

## SPECIAL PROVISIONS

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### 1. SCOPE OF WORK

This project includes the construction of a new wastewater treatment system for the Lewis and Clark Caverns Campground. The system will serve the comfort station, RV dump station and 2 host camp pads.

The system includes the following components:

- Primary Tanks at both the comfort station and RV dump station
- Pumping vault and flowmeter at the comfort station
- Combined flow equalization and pumping vault with flowmeter at RV dump station
- Anoxic tank
- Combined aeration/ clarification tank
- Recirculation tank
- Treatment pods
- Pumping vault for drain field
- Six zone drain field

Also included are interconnecting piping, control panels, access road, and electrical power connections.

### 2. PROJECT MEETINGS

Pre-Construction Conference. After the Contract has been awarded, but before the start of construction, a pre-construction conference will be held at a time and place mutually agreed to by the parties. The conference shall be attended by the following: the Contractor and his superintendent; the principal subcontractors; representatives of principal suppliers and manufacturers, as appropriate; the Engineers and his construction observer; representatives of the Owner and others as appropriate.

Unless previously submitted, the Contractor shall bring the following submittals to the conference: list of proposed Subcontractors; proposed construction schedule; schedule for submitting shop drawings and other submittals; schedule procurement dates; construction technique submittal forms (as applicable); preliminary payment schedule; and tentative schedule of values. Work shall not start prior to the Engineer's receipt of these submittals. The Engineer will preside at the conference and will arrange for keeping the minutes and distributing copies of the minutes to all persons attending the meeting.

### **3. UTILITIES AND BARRIERS**

Notification. The Contractor shall contact the one call locate number in advance of performing any excavation work on the site to obtain utility locates over the entire area to be impacted by construction of the project. The Contractor shall immediately notify the Engineer of the discovery of any utilities that are in conflict with the work that were not previously identified in the plans.

Identification. All utilities that may conflict with the work shall be the Contractor's responsibility to locate before any excavation is performed. Field markings provided by the utilities shall be preserved by the Contractor until actual excavation commences. All utility locations on the Drawings should be considered approximate and should be verified in the field by the Contractor. The Contractor shall also be responsible for locating all utilities that are not located on the Drawings.

Temporary Utilities. The Contractor shall provide all temporary electrical, lighting, telephone, heating, cooling, ventilating, water, sanitary, first aid, fire protection, and other utilities and services necessary for the performance of the work. All fees, charges, and other costs associated therewith shall be paid for by the Contractor.

Conflicts with Existing Utilities. For any utilities shown on the plans which are damaged or require temporary support to allow performance of the work, the Contractor shall contact the utility's owner and make all arrangements and pay all costs associated with the repair and/or temporary support of the utility. The Contractor shall comply with all requirements of the utility's owner.

The Contractor is responsible for the repair of any utilities that were properly marked by the utility locator and damaged by the Contractor, whether they are shown on the plans or not.

Barriers. The Contractor shall temporarily remove all fences, barricades, minor structures, and other obstructions that interfere with the prosecution of the work. Removal shall not extend beyond designated construction limits or right-of-way without first obtaining written authorization from the owner of the barrier.

Fences and barricades used for the confinement or exclusion of livestock, animals, or persons shall be replaced at the end of each work day to the extent necessary to perform the restrictive intent of the barrier.

Unless otherwise directed by the Engineer or indicated on the Drawings, all barriers so removed shall be replaced following the completion of the work to as good or better condition than existed prior to the start of work. The requirement applies to small trees and decorative shrubs as well as fences, barricades, and minor structures.

The Contractor shall replace at his own expense all barriers damaged or destroyed.

#### **4. REPAIR AND REPLACEMENT QUALITY**

General. Items requiring repair or replacement due to damage or removal or otherwise necessitated in the course of pursuance of the work and which are not otherwise specified herein, shall be repaired or replaced to the following levels of quality.

Paved and Gravel Roads, Driveways, and Sidewalks. Repair or replacement shall be to a thickness and grade matching the existing condition. Quality of materials and methods shall comply with respective sections of the current edition of the Montana Public Works Standard Specifications.

Water and Sewer Main and Services. Repair or replacement shall be in a manner consistent with the existing condition using materials conforming to the Uniform Plumbing Code, the current editions of the DEQ 1 and DEQ 2 circulars, American Water Works Association Standard Specifications, and the requirements of the Montana Department of Environmental Quality. Construction shall also comply with the current edition of the Montana Public Works Standard Specifications. Repair or replacement will not be allowed with materials like the existing installation if they do not conform to the above-referenced standards.

Electrical, Telephone, Cable TV, Natural Gas, and Petroleum Lines. Repair or replacement shall be to the standards required by the utility owner and at the utility owner's option may be performed by the utility owner with full cost assessed to the Contractor.

Fences. All fences adjacent to any work site are to be maintained to the satisfaction of the abutting property owners. The Contractor shall notify the landowners of the need to temporarily removed or relocate fences for access to the work and shall coordinate such activities with the respective landowners in regards to removal, relocation, and restoration of fences prior to commencing work.

Any fence removed or destroyed during the course of the Contract shall be reinstalled or reconstructed in like kind at no cost to the Owner or the landowner. The cost for this work shall be considered incidental and no additional compensation will be allowed.

Other Items. Repair or replacement of other items not covered by the preceding shall be to the standards required by the owner of the item and at the owner's option may be performed by the owner of the item with full cost assessed to the Contractor.

Decisions Regarding Repair Versus Replacement. The decision of repair versus replacement of an affected item shall be at the discretion of the Engineer upon consultation with the owner of the item. The decision shall be based on a determination of whether repaired quality can equal the quality of a replacement installation. The Engineer's authority shall be final in this regard.

Limits of Repair and Replacement. The limits of areas to be repaired or replaced shall be determined by the Engineer in the field based on the extent of damage or removal sustained. The determination shall be based on insuring that all damaged or removed portions of the existing installation are fully restored. The authority of the Engineer shall be final in this regard. All work effects outside limits as described in these Contract Documents are subject to repair and replacement quality as described herein.

Repair by Party Owning or Maintaining Item. The party owning or maintaining the item under consideration shall have the exclusive right to undertake repair or replacement themselves and charge the Contractor for full costs incurred or to direct and supervise the Contractor to repair or replace the item to their standard of quality. The authority of the owner of the item shall be final in this regard.

## **5. GENERAL CONSTRUCTION REQUIREMENTS**

Quality Assurance. The Engineer will monitor the construction of work covered by this section to determine if the work is being performed in accordance with the contract requirements. The Engineer does not have the authority or the means to control the Contractor's methods of construction. It is, therefore, the Contractor's responsibility to utilize all methods, equipment, manpower, and other means necessary to assure that the work is installed in compliance with the Drawings and Specifications, and laws and regulations applicable to the work. All buried work items shall be installed in the presence of the Engineer or may not be considered for payment.

Grade and Alignment. The Contractor shall provide all construction staking as required to define the locations of the improvements to be installed under this contract.

Tolerances. Construction tolerances for the work shall be as outlined in the Technical Specifications.

Construction Limits. Construct activities shall be limited to area no more than 40-feet from the edge of excavation and embankment, or any other improvements shown on the plans. Equipment access between roads and the construction site shall be limited to a single route to minimize disturbance. Disturbance and equipment access beyond these limits is not allowed without the written approval of both the Engineer and the owner of the affected property. If so approved, disturbance beyond construction limits shall meet all requirements imposed by the landowner; this includes existing roads used and/or improved as well as the construction of new access

roads. Special construction, reclamation, or post-construction road ripping or other closure provisions required by the landowner on access roads beyond the construction limits shall be performed by the Contractor at no additional cost to the Owner.

