Montana Fish, Wildlife & Parks

SPECIFICATIONS FOR WORK
SPECIAL PROVISIONS

Contents:

1. PROJECT DESCRIPTION

The Project involves construction work associated with:

Flathead Lake Islands Sanitary Improvements
Flathead Lake State Park, Montana
Bird and Cedar Islands
FWP #7216611

The project generally includes the installation of two new buildings that house composting toilet facilities one each on both Bird and Cedar Islands. The installation on Cedar island shall also include the removal of the existing building and old non functioning composting toilet.

2. PROJECT RELATED CONTACTS

Project contacts are designated as follows:

Owner:	Montana FWP 1420 E. Sixth Ave. PO Box 200701 Helena, MT 59620-0701
FWP Project Representative:	Randi Rognlie FWP Project Manager 1522 9th Avenue Helena, MT 59620 406-841-4019 (wk) 406-431-9797 (cell) 406-841-4004 (fax)
Engineering Consultant:	Matt Nerdig A2Z Engineering PLLC 138 E Center Street Kalispell, MT 406-755-7888 (wk) 406-249-1385 (cell)

3. SITE INSPECTION

All Bidders should satisfy themselves as to the construction conditions by personal examination of the site described in this document. Bidders are encouraged to make any investigations necessary to assess the nature of the construction and the difficulties to be encountered, see General Conditions, Article 3.

4. SOILS INFORMATION

Geotechnical investigation work has not been done for this Project. It is the responsibility of the Bidders to conduct all investigations and determine the soil type and digging conditions that may be encountered with this Project prior to bid preparation, see General Conditions, Article 3.

5. PROJECT REPRESENTATIVE, INSPECTIONS, AND TESTING

The Contractor's work will be periodically tested and observed to ensure compliance with the Contract Documents. Complete payment will not be made until the Contractor has demonstrated that the work is complete and has been performed as required. If the Project Representative detects a discrepancy between the work and the requirements of the Contract Documents at any time, up to and including final inspection, such work will not be completely paid for until the Contractor has corrected the deficiency, see General Conditions, Article 9.

The Project Representative will periodically monitor the construction of work to determine if the work is being performed in accordance with the contract requirements. The Project Representative does not have the authority or means to control the Contractor's methods of construction. It is, therefore, the Contractor's responsibility to utilize all methods, equipment, personnel, 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. Any discrepancies noted shall be brought to the Contractor's attention, who shall immediately correct the discrepancy. Failure of the Project Representative to detect a discrepancy will not relieve the Contractor of his ultimate responsibility to perform the work as required, see General Conditions, Article 3.

The Contractor shall inspect the work as it is being performed. Any deviation from the Contract requirements shall be immediately corrected. Prior to any scheduled observation by the Project Representative, the Contractor shall again inspect the work and certify to the Project Representative that he has inspected the work and it meets the requirements of the Contract Documents. The Project Representative may require uncovering of work to verify the work was installed according to the contract documents, see General Conditions, Article 12.

The work will be subject to review by the Project Representative. The results of all such observations, and all contract administration, shall be directed to the Contractor only through the Project Representative.

5.1 Services Required by the Contractor. The Contractor shall provide the following services:

a. Any field surveys to establish locations, elevations, and alignments as stipulated on the Contract Documents. FWP reserves the right to set preliminary construction staking for the project. The Contractor is responsible to notify FWP for any

construction staking discrepancies.

b. Preparation and certification of all required shop drawings and submittals as described in the General Conditions, Article 3.

c. All testing requiring the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to the Project Representative. The laboratory shall be staffed with experienced technicians properly equipped, and fully qualified to perform the tests in accordance with the specified standards.

d. Preparation and submittal of a construction schedule, including submittals, see General Conditions, Article 3. The schedule shall be updated as required, as defined in the Contract Documents.

e. All Quality Control testing as required by the Contractor's internal policies.

f. All Quality Assurance testing and/or re-testing as stated in the Contract Documents, see General Conditions, Article 13.

