall provide the equipment manufacturer's representative for a minimum of one (1) day of training to City personnel. The CONTRACTOR shall coordinate and schedule demonstration of the system with the WASTEWATER DIVISION.

SEWER LIFT STATION SPECIFICATIONS

2. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with City personnel in detail to explain all aspects of operation and maintenance.
3. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.
4. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

●● END OF SECTION ●●

SEWER LIFT STATION SPECIFICATIONS

SECTION 512E

OFF-PEAK PUMPING STATIONS

1.1 GENERAL REQUIREMENTS

1. Design must follow all Lift Station Specifications as outlined in Sections 512A through 512 D. An exception may apply when these off-peak requirements cause a conflict, use the off-peak applicable guideline.
2. Initial flows shall be via gravity sewer according to the current approved master plan. When it is determined necessary, the flows shall be diverted to the lift station and storage tank for off-peak pumping.
3. Minimum force main velocity of 2 ft/sec (per City specs) to be maintained at all times.
4. Duplex pumping capability (minimum) with one (1) duty and one (1) lag pump.
5. Auto pumping and alarm at high level.
6. Electronic controls provided such that the on/off levels and/or times may be adjusted according to downstream capacity needs.
7. Radio SCADA telemetry system (ELPRO 905 U-1) to tie in with City system.
8. Provide odor control and a method to eliminate the build up of solids and grit settling in the holding tank (aeration, mixing and filtered venting or approved alternative).
9. Generator receptacle to accommodate City generators as well as generator(s) of maintenance contractor (permanent standby power is not required).
10. The pump station shall be privately maintained but must allow the City of Meridian access in cases of emergency and/or configuration changes.

1.2 LENIENCIES

1. Use of ductile iron piping and appurtances (in lieu of stainless steel) shall be considered on a case by case basis.

SEWER LIFT STATION SPECIFICATIONS

2. Storage tanks may be installed in phases with development, as long as 150 gal/ERU storage is available at all times.
3. In the case of expected gravity sewer construction arriving to the service area, smaller pumps may be used at first and sizing may be increased for future phases of a subdivision (before final design pumping capacity is needed).
4. Demonstrate operation and maintenance of the system to City personnel prior to final acceptance. The CONTRACTOR shall provide the equipment manufacturer's representative for a minimum of one (1) day of training to City personnel. The CONTRACTOR shall coordinate and schedule demonstration of the system with the WASTEWATER DIVISION.

1.3 STATEMENT OF COMPLIANCE

THE DESIGN ENGINEER MUST SUBMIT A LETTER OF COMPLIANCE TO THE CITY OF MERIDIAN PUBLIC WORKS DEPARTMENT PRIOR TO REQUESTING A CERTIFICATE OF OCCUPANCY FOR ANY BUILDING.

●● END OF SECTION ●

LIFT STATION GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MOST CURRENT EDITIONS OF THE FOLLOWING SPECIFICATIONS AND/OR CODES:
 - THE CITY OF MERIDIAN SUPPLEMENTAL STANDARDS TO THE ISPWC
 - IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION (ISPWC)
 - UNIFORM BUILDING CODE (UBC)
 - NATIONAL ELECTRICAL CODE (NEC).

2. REFER TO DIVISION 500, SECTION 512, SEWAGE LIFT STATION CONSTRUCTION, OF THE CITY OF MERIDIAN SUPPLEMENTAL STANDARDS TO THE ISPWC FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

3. PUMPS - 2 EACH, ABS NO. _____ SUBMERSIBLE PUMPS - ____ H.P. WITH ABS RAIL SYSTEM.

4. ELECTRICAL CABLES TO PUMPS SHALL BE RUN IN 1 ½ INCH (MINIMUM DIAMETER) CONDUIT AND HAVE STAINLESS STEEL STRAIN RELIEVERS. AN EMPTY PARALLEL CONDUIT SHALL ALSO BE INSTALLED FOR FUTURE USE. A JUNCTION BOX SHALL BE LOCATED BETWEEN THE WET WELL AND CONTROL PANEL TO ALLOW DISCONNECTION OF THE POWER CABLES. PROVIDE CABLE "DISCONNECTS" IN JUNCTION BOX. SEE CITY OF MERIDIAN SUPPLEMENTAL SPECIFICATIONS, SECTION 5.7, A,17.