Areas of Disturbance. Approved areas of disturbance are those areas disturbed by construction activities within the construction limits and along designated or approved access routes. Such areas shall be fine graded to blend with the existing terrain. Other areas that are disturbed by the Contractor's activities outside the limits noted above will be considered as site damage or unapproved areas of disturbance subject to the repair and replacement quality as specified herein. Such areas will also require the reclamation operations noted above and as specified herein, but costs of such work shall be borne by the Contractor.

## **6. MATERIAL SOURCES**

If additional material is needed for embankment or other materials, the Contractor will be responsible for placement and import from an off-site site location secured by the Contractor. The material shall be clean material, suitable for use as fill material and subject to the approval on the Engineer.

If excess material is generated during construction, the Contractor shall be responsible for export and disposal at an off-site location secured by the Contractor.

Haul routes shall be within the corridors of disturbance created by this project.

## **7. ENVIRONMENTAL PROTECTION**

The Contractor shall comply with all laws and regulations of the United States Corps of Engineers and Environmental Protection Agency, Montana Department of Fish, Wildlife and Parks, Department of State Lands, Department of Environmental Quality, the Department of Natural Resources and Conservation, and with all other Federal, State, and Local laws and regulations controlling pollution of the environment. He shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

The Contractor also agrees to comply with the requirements of any permits obtained for the project by the Owner. These permits include but may not be limited to the permits listed under the Permits and Regulatory Requirements section. Copies of any of these permits are available upon request from the Engineer.

The Contractor shall be responsible for submitting and obtaining a temporary discharge permit from the Montana Department of Environmental Quality for the discharge of any water related to the construction of this project. A construction Dewatering Discharge Permit, issued by the Department of Environmental Quality, is required if water from construction is discharged to

state waters. The Department of Environmental Quality must be contacted immediately if either contaminated soil or contaminated groundwater is encountered.

The Contractor shall be responsible for submitting and obtaining a storm water discharge permit from the Montana Department of Environment Quality. The cost of any erosion control measures or other work required by the permit shall be included in the bid and are considered incidental to the project.

## 8. WEED CONTROL

Prior to mobilizing equipment to the project site, the Contractor shall clean his equipment and vehicles to assure no weeds are imported. If there is an abnormal growth of noxious weeds on a project site after construction as determined by the Owner or local weed control authority, the Contractor may be responsible for weed control under the contract warranty.

## 9. PERMITS AND REGULATORY REQUIREMENTS

Jurisdiction. The performance of this work shall be under the jurisdiction of the following agencies, departments, and standards and compliance with the requirements thereof is required:

**Federal Level:** United States Law

**State Level:** Department of Environmental Quality; Department of Fish, Wildlife & Parks; Montana Department of Transportation; Montana Building Code Division; Uniform Building Code; Uniform Plumbing Code; Uniform Mechanical Code; National Electric Code; State annotations to these codes; and Montana State Law.

**Local Level:** Jefferson County

Contractor's Responsibility. The Contractor shall familiarize himself with the requirements of all regulatory agencies pertaining to the performance of the work on the project.

The Contractor shall secure and pay for all permits, licenses, and fees necessary for the performance of the work.

The Contractor shall perform all work in accordance with the regulatory requirements. Any conflict between the Contract Documents and the regulatory requirements shall be brought to the immediate attention of the Engineer.

The following permits will be required for construction:

<b>Permit</b>	<b>Entity Providing Permit</b>	<b>Entity Submitting Permit</b>
SWPPP	Contractor	Contractor

The Contractor shall be responsible for managing the SWPP permit until the required amount of vegetation is established to stabilize the site and allow the permit to be lifted.

## **10. SMOKE AND DUST CONTROL**

The Contractor shall have informed himself of all applicable State Board of Health requirements and similar State or Federal requirements pertaining to control of or abatement of air pollution. The Contractor shall have provided or be prepared to provide such air pollution control measures as are required to comply with the minimum standards established by such agencies.

Hauling of material and transport of equipment along public roadways or through the towns and adjacent other structures and dwellings shall require effective dust abatement procedures. This also applies to the unloading and placement of spoils material at deposition sites. The Contractor shall utilize environmentally sound methods for watering and/or otherwise chemically treating dust-generating surfaces to comply with all applicable legal standards for airborne particulates. Prior to any work, the Contractor shall submit a written plan for dust abatement procedures identifying at a minimum the following:

- Times and nature of dust generating activity on public roads and at deposition sites.
- Nature and chemical characterization of dust abatement materials to be used.
- Method of application of dust abatement materials to be used.
- Time schedule for application of dust abatement materials to be used.
- Availability of equipment and operators for emergency application of dust abatement materials at other than scheduled times.

Watering for dust control is considered incidental to the Contract and shall be performed at no additional cost to the Owner.

## **11. SITE CLEAN UP**

The Contractor shall be responsible for final clean up at the end of the project to a level satisfactory to the Owner. All construction debris, no matter how small, shall be collected and removed from the site. All wheel ruts shall be filled in and be leveled to match the adjacent grade and material. Re-seeding, re-sodding, or other re-surfacing may be necessary to repair any construction related impacts or damage.

All survey markings, stakes, temporary paint marks, flagging and other devices shall be removed regardless of who installed them. All excess pavement, concrete, gravel, soil, or other construction materials not intended for permanent use shall be removed.

All final slopes shall be dressed manually to remove woody debris, accumulated trash and oversized material. Any new slope or topsoil surfaces shall be hand raked to provide a uniform appearance. The Contractor shall dress all gravel, pavement and concrete edges to eliminate

abrupt edges and provide a smooth transition. All construction related temporary sediment control devices shall be removed as soon as practical.

Unless specifically noted otherwise, all final cleanup work shall be incidental to other work items in the contract and no separate payment shall be made.

## **12. SANITARY FACILITIES**

Construction workers are allowed to use the two existing latrines located within the campground. At the conclusion of construction, the latrine vaults will be pumped by the Contractor. The cost of pumping the latrines sanitary facilities shall be considered incidental to other items of work and no additional compensation will be allowed.

## **13. INCORPORATION OF MONTANA PUBLIC WORKS SPECIFICATION**

All work not specially described in the technical specifications of these bid documents shall be performed in compliance with the applicable technical specifications section found in Montana Public Works Specification- Sixth Edition. The Montana Public Works Specifications shall be modified to require the Contractor to provide compaction and concrete testing through an independent testing laboratory, not the Owner.

## **14. CONSTRUCTION SCHEDULING REQUIREMENTS**

The contract time for this project will start in the fall of 2021. Construction shall be complete and the system shall be ready for start up on April 1, 2022. The actual start of system operation is anticipated in late April or early May.

## **15. STAGING AREA**

Material storage, equipment parking and job trailers are limited to the staging area designated in the drawings. This area will be reclaimed and seeded by the Contractor at the conclusion of construction. The cost of reclamation shall be considered incidental to other items of work and no additional compensation will be allowed.

## **18. CAMPING FOR WORKERS**

Construction workers and family members are allowed to utilize the campground while project construction is underway. The normal fees charged the public will apply. While the time limit on campsite occupancy is waived for the duration of the project, all other campground rules apply. Camp sites are required to be clean and tidy.

## **17. MEASUREMENT AND PAYMENT**

- A. **Scope:** This section describes the method of measurements and the basis of payment for all work shown on the drawings and required by the Contract



Documents. This measurement and payment section shall take precedence over all other references to measurement and payment referenced in these specifications (with the exception of any addenda).

- B. **Bid Prices:** The bid price for each item of the Contract in the Bid Proposal shall cover all work shown on the drawings and be defined in the specifications and other contract documents. All costs in connection with the work including furnishing all materials, equipment, and tools, and performing all necessary labor and supervision to fully complete the work, shall be included in the lump sum or unit price bid items on the proposal. The amounts shown on the proposal shall be the contract price.