5.2 Services Provided by the Owner. The Owner shall provide the following services at no cost to the Contractor except as required for retests as defined in the Contract Documents.

a. The Project Representative may check compaction of backfill and surfacing courses using laboratory testing submittal information supplied by the Contractor. These tests are to determine if compaction requirements are being fulfilled in accordance with the Contract Documents. It is ultimately the responsibility of the Contractor to ensure that this level of compaction is constant and met in all locations.

b. Any additional Quality Assurance testing deemed appropriate by the Owner, at the Owner's expense.

6. ENGINEERING INTERPRETATIONS

Timely Engineering decisions on construction activities or results have an important bearing on the Contractor's schedule. When engineering interpretation affects a plan design or specifications change, it should be realized that more than 24 hours may be required to gain the necessary Owner participation in the decision process including time for formal work directive, or change order preparation as required.

7. REJECTED WORK

Any defective work or nonconforming materials or equipment that may be discovered at any time prior to the expiration of the warranty period, shall be removed and replaced with work or materials conforming to the provisions of the Contract Documents, see General

Conditions, Article 12. Failure on the part of the Project Representative to condemn or reject bad or inferior work, or to note nonconforming materials or equipment on the Contractors submittals, shall not be construed to imply acceptance of such work. The Owner shall reserve and retain all its rights and remedies at law against the Contractor and its Surety for correction of any and all latent defects discovered after the guarantee period (MCA 27-2-208).

Only the Project Representative will have the authority to reject work which does not conform to the Contract Documents.

8. UTILITIES

The exact locations of existing utilities that may conflict with the work are not precisely known. It shall be the Contractor's responsibility to contact the owners of the respective utilities and arrange for field location services. **One Call Locators, 1-800-424-5555**

The Contract Documents may show utility locations based on limited field observation and information provided to the Project Representative by others. **The Project Representative cannot guarantee their accuracy.** The Contractor shall immediately notify the Project Representative of any discrepancies with utility locations as shown on the Contract Drawings and/or their bury depths that may in any way affect the intent of construction as scoped in these specifications.

There will be no separate payment for exploratory excavation required to locate underground utilities.

8.1 Notification. The Contractor shall contact, in writing, all public and private utility companies that may have utilities encountered during excavation. The notification includes the following information:

a. The nature of the work that the Contractor will be performing.
b. The time, date and location that the Contractor will be performing work that may conflict with the utility.
c. The nature of work that the utility will be required to perform such as moving a power pole, supporting a pole or underground cable, etc.
d. Requests for field location and identification of utilities.

A copy of the letter of notification shall be provided to the Project Representative. During the course of construction, the Contractor shall keep the utility companies notified of any change in schedule, or nature of work that differs from the original notification.

8.2 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 utility companies 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.

Utilities are depicted on the Contract Documents in accordance with their achieved “Quality Levels,” as defined in the American Society of Civil Engineer’s Document, ASCE 38, “Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data.” Reliance upon these data for risk management purposes during bidding does not relieve the Contractor, or Utility Owner from following all applicable utility damage prevention statutes, policies, and/or procedures during construction. It is important that the Contractor investigates and understands the scope of work between the project Owner and Engineer regarding scope of limits of the utility investigations leading to these utility depictions. Definitions of Quality Levels are described as follows:

a. "QUALITY LEVEL A" – (QLA): LOCATING THROUGH EXCAVATION. QLA data are highly accurate and are obtained by surveying an exposed utility. As such, both horizontal and vertical data are recorded. Survey accuracies are typically set at 15mm (1/2-inch) vertically, and to project survey standards horizontally (typically the same as for topography features), although these survey accuracies and precisions are generally left to the owner to specify in a scope of work. In addition to the applicable standard of care and any other additional standards imposed by commercial indemnity clauses, the accuracy of these location data is also typically guaranteed. Other data typically characterized include material type, surface elevation, utility size/capacity, outside dimensions, and configurations, soil type, and utility condition.