5. DOOR ASSEMBLY - DUPLEX ALUMINUM DOOR WITH 300 LB/SF LOAD RATING.

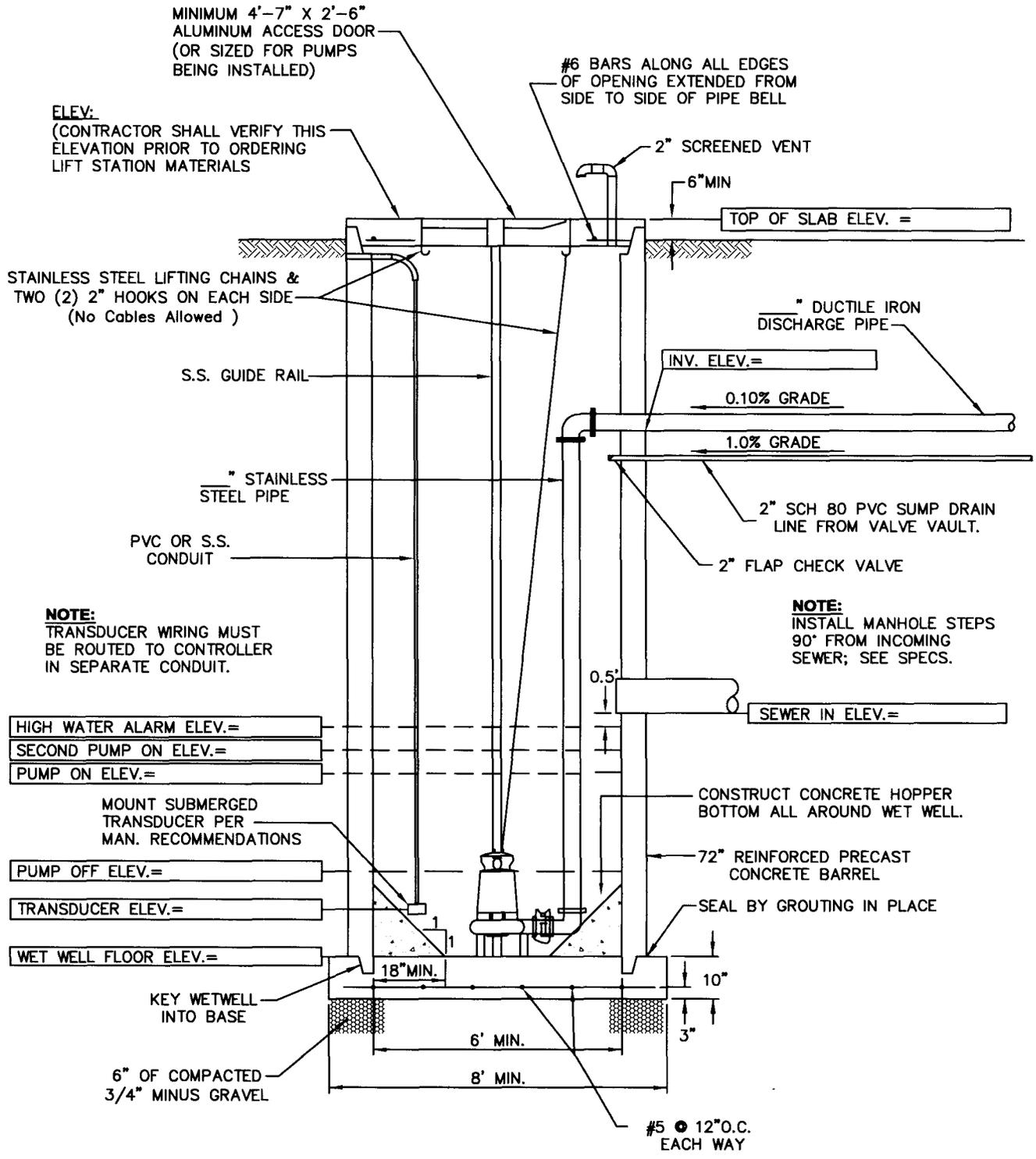
6. PIPING - ALL PIPING INSIDE THE WET WELL SHALL BE STAINLESS STEEL. CONTRACTOR SHALL PAINT ALL SURFACES NOT COVERED AFTER PIPING IS IN PLACE WITH KOPPERS COATING. CHECK VALVES INSIDE WET WELL ARE MILLIKEN FLEX CHECK OR EQUAL. ALL PIPE OUTSIDE THE WET WELL IS DUCTILE IRON AND ALL FITTINGS ARE CAST IRON, FL x FL.