No item that is required by the Contract Documents for the proper and successful completion of the work will be paid for outside of or in addition to the prices submitted in the Bid Proposal. All work not specifically set forth as a pay item in the Bid Proposal shall be considered a subsidiary obligation of the Contractor and all cost in connection therewith shall be included in the prices bid.

Retainage at the amounts specified in the General Conditions will be withheld from each progress payment.

- C. **Estimated Quantities:** Any estimated quantities stipulated in the Bid Proposal or other Contract Documents are approximate and are to be used only as a basis for estimating probable cost of the work and for the purpose of comparing the bids submitted for the work.

- D. **Method of Measurement:** No measurement will be made on bid items representing a lump sum bid.

- E. **Basis of Payment:**

**1. Mobilization, Insurance & Bonding**

- ◆ General: This bid item shall include the costs associated with mobilizing to the project site, insurance, bonding, permitting, and submittals.
- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Transport and set up all equipment, materials, and other items needed to complete the project;
  - All permits, coordination, and compliance inspections required for the work;

- Insurance and bonding;
- Provide and install project sign;
- Reclaim staging area;
- Prepare and provide submittals, construction schedule, and all other paperwork required by the contract documents prior to construction startup.

- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

## 2. **RV Dump Station Demolition**

- ◆ General: This bid item shall include all demolition of RV Dump Station.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Grading, embankment, excavation and compaction as needed to remove existing items;
  - Transport and disposal of demolished materials and equipment;
  - Remove breaker for electrical connection;
  - Cap electrical conductor and conduit;
  - Import and compaction of materials to fill voids left by buried materials that are removed.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

## 3. **Comfort Station Septic Demolition**

- ◆ General: This bid item shall include all demolition of the comfort station septic tank.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Grading, embankment, excavation and compaction as needed to remove existing items;

- Transport and disposal of demolished materials and equipment;
- Pump septic tank;
- Sand or gravel backfill;
- Import and compaction of materials to fill voids left by buried materials that are removed.

- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

#### **4. Sewer Vault Demolition**

- ◆ General: This bid item shall include all demolition of sewer vault.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Grading, embankment, excavation and compaction as needed to remove existing items;
  - Transport and disposal of demolished materials and equipment;
  - Pump vault as necessary;
  - Sand or gravel backfill;
  - Import and compaction of materials to fill voids left by buried materials that are removed.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

#### **5. Abandon Distribution Box**

- ◆ General: This bid item shall include all demolition and abandonment of a distribution box.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Grading, embankment, excavation and compaction as needed to remove existing items;
  - Transport and disposal of demolished materials and equipment;

- Import and compaction of materials to fill voids left by buried materials that are removed.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

**6. Abandon Distribution Box**

- ◆ General: This bid item shall include all demolition and abandonment of a sewer cleanout.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Grading, embankment, excavation and compaction as needed to remove existing items;
  - Transport and disposal of demolished materials and equipment;
  - Import and compaction of materials to fill voids left by buried materials that are removed.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

**7., 16., 17., 29. Fiberglass Tank with Risers**

- ◆ General: This bid item shall include providing and installing fiberglass tanks including PVC risers
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide compaction testing from an independent testing firm;
  - Clearing and grubbing;
  - Survey as required to maintain alignment and grade;
  - Excavation;
  - Provide, place, and compact backfill materials;
  - Provide and place tank;
  - Remove spoils generated by tank installation;
  - Provide an install access risers including lids;

- Leakage testing;
  - Fine grading;
  - Pipe penetrations;
  - Internal piping and supports (not specifically included in other bid items);
  - High water alarm float switches not associated with pumps;
  - Pump platforms.
- ◆ Measurement: Measurement shall be one lump sum bid item.
  - ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

**9., 11., 13., 14., 26. Concrete Vault/Basin with Risers**

- ◆ General: This bid item shall include providing and installing a precast concrete tanks with risers.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide compaction testing from an independent testing firm;
  - Clearing and grubbing;
  - Survey as required to maintain alignment and grade;
  - Repair and replacement of any items not specifically mentioned elsewhere in these specifications;
  - Excavation and backfill;
  - Provide and place tanks;
  - Remove spoils generated by tank installation;
  - Provide and install access risers including lids;
  - Leakage testing;
  - Fine grading of disturbed area;
  - High water alarm float switches not associated with pumps;
  - Pipe penetrations;
  - Internal piping and supports (not specifically included in other bid items).
- ◆ Measurement: Measurement shall be per each concrete vault or basin installed.
- ◆ Payment: Payment shall be by the unit price bid for each concrete vault or basin installed listed in the proposal.

## **8., 12. Effluent Filter**

- ◆ General: This bid item shall include all the installation of effluent filters in septic tanks of the size indicated in the plans.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide and install effluent filter;
  - Provide and install supports as required;
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

## **10., 15., 20., 27. Pumps**

- ◆ General: This bid item shall include providing and installing a pumps inside treatment tanks.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide and install pumps;
  - Provide and install flow inducers;
  - Provide and install float switches and supports;
  - Provide electrical connections.
- ◆ Measurement: Measurement shall be per each pump installed.
- ◆ Payment: Payment shall be by the unit price bid for each pump installed listed in the proposal.

## **18. Aeration System**

- ◆ General: This bid item shall include providing and installing an aeration system including pumps, venturis, nozzles and piping.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide and install pumps;

- Provide and install flow inducers;
- Provide and install float switches and supports;
- Provide electrical connections;
- Install venturis and nozzles;
- Provide and install all piping internal and external to tank associated with aeration system;
- Trench excavation and backfill;
- Warning tape;
- Pipe bedding.

- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

## 21. Recirculating Ball Valve

- ◆ General: This bid item shall include all the installation of a recirculating ball valve.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide and install recirculating ball valve;
  - Provide and install supports as required;
  - Pipe connections.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

## 22. Pre-Anoxic Return Pump and Piping

- ◆ General: This bid item shall include providing and installing a pre-anoxic return pump and piping.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide and install pump;
  - Provide and install flow inducer;
  - Provide electrical connections;
  - Provide and install all piping internal and external to tanks associated with pre-anoxic return line;

- Trench excavation and backfill;
- Warning tape;
- Pipe bedding.

- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

### **23. Treatment Pods**

- ◆ General: This bid item shall include providing and installing treatment pods.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide and install treatment pods;
  - Piping connections;
  - Excavation and backfill,
  - Grading including site in vicinity around pods;
  - Insulation.
- ◆ Measurement: Measurement shall be per each treatment pod installed.
- ◆ Payment: Payment shall be by the unit price bid for each treatment pod installed listed in the proposal.

### **24. Treatment Pods Ventilation System**

- ◆ General: This bid item shall include providing and installing treatment pods ventilation system.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide and install vent fan assembly;
  - Piping connection;
  - Excavation and backfill,
  - Concrete slab;
  - Electrical connection.
- ◆ Measurement: Measurement shall be one lump sum bid item.



- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

## 25. Treat Pods/Recirculation Tanks Connecting Piping

- ◆ General: This bid item shall include the installation gravity and pressure sewer piping connecting the recirculation tank, treatment pods, ventilation system and the pressure dosing pump vault.
- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Utility bracing / support and coordination with Utility Owners;
  - Dewatering trench;
  - Provide compaction testing from an independent testing firm;
  - Clearing and grubbing;
  - Survey as required to maintain alignment and grade;
  - Repair and replacement of any items not specifically mentioned elsewhere in these specifications;
  - Trench excavation and backfill;
  - All gaskets and appurtenances required to make pipe connections;
  - Type 1 bedding;
  - Type 2 bedding;
  - Exploratory excavation and existing utility crossings;
  - Remove spoils generated by pipe installation;
  - Provide and install pipe and fittings;
  - Required testing of pipe;
  - Warning tape;
  - Fine grading.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

## 28. Flowmeter

- ◆ General: This bid item shall include providing and installing flowmeter and flowmeter vault.

- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Provide and install flowmeter;
  - Piping connections;
  - Excavation and backfill,
  - Grading including site in vicinity around vault;
  - Provide and install flowmeter vault and riser.
- ◆ Measurement: Measurement shall be per each flowmeter installed.
- ◆ Payment: Payment shall be by the unit price bid for each flowmeter installed listed in the proposal.

## 29. Zone Selection Valve

- ◆ General: This bid item shall include providing and installing a zone selection valve.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Connections to pipe;
  - Provide compaction testing from an independent testing firm;
  - Clearing and grubbing;
  - Survey as required to maintain alignment and grade;
  - Trench excavation and backfill;
  - All gaskets and appurtenances required to make pipe connections;
  - Type 1 bedding;
  - Type 2 bedding;
  - Provide and install zone selection valve;
  - Provide and install PVC access riser;
  - Fine grading of disturbed area.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

## 30. Schedule 40 PVC 4-inch Gravity Main

- ◆ General: This bid item shall include the installation 4-inch gravity sewer main.

- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Utility bracing / support and coordination with Utility Owners;
  - Dewatering trench;
  - Provide compaction testing from an independent testing firm;
  - Clearing and grubbing;
  - Survey as required to maintain alignment and grade;
  - Repair and replacement of any items not specifically mentioned elsewhere in these specifications;
  - Trench excavation and backfill;
  - All gaskets and appurtenances required to make pipe connections;
  - Type 1 bedding;
  - Type 2 bedding;
  - Exploratory excavation and existing utility crossings;
  - Remove spoils generated by pipe installation;
  - Provide and install pipe and fittings;
  - Required testing of pipe;
  - Warning tape;
  - Fine grading.
  
- ◆ Measurement: Measurement shall be per lineal foot of pipe installed including fittings and valves. Measurement shall be to the nearest foot.
  
- ◆ Payment: Payment shall be by the unit price bid per lineal foot of pipe listed in the proposal.

**31. Schedule 40 PVC 2-inch Pressure Main**

- ◆ General: This bid item shall include the installation 2-inch sewer pressure main including drain field manifolds.
  
- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Utility bracing / support and coordination with Utility Owners;
  - Dewatering trench;
  - Provide compaction testing from an independent testing firm;

- Clearing and grubbing;
  - Survey as required to maintain alignment and grade;
  - Repair and replacement of any items not specifically mentioned elsewhere in these specifications;
  - Trench excavation and backfill;
  - All gaskets and appurtenances required to make pipe connections;
  - Type 1 bedding;
  - Type 2 bedding;
  - Exploratory excavation and existing utility crossings;
  - Remove spoils generated by pipe installation;
  - Provide and install pipe and fittings;
  - Required testing of pipe;
  - Warning tape;
  - Fine grading.
- ◆ Measurement: Measurement shall be per lineal foot of pipe installed including fittings and valves. Measurement shall be to the nearest foot.
  - ◆ Payment: Payment shall be by the unit price bid per lineal foot of pipe listed in the proposal.

### 32. Sewer Cleanout

- ◆ General: This bid item shall include providing and installing a sewer cleanout.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Connection to pipe;
  - Utility bracing/support and coordination with Utility Owners;
  - Disposal of existing pipe and appurtenances as required;
  - Provide compaction testing from an independent testing firm;
  - Clearing and grubbing;
  - Survey as required to maintain alignment and grade;
  - Repair and replacement of any items not specifically mentioned elsewhere in these specifications;
  - Trench excavation and backfill;
  - All gaskets and appurtenances required to make pipe connections;
  - Type 1 bedding;

- Type 2 bedding;
- Exploratory excavation and existing utility crossings;
- Remove spoils generated by pipe installation;
- Provide and install pipe and fittings;
- Fine grading of disturbed area.

- ◆ Measurement: Measurement shall be per each cleanout installed.
- ◆ Payment: Payment shall be by the unit price bid for each cleanout installed listed in the proposal.

### **33. Drain Field Throttling Valves**

- ◆ General: This bid item shall include providing and installing drain field throttling valves.

- ◆ Work Included:

- All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
- Connections to pipe;
- Provide compaction testing from an independent testing firm;
- Clearing and grubbing;
- Survey as required to maintain alignment and grade;
- Trench excavation and backfill;
- All gaskets and appurtenances required to make pipe connections;
- Type 1 bedding;
- Type 2 bedding;
- Provide and install valves;
- Fine grading of disturbed area.

- ◆ Measurement: Measurement shall be per each drain field throttling valve installed.
- ◆ Payment: Payment shall be by the unit price bid for each drain field throttling valve installed listed in the proposal.

### **34. Drain Field Infiltration Chambers**

- ◆ General: This bid item shall include providing and installing drain field chambers and piping.

- ◆ Work Included:

- All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Survey as required to maintain alignment and grade;
  - Trench excavation and backfill;
  - All gaskets and appurtenances required to make pipe connections;
  - Provide and install drain field chambers;
  - Provide and install pressure dosing piping;
  - Fine grading of disturbed area.
- ◆ Measurement: Measurement shall be per lineal foot of drain field chamber installed not including end caps. Measurement shall be to the nearest foot.
  - ◆ Payment: Payment shall be by the unit price bid per lineal foot of drain field chambers listed in the proposal.

### 35. RV Dump Station

- ◆ General: This bid item shall include providing and installing a RV dump station.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Water pipe from towers to connection point to existing water line;
  - Trench excavation and backfill;
  - Exploratory excavation,
  - Water towers;
  - Signs, sign posts and hardware;
  - Excavation and backfill;
  - Subgrade preparation;
  - Provide, place and compact base course;
  - Bollards;
  - Type 1 bedding;
  - Type 2 bedding;
  - Concrete pads including forming and reinforcement;
  - ADA ramp;
  - Sanitary hatches;
  - Vertical sewer piping run connecting to sanitary hatch;
  - Fine grading of disturbed area;
  - Concrete and compaction testing;
  - Remove existing gravel interfering with construction of the dump station.

- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

### **36. Gravel Surfacing**

- ◆ General: This bid item shall include the placement of the gravel surfacing for the new access roads and RV dump station gravel replacement.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Subgrade preparation and compaction;
  - Import, place and compact sub base course;
  - Import, place and compact crushed top surfacing;
  - Provide and place geotextile;
  - Compaction testing;
  - Survey;
  - Watering and dust control;
  - Fine grading.
- ◆ Measurement: Measurement shall be per square yard of new road and parking area gravel section installed. Measurement shall be rounded to the nearest square yard.
- ◆ Payment: Payment shall be by the unit price bid for each square yard of new road and parking area gravel section installed listed in the proposal.

### **37. Pavement Removal and Replacement**

- ◆ General: This bid item shall include the removal and replacement of pavement surfacing section.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Saw cuts;
  - Demolition, loading, unloading, transport and disposal of asphalt;
  - Disposal fees (if any);

- Placement of underlying crushed base course with compaction;
  - Survey line and grade;
  - Provide required tack coat;
  - Provide and place, and compact asphalt;
  - Required testing of crushed base course and asphalt.
- ◆ Measurement: Measurement shall be per square yard of pavement installed. Measurement shall be to the nearest square yard.
  - ◆ Payment: Payment shall be by the price bid per square yard of pavement installed as listed in the proposal.

### **38. Sidewalk Removal and Replacement**

- ◆ General: This bid item shall include the removal and replacement concrete sidewalk.
- ◆ Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Saw cuts;
  - Demolition, loading, unloading, transport and disposal of sidewalk;
  - Placement of underlying crushed gravel with compaction;
  - Survey line and grade;
  - Provide and place concrete;
  - Install contraction and expansion joints;
  - Rebar dowels where required.
  - Finishing and brooming;
  - Hot and cold weather concreting procedures.
- ◆ Measurement: Measurement shall be per square foot of sidewalk installed. Measurement shall be to the nearest square foot.
- ◆ Payment: Payment shall be by the price bid per square foot of sidewalk installed as listed in the proposal.