b. "QUALITY LEVEL B" – (QLB): DESIGNATING. QLB information is obtained through the application of appropriate surface geophysical methods to identify the existence and approximate horizontal location of utilities (a utility’s “designation”) within the project limits, followed by survey, mapping, and professional review of that designation. Underground utilities are identified by interpretation of received signals generated either actively or passively, and through correlating these received signals with visible objects (QLC) and record data (QLD) to determine function. Designated utilities that can’t be identified are labeled as “unknowns.” Although approximate has no accuracy associated with it, generally the locations are within inches rather than feet. The more utility congested the area or the deeper the utilities, the less likely it is that the designations will achieve that accuracy. These designations are then surveyed to project accuracies and precisions, typically third-order accuracy similar to other topography features. Note that surveying existing one-call marks does not lead to QLB data, since the genesis of the

marks was not under the direct responsible charge of the professional certifying the QLB depictions, and one-call generally does not address unknown utilities, privately owned utilities, utilities without records, abandoned utilities, and so on. Nor does the professional have knowledge of the field technician's qualifications, training, and level of effort.

c. "QUALITY LEVEL C" – (QLC): SURFACE VISIBLE FEATURE SURVEY. QLC builds upon the QLD information by adding an independent detailed topography site survey for surface-visible appurtenances of subsurface utilities including but not limited to fire hydrants, valves, risers, and manholes. Professional judgment is used to correlate the QLD data to the surveyed features, thus increasing the reliability of both utility location and existence. It is a function of the professional to determine when records and features do not agree and resolve discrepancies. This may be accomplished by depiction of a utility line at quality level D, effectively bypassing or disregarding (but still depicting) a surveyed structure of unknown origin. Additional resolution may result from consultation with utility owners.

d. "QUALITY LEVEL D" – (QLD): EXISTING RECORDS RESEARCH. QLD is the most basic level of information. Information is obtained from the review and documentation of existing utility records, verbal accounts, and/or one-call markings (to determine the existence of major active utilities and their approximate locations).

8.3 Removal or Relocation of Utilities. All electric power, street lighting, gas, telephone, and television utilities that require relocation will be the responsibility of the utility owner. A request for extending the specified contract time will be considered if utility owners cause delays.

8.4 Public Utilities. Water, sewer, storm drainage, and other utilities owned and operated by the public entities shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All such work shall be in accordance with these Contract Documents, or the Owner's Standard Specifications or written instructions when the work involved is not covered by these Specifications.

8.5 Other Utilities. Utilities owned and operated by private individuals, railroads, school districts, associations, or other entities not covered in these Special Provisions shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All work shall be in accordance with the utility owner's directions, or by methods recognized as being the

standard of the industry when directions are not given by the owner of the utility.

8.6 Damage to Utilities and Private Property. The Contractor shall protect all utilities and private property and shall be solely responsible for any damage resulting from his construction activities. The Contractor shall hold the Owner and Project Representative harmless from all actions resulting from his failure to properly protect utilities and private property. All damage to utilities shall be repaired at the Contractor's expense to the full satisfaction of the owner of the damaged utility or property. The Contractor shall provide the Owner with a letter from the owner of the damaged utility or property stating that it has been repaired to the utility owner's full satisfaction.

8.7 Structures. The Contractor shall exercise every precaution to prevent damage to existing buildings or structures in the vicinity of his work. In the event of such damages, he shall repair them to the satisfaction of the owner of the damaged structure at no cost to the Owner.

8.8 Overhead Utilities. The Contractor shall use extreme caution to avoid a conflict, contact, or damage to overhead utilities, such as power lines, streetlights, telephone lines, television lines, poles, or other appurtenances during the course of construction of this project.

8.9 Buried Gas Lines. The Contractor shall provide some means of overhead support for buried gas lines exposed during trenching to prevent rupture in case of trench caving.

8.10 Pavement Removal. Where trench excavation or structure excavation requires the removal of curb and gutter, concrete sidewalks, or asphalt or concrete pavement, the pavement or concrete shall be cut in a straight line parallel to the edge of the excavation by use of a spade-bitted air hammer, concrete saw, colter wheel, or similar approved equipment to obtain a straight, square clean break. Pavement cuts shall be 2 feet wider than the actual trench opening.

8.11 Survey Markers and Monuments. The Contractor shall use every care and precaution to protect and not disturb any survey marker or monuments, such as those that might be located at lot or block corners, property pins, intersection of street monuments or addition line demarcation. Such protection includes markings with flagged high lath and close supervision. No monuments shall be disturbed without prior approval of the Project Representative. Any survey marker or monument disturbed by the Contractor during the construction of the project shall be replaced at no cost to the Owner by a licensed land surveyor.