7. TELEPHONE AND ELECTRICAL SERVICE TO BE PROVIDED AT THE DEVELOPER'S EXPENSE.

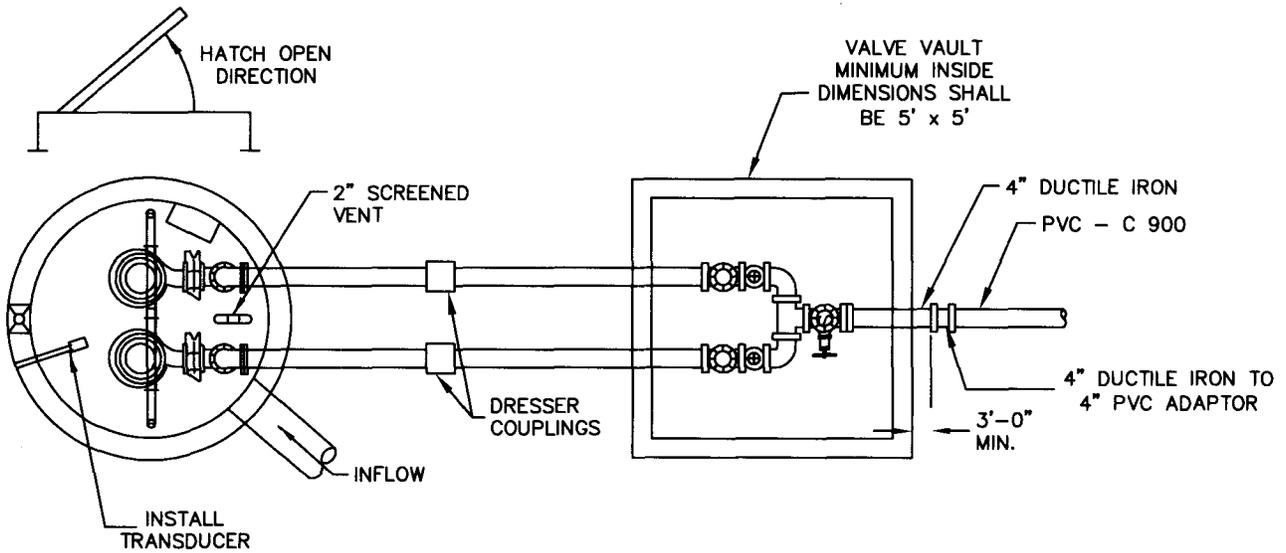
8. INSPECTION WILL BE BY THE CITY OF MERIDIAN.

9. EQUIPMENT SUPPLIER TO BE PRESENT FOR INITIAL STARTUP WITH THE CITY OF MERIDIAN WASTEWATER SUPERINTENDENT OR HIS DESIGNATED REPRESENTATIVE.