### **39. Landscaping Rock**

- ◆ General: This bid item shall include providing and placing of a landscaping rock.
- ◆ Work Included:



- All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
- Provide and place rocks;
- Excavation and embankment;
- Gravel surfacing repair,
- Survey.

- ◆ Measurement: Measurement shall be per each rock placed.
- ◆ Payment: Payment shall be by the unit price bid for each rock placed listed in the proposal.

**40. Topsoil, Seed and Mulch**

- ◆ General: This bid item shall include the topsoil, seeding, and fertilizing of disturbed upland grass areas.
- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Fine grading and conditioning of topsoil;
  - Provide and place seed and mulch;
  - Maintenance of seeded area as required by specifications.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

**41. Wastewater System Control Panel**

- ◆ General: This bid item shall include the installation the Wastewater Treatment System Control Panel all connections between the panel and equipment it controls.
- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Provide and install wastewater treatment system control panel.
  - Trench excavation and backfill for buried conductors, cables and conduit;
  - Warning tape;

- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

**42. Wastewater System Electrical Connection**

- ◆ General: This bid item shall include the installation electrical conduit, conductors, and components for providing power to the RV Dump Station light, RV Dump Station Receptacle and Wastewater Treatment System Control Panel.
- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Provide and install all electrical components, conductors, conduits, panels and appurtenances between existing panel and wastewater treatment system control panel.
  - Provide and install all electrical components, conductors, conduits, panels and appurtenances between existing panel and wastewater treatment system control panel and RV dump station.
  - Provide and install RV dump station receptacle;
  - Provide and install RV dump station light pole and light pole base;
  - Trench excavation and backfill for buried conductors and conduit;
  - Warning tape;
  - Compaction and concrete testing;
  - Permits.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

**43. Comfort Station Control Panel**

- ◆ General: This bid item shall include the installation the Comfort Station Control Panel and all connections between the panel and equipment it controls.

- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Provide and install comfort station control panel;
  - Trench excavation and backfill for buried conductors, cables and conduit;
  - Warning tape;
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

#### **44. Comfort Station Electrical Connection**

- ◆ General: This bid item shall include the installation electrical conduit, conductors, and components for providing power to the Comfort Station Control Panel.
- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Provide and install all electrical components, conductors, conduits, and appurtenances between existing panel and comfort station control panel.
  - Permits.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

#### **45. System Start Up and Training**

- ◆ General: This bid item shall include all efforts necessary to start the system and insure its proper function. Also included is training of FWP staff in the operation of the system.
- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Provide system start up services.

- Provide training for FWP staff.
- Permits.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

**46. 2 Years System Operation and Maintenance**

- ◆ General: This bid item shall include 2 years of system operation and maintenance.
- ◆ Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Provide operation and maintenance of system as specified.
- ◆ Measurement: Measurement shall be one lump sum bid item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

# TECHNICAL SPECIFICATIONS

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Note:

All other work shall be performed in compliance with the Montana Public Works Specification- Sixth Edition. The Montana Public Works Specifications shall be modified to require the Contractor to provide compaction and concrete testing through an independent testing laboratory, not the Owner.

**SECTION 02/535**

**WASTEWATER TREATMENT AND  
DISPOSAL SYSTEM**

**PART 1      GENERAL**

1.      WORK INCLUDED

- A.      This section covers the work necessary to furnish and install piping, tanks, pumps, treatment systems, valves, and infiltration chambers for the construction and startup of a complete wastewater treatment and disposal system.
  
- B.      Work included in this section is as follows:
  - 1.      Wastewater piping and valves.
  - 2.      Septic and treatment tanks
  - 3.      Wastewater treatment system
  - 4.      Dosing tank and pump vaults
  - 5.      Pressure dosed drain field

2.      GENERAL

- A.      The Drawings do not show all details of all piping systems, and instead only portray the functionality required. The **CONTRACTOR** shall provide all accessories, adapters, appurtenances and supports to achieve a complete and functional installation. The **CONTRACTOR** shall verify all piping routings and locating dimensions shown for conflicts with other piping or utilities and shall provide any offsets required to achieve clearance at no additional cost to the **OWNER**. In the event changes to the locations of equipment or piping shown are necessary, the **CONTRACTOR** shall submit such changes in writing to the **ENGINEER** before proceeding with such changes.
  
- B.      Manufacturers' references are included herein for reference and to establish the required level of quality; "or equal" products may be proposed subject to the requirements for Submittal review.

3.      CODES, PERMITS AND COMPLIANCE

- A.      Plumbing under these Specifications shall conform to all requirements of the current codes, standards and ordinances applicable to work. In event of conflicts between these Specifications and applicable codes or standards, the codes and standards shall govern.
  
- B.      All piping, wastewater system components and accessories shall be installed in strict accordance with the laws and regulations of the State of Montana and Jefferson County.
  
- C.      Any permits legally required for the work under these Specifications shall be the responsibility of the **CONTRACTOR** to obtain. Costs of such permits and scheduling of any inspections required in conjunction with such permits or associated requirements shall be the responsibility of the **CONTRACTOR**.

- D. Completed piping systems shall be tested by the **CONTRACTOR** in accordance with all applicable codes and standards before charging such piping with wastewater.

4. SUBMITTALS

- A. The **CONTRACTOR** shall provide the following information:
  - 1. Provide manufacturers' catalog information, brochures, warranties and operation and maintenance manuals for each product used in the system in addition to any specific information required in individual specifications.
  - 2. A comprehensive operation and maintenance manual addressing the entire wastewater treatment and disposal system as a whole.

**PART 2 PRODUCTS**

1. SEWER PIPE

- A. Gravity Pipe – Gravity pipe shall be minimum 4-inch diameter schedule 40 PVC pipe and fittings joined with solvent weld joint or bell and spigot joints with gaskets.
- B. Pressure Pipe- pipe shall be minimum 4-inch diameter schedule 40 PVC pipe and fittings joined with solvent weld joint or bell and spigot joints with gaskets.
- C. All pipe shall meet the requirements of ASTM D 3034-08.

2. CONCRETE TANKS

- A. Septic tanks shall meet the standards for septic tanks, Montana Department of Environmental Quality (MDEQ), Circular DEQ 4, Chapter 7. Tanks shall be manufactured as by a qualified Concrete Septic Tank Manufacturer.
- B. Tank construction requirements include, but are not limited to the following:
  - 1. Septic tanks shall be constructed of precast concrete.
  - 2. Tanks shall be structural sound and capable of withstanding loads created by 6-feet of burial depth to the top of the tank.
  - 3. The walls and floor of the tank shall be a minimum of 3-inches thick if adequately reinforced with steel and a minimum of 6-inches thick if not reinforced. Concrete for septic tanks shall have a water/cement ratio of less than 0.45, a 28-day compressive strength of at least 4,000 psi and shall be made with sulfate resistant cement (tricalcium aluminate content of less than 8 percent).
  - 4. Concrete covers shall be a minimum of 3-inches thick and adequately reinforced.
  - 5. The inlet into the tank shall be 4-inches minimum in diameter and shall enter the tank 3-inches above the liquid level.
  - 6. Tees or baffles shall extend a minimum of 7-inches above the liquid level.
  - 7. Double compartment septic tanks shall be constructed so the second compartment vents to the first compartment and the first compartment shall vent to the gravity sewer line inlet.
  - 8. All septic tanks shall have an air space that is 15% or greater than the liquid capacity of the tank.
  - 9. Concrete tank sealant shall be flexible and appropriate for use in septic tanks, and

must conform to ASTM 990-09.