8.12 Temporary Utilities. The Contractor shall provide all temporary electrical, lighting, telephone, heating, cooling, ventilating, water, sanitary, fire protec-

tion, 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.

9. CONSTRUCTION SAFETY

The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees and subcontractors) and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable federal, state, county, and local laws, ordinances, codes, and regulations. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve them from compliance with the obligations and penalties set forth therein, see General Conditions, Article 10.

10. CONSTRUCTION LIMITS AND AREAS OF DISTURBANCE

10.1 Construction Limits. Where construction easements or property lines, are not specifically called out on the Contract Documents, limit the construction disturbance to ten (10) feet, when measured from the edge of the slope stake grading, or to the adjacent property line, whichever is less. Disturbance and equipment access beyond this limit is not allowed without the written approval of both the Project Representative 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 reclamation 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.

10.2 Areas of Disturbances. Approved areas of disturbance are those areas disturbed by construction activities within the construction limits and along designated or approved access routes. Such areas may require reclamation and revegetation operations, including grading to the original contours, top soiling with salvaged or imported topsoil, seeding, fertilizing, and mulching as specified herein. Other areas that are disturbed by the Contractor's activities outside of the limits noted above will be considered as site damage or unapproved areas of disturbance, see General Conditions, Articles 3 and 10. This includes areas selected by the Contractor outside the defined construction limits for mobilization, offices, equipment, or material storage.

11. DECONTAMINATE CONSTRUCTION EQUIPMENT

Power wash all construction equipment that have been previously operated off of paved or gravel roadways entering the project site to prevent the spread of noxious weeds and aquatic invasive species. This applies to all FWP projects, whether or not individual construction permits specifically address cleaning of equipment.

12. TREE PROTECTION AND PRESERVATION

The Contractor and the Owner shall individually inspect all trees within the project construction limits prior to construction. The Owner shall determine which trees are to be removed and which trees are to be preserved. Construction of the grading, utilities and various roadway facilities must not significantly damage the trees root system or hinder it's chances for survival. Reasonable variations from the Contract Documents, as directed by the Project Representative, may be employed to ensure the survival of trees.

13. CONSTRUCTION SURVEYS

The Contractor will be responsible for all layout and construction staking utilizing the Project Representative's existing control and coordinate data for the project. Dimensions and elevations indicated in layout of work shall be verified by the Contractor. Discrepancies between Drawings, Specifications, and existing conditions shall be referred to the Project Representative for adjustment before work is performed. The Project Representative may set location and grade stakes prior to construction; however, it is ultimately the responsibility of the Contractor to check and verify all construction staking for the project.

Existing survey control (horizontal and vertical) has been set for use in the design and ultimately the construction of these improvements. A listing of the coordinates and vertical elevation for each of these control points may be included in the project drawings.

The Contractor will be responsible for preserving and protecting the survey control until proper referencing by the Contractor has been completed. Any survey control obliterated, removed, or otherwise lost during construction will be replaced at the Contractor's expense.

Contractor shall be aware of property pins and survey monuments. Damage to these pins will require replacement of such by a registered land surveyor at no cost to the owner.

The Contractor shall provide construction staking from the Contractor's layouts and the control points. Contractor's construction staking includes at a minimum:

1. Slope stakes located at critical points as determined by the Project Representative.
2. Blue tops every longitudinally and transversely for subgrade and crushed base to

verify finish grading of course.
3. Location and grade stakes for drainage features and retaining walls.
4. Location stakes for roadside safety items, permanent and temporary traffic control, and misc. items as determined by the Project Representative.

Original field notes, computations and other records take by the Contractor for the purpose of quantity and progress surveys shall be furnished promptly to the Project Representative and shall be used to the extent necessary in determining the proper amount of payment due to the Contractor.

14. MATERIAL SOURCES AND CONSTRUCTION WATER

The Contractor shall be responsible for locating all necessary material sources, including aggregates, earthen borrow and water necessary to complete the work. The Contractor shall be responsible for meeting all transportation and environmental regulations as well as paying any royalties. The Contractor shall provide the Project Representative with written approvals of landowners from whom materials are to be obtained, prior to approval.

The Contractor may use materials from any source, providing the materials have been tested through representative samples and will meet the Specifications.