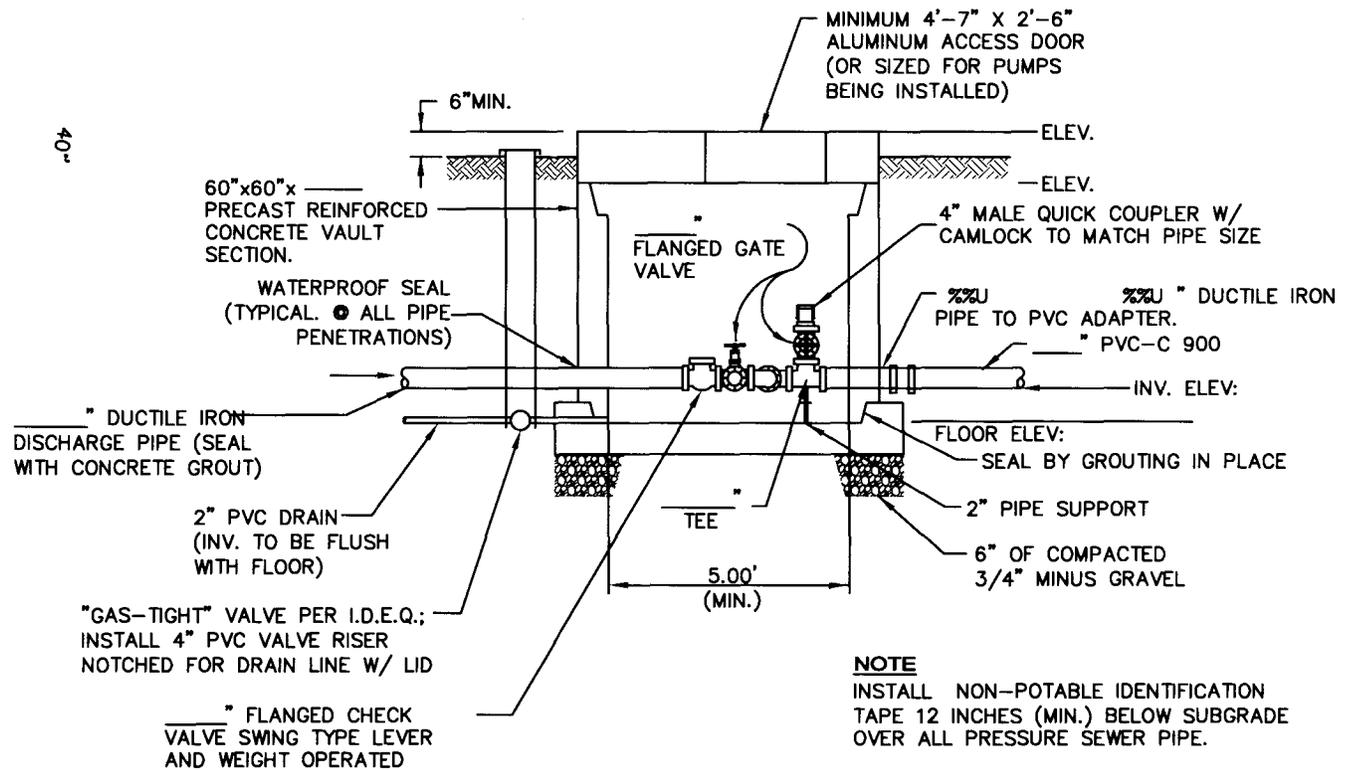
STANDARD DETAIL	
CITY OF MERIDIAN, IDAHO	
LIFT STATION NOTES	
PUBLIC WORKS DEPT	
660 E. WATERTOWER LANE, STE. 200 MERIDIAN, IDAHO 83642	
DESIGN: C.O.M.	DWN: C.O.M.
SCALE: NONE	DATE: JULY 2008
DWG No.: LS1	



STANDARD DETAIL	
CITY OF MERIDIAN, IDAHO	
TYPICAL LIFT STATION DETAIL WET WELL PROFILE	
PUBLIC WORKS DEPT	
660 E. WATERTOWER LANE, STE. 200 MERIDIAN, IDAHO 83642	
DESIGN: C.O.M.	DWN: C.O.M.
SCALE: NONE	DATE: JULY 2008
	DWG No.: LS2