10. A complete set of plans stamped by a professional engineer to certify compliance with circular DEQ 4 shall be on file with the tank manufacturer and made available to DEQ upon request. These plans must show maximum bury depth, all dimensions, capacities, reinforcing, structure calculations and other such pertinent data for each tank.
  11. Clearly mark the tank within 2-feet of the outlet with the name of the tank manufacturer, tank model, number of gallons, date of manufacture, and maximum depth of bury.
  12. Submittals shall include cut sheets, capacity, stamped drawings with tank dimensions and reinforcing, minimum bury depth, and installation instructions.
- C. Tank risers shall be 24-inch or 30-inch diameter as called out in the plans, constructed of a PVC material with concentric ribs. Risers shall be solidly secured to the tank. Lids shall be fiberglass construction, secured to the riser with SS bolts, green in color, and shall include a polyurethane gasket to provide a watertight seal. Risers and lids shall be as manufactured by *Orenco* or approved equal.

### 3. EFFLUENT FILTER

- A. Septic tank outlets shall be equipped with an effluent filter. Effluent filters shall be PVC housing and handle with a filter cartridge with an effective opening of 1/8-inch. Filter shall include a bracket for mounting a tank level alarm.
- B. Effluent filters shall be designed for a minimum flowrate of 5100 gpd at the Comfort Station septic tank and 825 gpd at the RV Dump Station septic tank.
- C. Effluent filter shall meet ANSI/NSF Standard 46.
- D. Effluent Filter shall be *Orenco model FT1260-36 or FT854-36* as called out in the plans, or **ENGINEER** approved equal.

### 4. FIBERGLASS TANKS

- A. Fiberglass tanks shall be shop fabricated, watertight, single wall, non-traffic bearing designed for underground storage of wastewater.
- B. Tank components shall be filament wound or contact molded conforming to ASTM D-3299, ASTM D-3299-95a and ASTM D4067-95a as appropriate.
- C. Tank shall include manways laminated to the tank shell, lifting lugs, pump platforms where pumps are shown in the plans and PVC connections where pipe penetrations are shown on the plans.
- D. Tank loading criteria shall include the following:
  1. Weight of saturated backfill shall be 140 lbs/cf
  2. Weight of unsaturated backfill shall be 127 lbs/cf
  3. Minimum lateral loading shall be 62.4 lbs/cf
  4. Concentrated wheel load of 2500 lbs



- E. Tank shall be analyzed for the following loading conditions at a minimum:
  1. 4-foot bury plus full exterior hydrostatic loading
  2. 4-foot bury plus full exterior hydrostatic loading plus wheel load
  3. 1-foot bury plus wheel load
  4. Interior hydrostatic load with full tank unsupported by soil
- F. A complete set of plans stamped by a professional engineer to certify compliance with circular DEQ 4 and IAPMO/ANSI Z1000-07 shall be on file with the tank manufacturer and made available to DEQ upon request. These plans must show maximum bury depth, all dimensions, capacities, reinforcing, structural calculations and other such pertinent data for each tank.
- G. Clearly mark one of the riser outlets in a visible location with the name of the tank manufacturer, tank model, number of gallons, date of manufacture, and maximum depth of bury.
- H. Submittals shall include cut sheets, capacity, stamped drawings with tank dimensions, minimum bury depth, and installation instructions.
- I. Tanks shall be manufactured by Xerxes or approved equal.

5. FLOW INDUCER

- A. Flow inducers shall be designed to house the 4-inch submersible pumps specified in the next section of these specifications. Flow inducers shall be constructed of PVC with a fiberglass base and mounting flange designed to connect to a PVC tank riser. Flow inducers shall include a bracket for attachment of a float assembly. The flow inducer shall be designed to accommodate flows up to 65 gpm. Flow inducers shall be Orenco Universal Flow Inducer or approved equal.

6. HIGH HEAD EFFLUENT PUMPS

- A. Pumps shall be 4-inch sealed submersible type, single phase, 230V, 60 Hz, two wire motor, with a 10-foot minimum extra heavy-duty cord with ground. The motor shall have thermal overload protection. Discharge shall be 2-inch NPT and the pump shall be capable of passing a 3/4-inch solid. The pump shall meet National Electrical Code, Class I, and Division 2 requirements and shall be UL and/or CSA listed. Motors shall be rated for continuous use and frequent cycling. Pumps shall be Orenco PF50 series or approved equal as follows:

<u>Location</u>	<u>Horsepower</u>	<u>Model Number</u>
Comfort Station Pumps	3/4	PF500712
RV Dump Station Pumps	1/2	PF500512
Aeration System Pumps	1/2	PF500712
Recirculating Tank Pumps	1/2	PF500512
Pressure Dosing Pumps	3/4	PF500712
Anoxic Return Pump	1/2	PF500512

7. DISCHARGE ASSEMBLY

- A. Discharge assemblies shall be designed to convey effluent from a pump to the exterior of a tank riser. Discharge assemblies shall include valves as called out in the drawings, pipe, fitting, unions and flexible hose. Discharge assemblies shall be Orenco Systems or approved equal.

8. FLOAT SWITCHES ASSEMBLIES

- A. Float switches shall be tilt sensitive, narrow angle float switches which are sealed in a non-corrosive PVC housing mounted on a 1-inch PVC float stem. Float collars shall be ABS and easily adjustable. Switches shall be UL 508 listed for water and sewage and CSA certified and shall include a 2 conductor, jacketed flexible cable. Float switches shall be as manufactured by Orenco System or approved equal.

9. FLOWMETER

- A. Flowmeters shall be 2-inch nutating disc, positive displacement operation. The main case shall be constructed of a high-copper alloy with threaded inlet and outlet, rated for 150 psi operating pressure. Units of measure shall be US gallons and the flow range shall be 2.5 to 150 gpm. The flowmeter shall be equipped to send 4 to 20 mA signals to the nearest control panel. Flowmeters shall be Neptune T-10 or approved equal.

10. WASTEWATER TREATMENT SYSTEM

- A. Wastewater treatment system shall be four Advantex model AX100 pods in parallel or approved equal.
- B. Wastewater treatment units shall include tanks, media, piping, valves fittings, controls, and all components necessary for a complete and operable unit.
- C. Treatment shall utilize a fixed film, engineered textile media, operating in an unsaturated condition.
- D. Foam core insulated lids with minimum insulation value of R-6
- E. The unit shall be a pre-manufactured package.
- F. Wastewater treatment systems shall be as manufactured by Orenco Systems or approved equal.
- G. Substitution of an equal system requires preapproval of the Engineer. A submittal of the following information will be made at least 7 days in advance of the bid opening for evaluation by the Engineer:

- Catalog cut sheets
- Manufacturer's standard performance data
- List of similar successful installations with seasonal use and treatment of RV dump station effluent
- Test data certified by independent testing agency
- Design information including drawings, site layout, component details,

- elevations, and calculations specific to this project
- Operation and maintenance requirements and costs
- Listing as a DEQ approved level II system
- Additional information as needed to demonstrate compliance with all regulatory requirements.

The system will be evaluated based on the information provided and the Engineer will not be responsible for seeking additional data beyond contents of the submittal. Incomplete submittals will be rejected.

11. VENT FAN ASSEMBLY

- A. Vent fan assemblies shall be housed in a waterproof fiberglass enclosure. The enclosure shall house piping, ventilation fan, fan motor, carbon filter and splice box. Inlet piping connection shall be 4-inch PVC. The vent fan shall single phase, 0.08 hp, 3400 rpm, single phase, 115/240V, and shall produce 245 cfm and 0 in of H<sub>2</sub>O static pressure. The carbon filter shall use cylinder shaped with a PVC housing with a fiberglass bottom containing an activated carbon media. Provisions shall be made to allow the installation of a heater later if desired. The vent fan assembly shall be as manufactured by Orenco or approved equal.