Water for compaction efforts shall be supplied by the Contractor.

15. MATERIALS SALVAGE AND DISPOSAL

Notify the Owner for any material salvaged from the project site not identified in the Contract Documents. The Owner reserves the right to maintain salvaged material at the project site, compensate the Contractor for relocation of salvaged material, or agreed compensation to Owner for material salvaged by the Contractor.

The contractor on Cedar Island is responsible for removal of the entirety of the old composting toilet building and the old non function composting toilet. Haul and waste all waste material to a legal site and obey all state, county, and local disposal restrictions and regulations.

16. STORED MATERIALS

Contractor shall use an approved storage area for materials. The materials stored on the islands shall be within the limits of disturbance shown on the plans. The materials stored for staging/transport to the island shall be within the approved staging area in either West Shore or Big Arm State park as allocated during the preconstruction meeting. Materials and/or equipment purchased by the Contractor may be compensated on a monthly basis. For compensation, provide the Project Representative invoices for said materials, shop drawings and/or submittals for approval, and applicable insurance coverage, see General Conditions, Article 9.

17. STAGING AND STOCKPILING AREA

Contractor shall use staging and stockpiling sites for to facilitate the project as approved by the Owner. Contract Documents may show approved staging and stockpiling locations. Notify Owner within 24 hours for approval of staging and stockpiling sites not shown on the Contract Drawings. The FWP shall allocate areas within either West Shore or Big Arm state park to act as a stage location for material prior to transfer to each island. These areas shall be allocated and approved during the pre-construction meeting.

18. SECURITY

The Contractor shall provide all security measures necessary to assure the protection of equipment, materials in storage, completed work, and the project in general.

19. CLEANUP

Cleanup for each item of work shall be fully completed and accepted before the item is considered final. If the Contractor fails to perform cleanup within a timely manner the Owner reserves the right to withhold final payment.

Review these Contract Documents for additional Final Cleanup specifications for specific measures, associated with Contractor responsibilities and final payment.

20. ACCESS DURING CONSTRUCTION

Provide access to all public and private roadways and approaches within the project throughout the construction period.

Provide emergency access at all times within the project throughout the construction period.

21. CONSTRUCTION TRAFFIC CONTROL

The Contractor is responsible for providing safe construction and work zones within the project limits by implementing the rules, regulations, and practices of the Manual on Uniform Traffic Control Devices, current edition. This applies only to the staging area as there is no traffic on the islands.

22. SANITARY FACILITIES

Provide on-site toilet facilities for employees of Contractor and Sub-Contractors and maintain in a sanitary condition.

23. CONTRACT CLOSEOUT

The Contractor's Superintendent shall maintain at the project site, a "Record Set of Drawings" showing field changes, as-built elevations, unusual conditions encountered during construction, and such other data as required to provide the Owner with an

accurate “as constructed” set of record drawings. The Contractor shall furnish the “Record Set” to the Project Representative following the Final Inspection of the Project.

The Contractor’s final payment will not be processed until the “Record Set” of drawings are received and approved by the Project Representative.

24. MEASUREMENT AND PAYMENT

Review these Contract Documents for additional Measurement and Payment specifications for definitions. Quantities are listed on the Bid Proposal for Payment Items. Additional material quantities, volumes, and measurements may be shown on the Contract Document drawings and/or specifications.

Unit Price quantities and measurements shown on the Bid Proposal are for bidding and contract purpose only. Quantities and measurements supplied, completed for the project, and verified by the Project Representative shall determine payment. Each unit price will be deemed to include an amount considered by the Contractor to be adequate to cover Contractor’s overhead and profit for each bid item.

The Owner or Contractor may make a Claim for an adjustment in Contract Unit Price if the quantity of any item of Unit Price Work performed by the Contractor differs materially and/or significantly (increase or decrease by 50%) from the estimated quantity indicated on the Bid Proposal.