WET WELL & VALVE VAULT - PLAN



WET WELL EXTERIOR PIPING & VALVE VAULT - SECTION

SEE DETAIL LS2 FOR WET WELL ELEVATION VIEW

**STANDARD DETAIL
CITY OF MERIDIAN, IDAHO**

TYPICAL LIFT STATION DETAIL
WET WELL EXTERIOR PIPING

PUBLIC WORKS DEPT

660 E. WATERTOWER LANE, STE. 200
MERIDIAN, IDAHO 83642

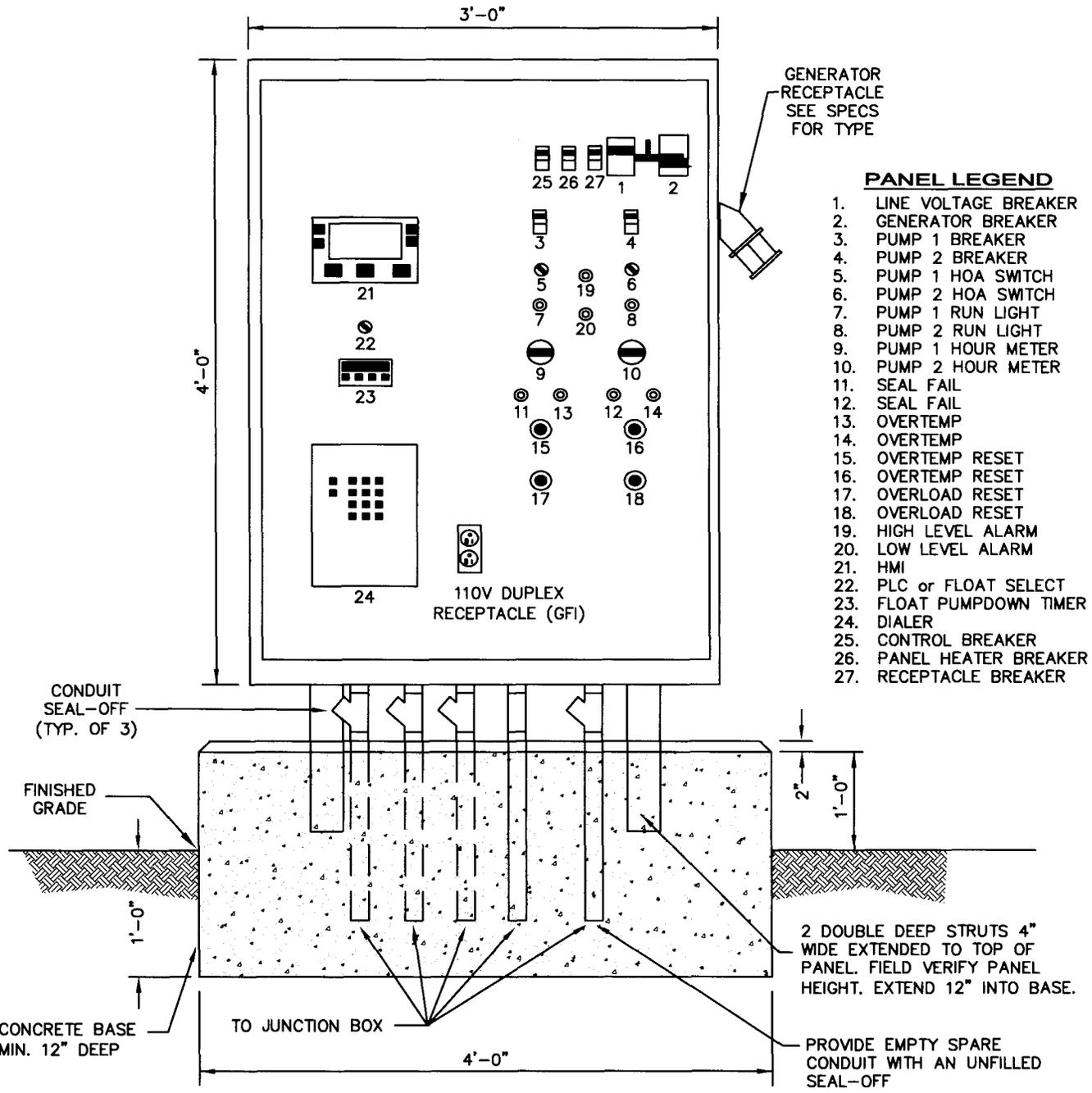
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DWN: C.O.M.