12. RECIRCULATING BALL VALVE

- A. The recirculating ball valve shall be designed to direct 100% of treated effluent return to the recirculation tank during periods of low flow and 100% of treated effluent return to the dosing tank during periods of high flow. The valve shall be constructed of Fiberglass, PVC, polyethene and ABS and operates using a 4-inch float attached to a cone shaped seat that engages to close the opening to the recirculating tank. The valve shall include sliding disconnects to allow for easy removal. The valve shall be a Orenco MM4-FRP. The valve is patented and no equal to our knowledge.

13. VENTURI INJECTOR

- A. Venturi injectors shall be PVDF construction with 3-inch male NPT inlet/outlet connections. Suction connection shall be 1-1/2-inch male NPT. Venturi injector shall be 3-inch Mazzei Model 3090 or approved equal.

14. INJECTOR NOZZLE

- A. Injector nozzles shall be PVDF construction with 2-inch male NPT connection. Nozzle shall create 10 psi of differential pressure at 50 gpm of flow. Injector nozzles shall be Mazzei Model N22 or approved equal.

15. ZONE SELECTION VALVE

- A. Zone selection valve shall be a hydro-indexing valve operating using the flow and pressure of the water. The valve shall sequentially alternate between six separate drain field zones.
- B. Each zone shall be isolated with a schedule 40 PVC ball valve and a schedule 80 PVC union.

- C. Each zone outlet shall include a section of clear schedule 40 PVC pipe.
- D. Minimum operating pressure of the valve shall not exceed 10 psi.
- E. All inlet and outlet connection shall be 1-1/2-inch solvent weld schedule 40 PVC.
- F. Zone selection valve shall be *Orenco system, V6606A Automatic Distributing Valve Assembly* or approved equal.

16. INFILTRATION CHAMBERS

- A. Infiltration chambers for absorption trench construction shall be 12-inches high by 34-inches wide and have an effective length of 48-inches.
- B. Infiltration chamber shall be designed to withstand loads from a 16,000 lbs axle with 12-inches of cover material.
- C. Chamber system shall include end caps with multiple inlet/outlet ports molded into the plastic.
- D. Infiltration Chamber system shall be *Infiltrator Systems, Inc. Quick4 Standard Chamber*.

17. PVC THROTTLING GATE VALVE

- A. PVC gate valves shall be non-rising stem with a screw in faucet style handle. PVC gate valves shall be constructed of Schedule 40 Hi-impact PVC type 1 per ASTM D-1784 with polypropylene paddles. Connections shall be slip. Pressure rating shall be 200 psi. Valves shall be *Orenco PVC Gate Valves, High-Pressure (VG)* or approved equal.

18. CONTROL PANELS

- A. Control panels shall include programable logic suited to serve both timed and demand dosing pump configurations. The following items shall be included:
  - 1. Built in elapsed time meters and counters
  - 2. Visual indicators of float positions
  - 3. High and low level alarms differentiated by steady or blinking LED light
  - 4. Timed delays on floats to prevent chattering
  - 5. Alternating duplex pumping
  - 6. Hand-off-auto switch for each pump, fan, and heater
  - 7. Run light for pumps
  - 8. Ethernet switch
  - 9. Industrial 4G cellular router
  - 10. Omni directional LTE/4G cell antenna kit
  - 11. Audible alarm with silencer, activated 2 hours after alarm event
  - 12. Alarm light, external with red lens
  - 13. Alarm notification via cell phone
- B. Control panels shall be enclosed in a NEMA 4 or better enclosures with 400W enclosure heater. Panels shall be UL listed.

- C. Incoming power shall be 4-wire single service 120/240 single phase with internal disconnect switch.
- D. Wastewater Treatment System Panel shall be designed to control the following components and provide the following functions:
  - 1. RV dump station flow equalization duplex pumps (2)
  - 2. Pre-anoxic return pump (1)
  - 3. Aeration system pumps (2)
  - 4. Recirculation pumps (4)
  - 5. Drain field dosing duplex pumps (2)
  - 6. RV dump station flowmeter including display and data logging
  - 7. Ventilation Fan
  - 8. Ventilation System Heater (future, not installed this project)
  - 9. Chemical feed mixer (future, not installed this project)
  - 10. Chemical feed peri pump (future, not installed this project)
  - 11. Floats for pump control and alarms
  - 12. Cell phone booster
- E. Comfort Station Panel shall be designed to control the following components and provide the following functions:
  - 1. Comfort station duplex pumps (2)
  - 2. Comfort station flowmeter including display and data logging
  - 3. Floats for pump control and alarms
  - 4. Cell phone booster
- F. Cell phone boosters shall be 5G network compatible, FCC approved and have a minimum coverage area of 200 sf. The antenna shall be designed for outdoor use. The booster shall be housed in the control panel or a separate NEMA 4 panel and shall be compatible with the alarm system.
- G. Control panels shall be as manufactured by Orenco or approved equal.

19. SPARE PARTS LIST

- A. The following spare parts shall be delivered to the Owner for storage:
  - 1. One PF 500512 pump
  - 2. One PF 500712 pump
  - 3. Three normally open float switches
  - 4. One normally closed float switch
  - 5. One effluent filter for RV Dump Station Primary Treatment Tank
  - 6. One effluent filter for Comfort Station Primary Treatment Tank

## **PART 3 EXECUTION**

### **1. TRENCHES**

- A. Pipe trenches shall be constructed as detailed in the Montana Public Works Specification, latest edition.
- B. Drain field trenches shall be constructed as shown on the plans. When the trenches have been excavated, the sides and bottom must be raked to scarify any smeared soil surfaces. Construction equipment, unless needed to construct the system, shall be kept off the area to be utilized for the absorption trench system to prevent undesirable compaction of the soils. Construction shall not be initiated when soil moisture content is high.

### **2. INFILTRATION CHAMBERS**

- A. Install infiltration chambers in accordance with manufacturer's recommendations.
- B. The infiltration chamber bed shall be level, free of irregularities and debris.

### **3. CONCRETE TANKS**

- A. Tanks shall be installed as detailed in the plans and according to manufacturer's recommendations. Placement of individual septic tanks shall meet all the requirements set forth in Circular DEQ 4. Upon installation the center seam and all penetrations shall be grouted with a sand-based cement grout on both sides. All tanks shall be tested for leakage after installation. Seal all inlets, outlets and access ports. Testing can include either of the following:
  - 1. Vacuum test: apply 4 inches of mercury vacuum. Tank is approved if 90% of vacuum is held for 2 minutes.
  - 2. Water test: fill tank and let stand for at least 24 hours. Refill tank. The tank is approved if there is no detectable drop in surface elevation within 30 minutes.The Contractor shall coordinate the testing with the Engineer. The Engineer or the Engineer's representative shall witness the testing.

### **4. FIBERGLASS TANKS**

- A. Tanks shall be installed as detailed in the plans and according to manufacturer's recommendations. Placement of individual septic tanks shall meet all the requirements set forth in Circular DEQ 4. All tanks shall be tested for leakage after installation. Seal all inlets, outlets, and access ports. Testing shall be as follows:
  - 1. Air test: Apply 5 psi of air pressure. Allow pressure to stabilize and disconnect air supply. Tank is approved if there is no noticeable drop in pressure after 1 hour.Failed tanks shall be retested after replacement or repair. Air must be carefully released through an appropriate valve mechanism. The Contractor shall coordinate the testing with the Engineer. The Engineer or the Engineer's representative shall witness the testing.