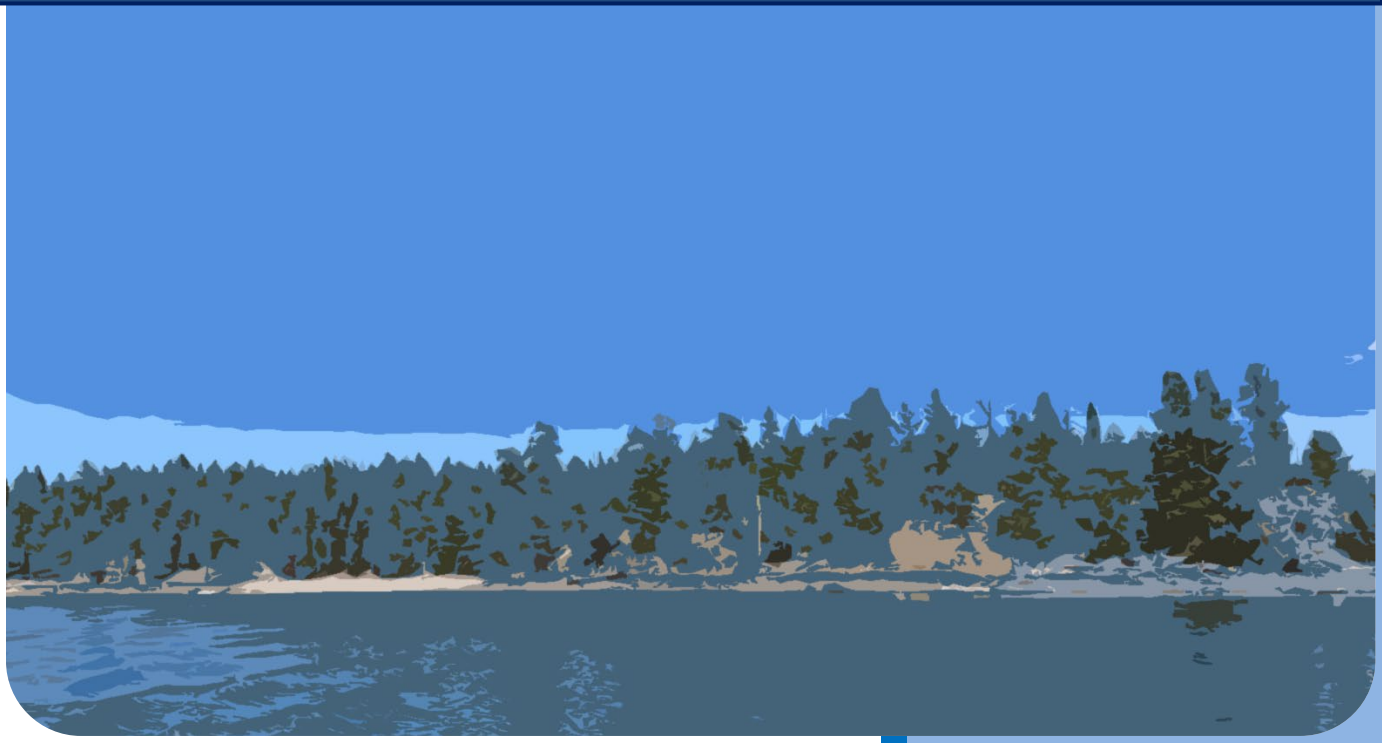
Lump sum bid item quantities will not be measured. Payment for the lump sum bid proposal items will be paid in full amount listed on the Bid Proposal when accepted by the Project Representative, unless specified otherwise.

FWP PROJECT #7216611

Owner:
MT FISH WILDLIFE AND PARKS
DESIGN AND CONSTRUCTION
1522 Ninth Avenue
PO Box 200701
Helena,. MT 59620-0701

Engineer: **A2Z Engineering PLLC** – (406) 755-7888

Flathead Lake Islands Sanitary Improvements - SPECIFICATIONS



MONTANA
MATT NERDIG
No. 17074 PE
LICENSED PROFESSIONAL ENGINEER

1 SCOPE

The following specifications provide details for the design, construction and erection of the Trail Master Phoenix Composting Toilet facility or engineer approved equivalent. The supplied facility shall satisfy all specifications with no exceptions. If an equivalent is proposed it must be approved by the engineer of record prior to being used in a bid package. This approval is required before the bid date and the submittal of the equivalent specifications is required two weeks prior to the bid date to allow the engineer to review and approve the equivalent specifications.

