

SETTLING POND REPLACEMENT PROJECT
Montana Fish, Wildlife & Parks
FWP # 7193123

SPECIFICATIONS FOR WORK TECHNICAL PROVISIONS

Incorporation of Montana Public Works Technical Specifications: The Technical Specifications as found in Montana Public Works Standard Specifications (MPWSS), Sixth Edition, April 2010 and/or current Addendums or Revisions; are hereby incorporated by reference and made a part of this Contract.

Incorporation of Montana Fish, Wildlife & Parks Technical Specifications and Modifications to MPWSS Technical Specifications. In addition to the MPWSS Technical Specifications are the following Technical Specifications, some with modifications to MPWSS Technical Specifications.

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SECTION 01010
SUMMARY OF WORK

1. GENERAL

1.1 Section Includes:

- A. Owner, Engineer and Contractor Responsibilities.
- B. Project Timeline
- C. Contractor use of Site and Premises.
- D. Project Objective

1.2 RESPONSIBILITIES

A. Owner or Engineer Responsibilities:

- 1. Respond to project questions
- 2. Submittal and Material review
- 3. Periodic inspections.
- 3. Final acceptance and inspections

B. Contractor Responsibilities

- 1. Coordination with FWP personnel
- 2. Layout of Basin structure
- 3. Completion of project as bid
- 4. Engage & Coordinate Quality control of work

1.3 PROJECT TIMETABLE

A. The schedule is dictated by and coordinated with the lowest period of the hatchery demand on the settling pond.

- 1. Monday September 19, 2022: Inflow to settling pond is stopped and lowering of water level in pond begins.
- 2. Monday September 26, 2022: Removal of biosolids starts.
- 3. Friday November 25, 2022: Latest project completion date with inflow to completed basin commencing.

4. To meet the hatchery schedules and restrictions, the project end date cannot be extended.

1.4 CONTRACTOR USE OF SITE

- A. The construction zone is defined by the outline of the existing chain link fence surrounding the settling pond. All work except temporary fencing and resetting of the chain link fence as described on the Drawings shall be confined within the construction zone. No work shall be permitted outside the construction zone unless authorized. Any damage to the site outside the construction zone shall be repaired to the satisfaction of the Owner.

1.5 PROJECT OBJECTIVE

- A. Project Objective: Replace the earthen lined settling pond which is out-dated and difficult to clean with a concrete settling basin that has increased detention time, is easier to clean with better settling characteristics.

2. SCOPE OF WORK

Work Items: Scope of Work includes the following but is not limited to the general descriptions listed herein.

- A. **MOBILIZATION:** This bid item shall include the costs associated with mobilizing to the project site, insurance, bonding, permitting, and submittals.

1. Work Includes:

- 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;
- Prepare and provide submittals, construction schedule, and all other paperwork required by the contract documents prior to construction startup.

2. Measurement: No measurement shall be taken for this item.

3. Payment: Payment shall be by the price bid for the lump sum bid item MOBILIZATION listed in the proposal with partial payments as follows.

- 50% of the amount bid for mobilization when the Contractor has moved on-site and begun construction activities.
- 100% of the amount bid for mobilization when 50% the contract amount (exclusive mobilization) has been completed.

B. **DEMOLITION:** This bid item includes cost associated with removal and disposal of the following items.

1. Work Includes:

- Existing trees and brush within the construction zone.
- Existing buried inlet piping, concrete pads and accessories.
- Existing pond liner of unknown material which interferes with the prosecution or quality of the finish work.

2. Measurement: None

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

C. **BIOSOLIDS REMOVAL & DISPOSAL**

1. Work Includes:

- Determine the best methods to treat (if applicable), collect and transport settling pond biosolids off the site.
- Furnish all equipment, pumps, vehicles and accessory equipment and materials to accomplish chosen plan.
- Determine final disposal method and obtain required disposal permits if required.
- Execute plans to collect and transport biosolids to final off site destination.
- Dispose of biosolids according to plan, paying all fees associated with disposal.
- Comply with all pertinent local, State and Federal regulations throughout the work item.

2. Measurement: Measurement shall be by the gallon transported off site. Measurement may also be by weight. The Contractor shall submit the weight ticket (as measured by the receiving entity) from each load of biosolids disposed. These tickets shall be the basis of payment for the work. The conversion rate from pounds to gallons shall be 8.35 pounds equivalent to 1.00 gallons.

3. Payment: Payment shall be by the unit price bid for BIOSOLIDS REMOVAL & DISPOSAL as listed in the proposal. No payment will be made for disposal of biosolids in which there is no weight ticket submitted. Price and payment is full compensation for equipment, loading, hauling, and disposing and for all labor and incidentals necessary to complete this item.

D. EXCAVATION & BACKFILL:

1. Work Includes:

- Removing and stockpiling topsoil.
- Removal of gravel coated with biosolids
- Disposal offsite of excavated material contaminated with biosolids.
- Unclassified excavation for concrete basin.
- Salvaging of material to be used as embankment fill.
- Dewatering of excavation, if required.
- Compaction of subgrade prior to application of crushed base course
- Installation of Geotextile fabric.
- Backfill, compaction and rough grading around concrete basin walls.
- All labor, tools, equipment, materials, and incidentals needed to complete the work as specified.