5. WASTEWATER TREATMENT SYSTEM

- A. The wastewater treatment system shall be installed in accordance with manufacturer's recommendations. All components shall be provided for a complete and operable system.
- B. Contractor shall provide start up services to insure the entire treatment unit is operable and verify initial settings for floats, controls and alarms. Contractor shall demonstrate the operation of the system to the **ENGINEER** and **OWNER**. Start up will occur at the beginning of the camping season, likely in early May of 2022.
- C. The Contractor will provide training to FWP staff as a part of system start up. The Contractor shall demonstrate and explain the operation of the system, explain operation and maintenance procedures, and answer question posed by FWP staff.

6. PRESSURE DOSING SYSTEM

- A. Install the pressure dosing system in compliance with the plans and specifications.
- B. The drain field shall be pressure tested to verify proper installation and operation. For the purpose of the testing, the orifices in the laterals shall be placed in the twelve (12) o'clock position. The pump vault shall be filled with clean water, and the pump engaged in such a manner and for as many times as is necessary to adequately test the system operation. The test shall include verification of float settings (using the water level to activate the floats). When the pump test has been verified and accepted by the Engineer and the Jefferson County Sanitarian (if applicable), the pressure lines shall be turned such that the orifices are in the six (6) o'clock position (down) and the fittings dried and glued.

The Contractor is responsible for ensuring the system is operating properly prior to scheduling the testing. If a test is scheduled and the system is not ready for testing or fails the test, the Contractor shall be responsible for additional testing costs (i.e. Engineering Costs). The Owner shall be responsible for the cost of the Engineer for one test for the drain field dosing system. This testing shall include but not be limited to setting of the floats and timer.

7. OPERATION AND MAINTENANCE

- A. The Contractor shall be required to provide wastewater system operation and maintenance for the first two seasons of operations. The system normally operates from Early May to Mid-October. Operation and maintenance shall include the following activities for the first year at the intervals indicated:
  - 1. Visual inspection of tank liquid levels – Monthly
  - 2. Check and clean effluent filters – Monthly
  - 3. Record elapsed time meters and event counters for all pumps – Monthly
  - 4. Confirm proper operation of automatic distributing valve – Monthly
  - 5. Conform and record pump voltages and amperages - Quarterly
  - 6. Inspect distribution of effluent in treatment pods, clean as required – Semi-Annually
  - 7. Measure inlet or residual pressures to treatment pods, clean as required – Semi-Annually
  - 8. Inspect recirculating valve – Semi-Annually

9. Record sludge and scum accumulation in tanks – Annually
10. Flush distribution laterals in treatment pods – Annually
11. Inspect pumping system components, clean as required – Annually
12. Sampling for permit compliance including delivery to laboratory – As required by DEQ permit

Activities and intervals for the second year are as follows:

1. Visual inspection of tank liquid levels – Quarterly
2. Check and clean effluent filters – Quarterly
3. Record elapsed time meters and event counters for all pumps – Monthly
4. Confirm proper operation of automatic distributing valve – Monthly
5. Conform and record pump voltages and amperages - Annually
6. Inspect distribution of effluent in treatment pods, clean as required – Semi-Annually
7. Measure inlet or residual pressures to treatment pods, clean as required – Semi-Annually
8. Inspect recirculating valve – Semi-Annually
9. Record sludge and scum accumulation in tanks – Annually
10. Flush distribution laterals in treatment pods – Annually
11. Inspect pumping system components, clean as required – Annually
12. Sampling for permit compliance including delivery to laboratory – As required by DEQ permit

In addition, to the items listed above provide operations and maintenance activities as recommended in the manufacturer’s guidelines and standards.

- B. Respond to and correct alarm situations.
- C. Provide corrective maintenance for issues that arise during system operation and inspections.
- D. The following operation and maintenance activities or costs will be provided by FWP through the 2-year period operation and maintenance is provided by the Contractor.
  1. Any mowing over the drain field or other areas.
  2. Laboratory testing fees for DEQ required samples.
  3. The cost of tank pumping.
  4. Replacement and installation cost of defective parts after the warranty period expires. Diagnosis of the issue is still included in operation and maintenance to be provided by the Contractor.

**END OF SECTION 02/535**



## SECTION 11/670

### RV DUMP STATION EQUIPMENT

#### PART 1 GENERAL

##### 1. WORK INCLUDED

- A. This section covers the work necessary to furnish and install water towers and foot operated sanitary hatches associated with the construction of an RV Dump Station.

##### 2. GENERAL

- A. The Drawings do not show all details of all piping systems, and instead only portray the functionality required. The **CONTRACTOR** shall provide all accessories, adapters, appurtenances and supports to achieve a complete and functional installation. The **CONTRACTOR** shall verify all piping routings and locating dimensions shown for conflicts with other piping or utilities, and shall provide any offsets required to achieve clearance at no additional cost to the **OWNER**. In the event changes to the locations of equipment or piping shown are necessary, the **CONTRACTOR** shall submit such changes in writing to the **ENGINEER** before proceeding with such changes.
- B. Manufacturers' references are included herein for reference and to establish the required level of quality; "or equal" products may be proposed subject to the requirements for Submittal review.

##### 3. CODES, PERMITS AND COMPLIANCE

- A. Plumbing under these Specifications shall conform to all requirements of the current codes, standards and ordinances applicable to work. In event of conflicts between these Specifications and applicable codes or standards, the codes and standards shall govern.
- B. All piping, wastewater system components and accessories shall be installed in strict accordance with the laws and regulations of the State of Montana and Jefferson County.
- C. Any permits legally required for the work under these Specifications shall be the responsibility of the **CONTRACTOR** to obtain. Costs of such permits and scheduling of any inspections required in conjunction with such permits or associated requirements shall be the responsibility of the **CONTRACTOR**.
- D. Completed piping systems shall be tested by the **CONTRACTOR** in accordance with all applicable codes and standards before charging such piping with wastewater.

##### 4. SUBMITTALS

- A. The **CONTRACTOR** shall provide the following information:
  - 1. Provide manufacturers' catalog information, brochures, warranties and operation and maintenance manuals for each product used in the system.

## **PART 2      PRODUCTS**

### **1.      FOOT OPERATED SANITARY HATCH**

- A.      Foot operated sanitary hatches, self-closing, with a flat face seat. Hatch piping connection shall be 4-inch fpt. The base shall be a hexagonal one-piece cast-iron construction. The cover and operating pedal shall each be one-piece bronze construction.
- B.      Provision shall be provided to allow locking the cap to the base with a padlock utilizing ½-inch diameter holes. Padlock is not included.
- C.      Manufacturer's reference:
  - 1.      Foot operated sanitary hatches shall be *Model #DSV-GT2* as manufactured by *Trumbull Recreational Supply Company, Inc.*, or equal.

### **2.      SELF CONTAINED WATER TOWER**

- A.      Tower shall be 9'-6" overall height with riser extension for a 12-foot reach.
- B.      Tower shall be ADA compliant.
- C.      Tower shall be self-contained. All parts not necessary for user operation shall be internalized.
- D.      Towers for potable water use shall be powder coated blue. Towers for sanitary washdown (non-potable) shall be powder coated forest green.
- E.      Vacuum breaker backflow prevention shall be installed at the top of the tower.
- F.      Operating handle shall be stainless.
- G.      Industrial spring with protective boot.
- H.      Extension hose shall be non-kink industrial hose.
- I.      Include a bumper to protect the spray nozzle.
- J.      Tower shall be freeze proof for a bury depth of 6-feet.
- K.      Manufacturer's reference:
  - 1.      Self-contained water towers shall be *Model #FP-WT-6* as manufactured by *Trumbull Recreational Supply Company, Inc.*, or equal

**PART 3 EXECUTION**

1. FOOT OPERATED SANITARY HATCH

- A. Foot operated sanitary hatches shall be installed as detailed in the plans and according to manufacturer's recommendations.

2. SELF CONTAINED WATER TOWER

- A. Self-contained water towers shall be installed as detailed in the plans and according to manufacturer's recommendations.

**END OF SECTION 11/670**