SCALE: NONE

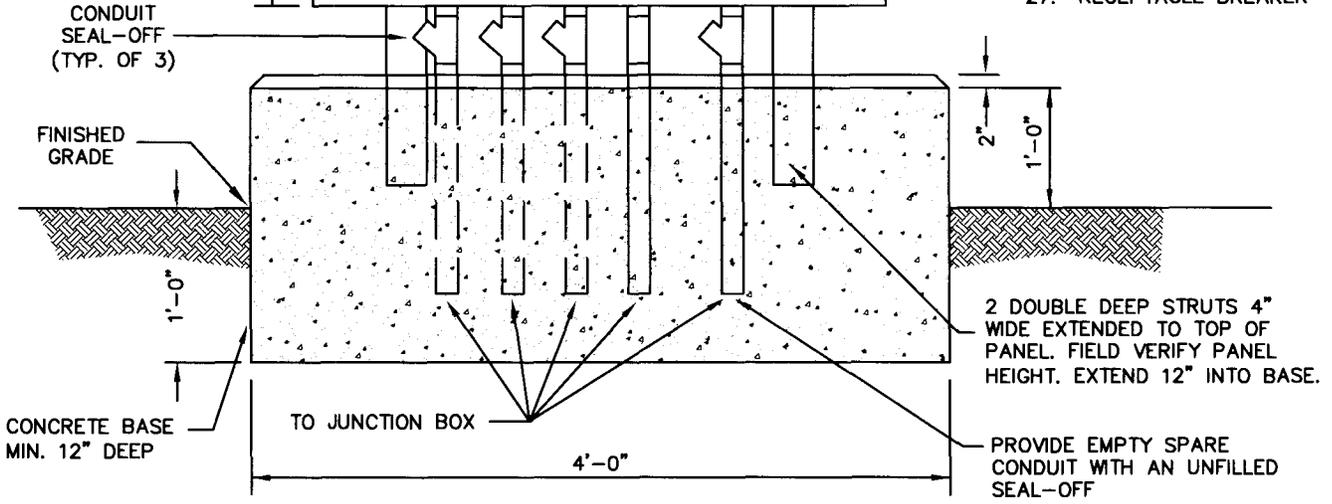
DATE: JULY 2008

DWG No.: LS3



GENERATOR RECEPTACLE
SEE SPECS
FOR TYPE

- PANEL LEGEND**
1. LINE VOLTAGE BREAKER
 2. GENERATOR BREAKER
 3. PUMP 1 BREAKER
 4. PUMP 2 BREAKER
 5. PUMP 1 HOA SWITCH
 6. PUMP 2 HOA SWITCH
 7. PUMP 1 RUN LIGHT
 8. PUMP 2 RUN LIGHT
 9. PUMP 1 HOUR METER
 10. PUMP 2 HOUR METER
 11. SEAL FAIL
 12. SEAL FAIL
 13. OVERTEMP
 14. OVERTEMP
 15. OVERTEMP RESET
 16. OVERTEMP RESET
 17. OVERLOAD RESET
 18. OVERLOAD RESET
 19. HIGH LEVEL ALARM
 20. LOW LEVEL ALARM
 21. HMI
 22. PLC or FLOAT SELECT
 23. FLOAT PUMPDOWN TIMER
 24. DIALER
 25. CONTROL BREAKER
 26. PANEL HEATER BREAKER
 27. RECEPTACLE BREAKER