2 GENERAL SPECIFICATIONS

The structure, composting toilet, heating system, water system, lighting, electrical system and controls are highly integrated, therefore the entire facility shall be supplied and erected by one company to assure compatibility, warranty issues, and proper operation. If substitutions or other options are proposed to this specification it shall be approved by the engineer of record prior to a bid package being submitted.

3 BUILDING SPECIFICATIONS

3.1 General

The building design and construction shall be compatible with the Phoenix Composting System installation and maintenance requirements. Dimensional framing lumber for the floors, foundation, roof and decks including pressure treated lumber shall be MSR 2100 psi F_B SPF. All wood in contact with the ground shall be .3 CAC treated. All fasteners in contact with the pressure treated wood shall be stainless steel. Components shall be durable and compatible for the intended use. All construction techniques shall be compliant with International Building Code Specifications and Requirements. All interior and exterior finishes shall be applied to the structure and buildings components.

3.2 Foundation

The foundation shall be constructed in accordance with the *Permanent Wood Foundation System Manual* published by the American Wood Council. All studs, plates and joists shall be .3 CAC treated and kiln dried to C-22 permanent wood foundation standards. . No wood treated with a preservative containing heavy metals such as ACA, CCA or ACZA shall be used. Underground sheeting shall be .3 CAC, Grade B plywood with horizontal face grain and edges blocked. All fasteners shall be stainless steel. Basement walls, doors and ceiling shall be insulated with expanded polystyrene foam. The basement floor shall be insulated with 2" of extruded polystyrene and covered with 4" native soil. The interior of the foundation walls shall be covered with 3/8” CAC treated plywood painted beige-gray.

3.3 Building Floors

The building floor shall be constructed from 2"x4" joists on 12" center for lower floor and 8” on center for main floor with ½" plywood glued and screwed. The floor shall have a 1/4"/ft. slope toward the entry door and a 1-1/2' cant strip atfloor-wall intersections. A polyurethane coating shall be applied according to manufacturer's directions to the floor and 6" up the side walls. Silica sand shall be added to the floor coating fortraction.

3.4 Building Walls

Toilet room walls shall be framed with 2"x3" studs with 3/8” plywood glued and nailed on both sides. All interior plywood edges shall be blocked. Wall interiors shall be finished with tan fiberglass panels with a pebble textured surface bonded to the wall sheeting. Interior wall corners shall be covered with stainless steel angle and fiberglass seams shall join with an extruded PVC strip of matching color. Exterior siding and trim shall be Sierra 8 Hardi-panel or equivalent.

3.5 Building Roof

The South facing roof shall incorporate a solar heat collector and Solar PV panel and be covered with 16 mm, double-walled Lexan glazing with gasketed battens. The North roof shall be constructedwith transparent glazing acting as skylights over the toilet room. Both north and south roofs shall include gutters to direct rainwater to a 100 gallon PVC cistern in the basement.

3.6 Doors

The toilet room entry door shall be a steel door with a steel jamb. Each door shall include a hydraulic closer, three ball bearing hinges, interior and exterior bronze D handle, dead boltand latch. The basement access door shall be constructed with a wood frame, ½” APA rated plywood sheeting on both sides, 1-1/2” expanded polystyrene insulation and a Hardi Panel exterior covering and include three black tee hinges and a hasp with a Padlock. The door shall be large enough to accommodate a fully assembled Phoenix or approved equivalent. The interior closet access door shall be covered with the same fiberglass as the interior walls with a strip hinge and latch keyed the same as the entry door and padlock.

3.7 Deck Railing and Stairs

Decks and railings shall be constructed from CAC treated lumber and coated with TuffCoat Urethane. Posts shall be CAC treated 4x4's. All fasteners shall be hot dipped galvanized coated or stainless steel.

4 PHOENIX COMPOSTING TOILET SYSTEM

4.1 System Specifications

The composting toilets shall be model 201 Phoenix Composting Systems or engineer approved equivalent with the following salient characteristics essential for structural integrity, mechanical operation and biochemicaldecomposition:

4.1.1 Tank

The composting tanks shall be manufactured with a 1/4" thick rotationally molded, polyethylene exterior shell and a 5/8" thick foamed polyethylene inner insulation layer. Upper and lower access doors shall be similarly constructed and shall provide access to the entire top and bottom of the compost pile using a conventional length rake or shovel. All fasteners shall be corrosion resistant stainless steel and nylon. Tank sections shall connect together with an overlapping, gasketed joint. Aeration of the compost pile shall be provided by sidewall baffles so that no point within a full tank shall be more than 2' from air contact. Liquid shall be separated from solid material by an elevated porous floor in the bottom of the tank and receive secondary treatment in the aerated stable medium beneath this floor. Three rotatable tines shall control the movement of finished compost to the access area.