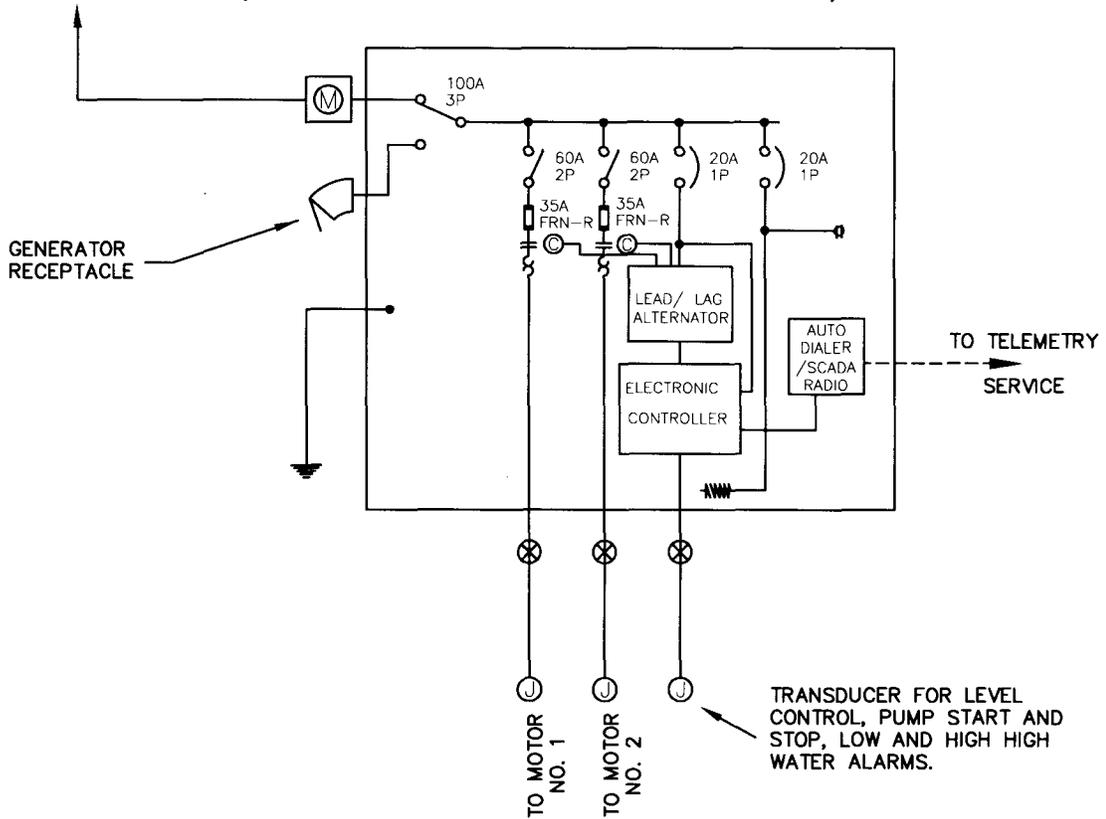


- NOTES**
1. THE CONFIGURATION OF THE CONTROL PANEL IS GENERAL AND IS INTENDED ONLY TO SHOW THE MINIMUM REQUIREMENTS.
 2. PLACE CONCRETE BASE ON COMPACTED GRAVEL BASE PLACED ON UNDISTURBED OR COMPACTED IMPORTED FILL. COMPACT TO 95% OF AASHTO T99 STANDARD.

STANDARD DETAIL	
CITY OF MERIDIAN, IDAHO	
TYPICAL LIFT STATION DETAIL CONTROL PANEL LAYOUT - ELEVATION VIEW	
PUBLIC WORKS DEPT	
660 E. WATERTOWER LANE, STE. 200 MERIDIAN, IDAHO 83642	
DESIGN: C.O.M.	DWN: C.O.M.
SCALE: NONE	DATE: JULY 2008
	DWG No.: LS4

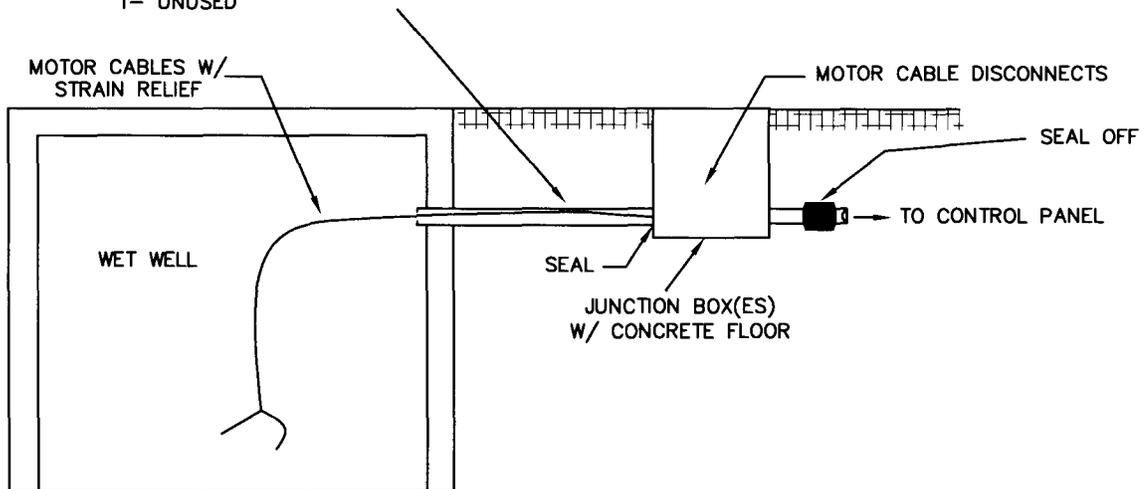
UNDERGROUND POWER
(IDAHO POWER CO)

GENERAL ONE-LINE DIAGRAM
(NOTE: RATINGS WILL CHANGE TO SPECIFIC APPLICATION)



CABLE DISCONNECT

CONDUITS
3 - FOR MOTOR CABLES AND TRANSDUCER
1- UNUSED



NOTES

1. DUPLEX CONTROL PANEL W/ MICRO-PROCESSOR / CONTROLLER W/ AUTO RADIO TELEMETRY TRANSMITTER BY ELPRO
2. GENERATOR RECEPTACLE W/ MANUAL TRANSFER SWITCH

STANDARD DETAIL
CITY OF MERIDIAN, IDAHO

TYPICAL LIFT STATION DETAIL
CONTROL PANEL - ONE LINE DIAGRAM

PUBLIC WORKS DEPT

660 E. WATERTOWER LANE, STE. 200
MERIDIAN, IDAHO 83642

DESIGN: C.O.M.

DWN: C.O.M.

SCALE: NONE

DATE: JULY 2008

DWG No.: LS5