4.1.2 Toilets

The toilet shall be manufactured from white polyethylene and ABS and include a black tapered polyethylene liner, 12" diameter chute and tank connector. An automatic seat closer shall be actuated by toilet room door openings.

4.1.3 Vent System

The vent system shall consist of a fan housing with a brushless 12 volt DC fan encapsulated forcorrosion resistance. 4" flexible hose connect the fan housing to 4" schedule 40 pvc vent pipe.All joints in the vent system shall seal so that there will be no leaks from rain or condensation.To conserve energy, ventilation rate shall be controlled by day and night, toilet room door openings, battery voltage and manual maintenance switch. The fan shall include a white LED for insect control and a thermostatic switch to turn the fan off in case of fire.

4.1.4 Liquid Spray System

The composting tank shall include an internal spray system for periodically applying water or liquid end product on to the top of the compost pile so that no sections of the pile are dry. The spray nozzles shall be accessible from the top access door and easily removed for maintenance. The frequency and duration of spraying shall be adjustable with control panel.

4.1.5 System Controller/Monitor

The system controller shall include load control, cumulative run time and over current protection for each electrical device. It shall also include a test function for each electrical device which will allow the operator to turn each device on while observing its operation. The controller shall also include a door opening counter for each toilet room to keep track of toilet use.

4.1.6 Maintenance Tools

Maintenance tools shall include a rake capable of reaching to the back of the tank, a tray for collecting finished compost and a reacher for removing trash.

4.1.7 Installation, Certification and Training

Installation of the Phoenix Composting Toilet shall be performed by a trained representative of the composting toilet manufacturer who shall also certify proper installation and validate the warranty. After completion of the installation, Advanced Composting Systems or Approved Equivalent System Manufacturer shall provide a training session for maintenance personnel.

5 SPECIAL CONDITIONS

5.1 Site Access

The site is only accessed via boat due to the remote nature of the proposed installation location. It will be necessary to use either a barge or helicopter to transport materials to and from the island as needed. The lack of an existing two track from the beach landing area may make a helicopter the preferred method for the majority of the material transfer. The plans spell out the intended landing area and access route to each island. The contractor is allowed the use of the Yellow Bay, Big Arm, Finley Point, or West Shore State Park to launch boats to reach the island.

5.1.1 Site Disturbance at Proposed Composting Toilet Site

The building and composting toilet shall be installed as indicated on the plans. The disturbance on site is limited to the 150 foot diameter circle centered on the composting toilet location. If it is necessary to remove trees in this area this will require approval of the Montana FWP prior to removal.

5.1.2 Construction Period Restrictions

Cedar island does not have any restrictions on dates that this construction can occur. Access to Bird Island and therefore construction cannot occur between March 1st and July 15th to protect nesting geese.

6 SOLAR HEATING SYSTEM

Solar heat collectors built into the south facing roof shall be insulated from the ceiling with 2" fiberglass insulation covered with black painted metal lath. All internal surfaces shall be painted black to increase collection. The system controller shall monitor collector temperature and control a fan to circulate air in the basement through insulated duct to the collectors.

7 LIGHTING

An LED light fixture with a shall be mounted in the toilet room. It shall be controlled by the system controller to illuminate when the entry door opens at night.

8 WATER SYSTEM

Rain water from the roof gutters shall be collected in a 100 gallon tank. A pump and hose shall provide pressurized water for cleaning the toilet rooms. The pump shall be controlled by a switch located in the service room.

9 ERECTION

Erection shall include excavation, building and system assembly and site restoration. Access trails shall be provided by others

10 WARRANTY

ACS shall warranty all materials and workmanship with the exclusions contained in the standard Phoenix warranty for a period of 5 years from the date of completion of the installation.