2. Measurement: No measurement shall be taken for this item.

3. Payment: Payment shall be by the price bid for the lump sum bid item EXCAVATION & BACKFILL listed in the proposal.

E. CRUSHED BASE COURSE

1. General: This bid item includes the 6 inch minimum crushed base course under the concrete base slab. It also includes the 4 inch course of finish surface material on areas as shown on the Drawings.

2. Work Includes

- All labor, tools, equipment, materials, and incidentals needed to complete the work as specified.
- Submittals to ensure material meets requirements listed in Section 02235
- Furnishing, installing and compacting crushed base course under concrete.
- Meeting density requirements for base course under concrete.
- Furnishing material for final gravel surface along north wall of basin.

2. Measurement: Measurement shall be per cubic yard of crushed base course installed. Measurement shall be rounded to the nearest cubic yard.
3. Payment: Payment shall be by the unit price bid for the cubic yard installed of bid item CRUSHED BASE COURSE listed in the proposal.

F. CONCRETE BASIN

1. General: This bid item includes all work associated with the construction of the concrete basin.
2. Work Includes
 - Furnish and install all formwork, form ties and required accessories for the placement of concrete.
 - Furnish and install all reinforcing steel.
 - Provide submittals as required in *Section 03300 Concrete* for the concrete mix design, including cement, aggregates, admixtures and required strength.
 - Provide submittals for embedded metals and fasteners.
 - Provide submittals for waterstops and sealants.
 - Procure and coordinate an independent quality control testing agency to conduct on-site testing and reporting.
 - Prepare existing concrete outlet structure for placement of new adjacent concrete.
 - Place concrete to lines and grades as indicated on the drawings to required tolerances and surfaces including waterstops where indicated as specified.
 - Perform curing of concrete as specified.
 - Removal and patching of form tie holes.
 - Patching of defective surfaces.
 - Placing concrete for pipe supports.
 - Placing concrete for shaping at the outlet structure.
 - General cleanup of concrete surfaces.
 - Furnishing and installation of grating on the interior walls.
 - Removal of concrete formwork and accessories from the jobsite.
3. Measurement: No measurement shall be taken for this item.
4. Payment: Payment shall be by the price bid for the lump sum bid item CONCRETE listed in the proposal.

G. INLET HEADER & PIPING

1. General: This bid item includes all work associated with the installation of inlet piping and inlet dispersion header.
2. Work Includes:
 - Furnish all ductile iron and PVC piping, fittings and fasteners.
 - Excavation to existing buried inlet pipe.
 - Dewater trench as needed to provide stable subgrade.
 - Cutting into existing 12" DI pipe and preparing end cut for extension.
 - Install new 12" DI pipe and riser including wall collar for penetration through concrete slab.
 - Provide proper bedding for piping and compaction of trench backfill.
 - Following completion of the concrete basin; Assemble PVC header sections and connect to the 12" ductile iron tee.
 - Install shims and straps to level PVC headers and fasten securely to concrete pipe supports.
 - Field measure and assemble PVC overflow piping.
 - Place concrete pad to support vertical riser.
 - Secure PVC overflow piping to existing outlet and fasten to concrete pad and basin wall.
3. Measurement: No measurement shall be taken for this item.
4. Payment: Payment shall be by the price bid for the lump sum bid item INLET HEADER & PIPING listed in the proposal.

H. SITE RESTORATION

1. General: This bid item includes all work associated site grading, restoration of fencing and final cleanup.
2. Work Includes:
 - Placing and fine grading topsoil
 - Installing weed barrier where noted.
 - Placing and compacting crushed base course over weed barrier
 - Removing temporary fencing and restoring fence location to pre-construction condition.
 - Resetting chain link posts removed for construction activity.
 - Installing chain link fence to original location.
 - Removing and disposing of sediment in raceways from dewatering operations, if applicable.
 - Removing all construction stakes, survey markers and flagging.

- Collect and remove all construction related debris, including excess concrete, gravel, soil or other construction materials not intended for permanent use.
- Repair any damaged areas of gravel surfaces, pavement or sod outside of the construction zone.

3. Measurement: No measurement shall be taken for this item.

4. Payment: Payment shall be by the price bid for the lump sum bid item SITE RESTORATION listed in the proposal.

3. CONTRACT

A. All work shall be done under one general contract provided by the Montana Department of Fish Wildlife and Parks Design and Construction.

4. PROPOSAL

A. Proposal shall include all costs to complete the work as described in the drawings and specifications.

END OF SECTION

SECTION 02050

DEMOLITION

PART 1: GENERAL

1.1 Description

- A. This section includes all labor and materials necessary for the work associated with the demolition of existing piping as shown on the Drawings and specified herein. This section also covers clearing of trees, brush and vegetation as required for construction of the concrete settling basin.
- B. The existing pond is lined with an unknown material. Portions of the liner will require removal to complete the work. Where the liner does not interfere with the prosecution or quality of the finish work, it may be left in place. No portions of the liner may be left exposed or near the surface of the finish work.

1.2 Submittals

- A. Not Required

1.3 Site Conditions

- A. The Contractor shall satisfy himself/herself as to the conditions that exist at the site both prior to bidding and prior to construction.
- B. The Contractor shall confine his operation to within the Construction Limits as indicated on the Drawings.

PART 2: MATERIALS

(not applicable)

PART 3: EXECUTION

3.1 Safety Requirements

- A. All work shall be done in conformance with the rules and regulations pertaining to safety established by the State of Montana, OSHA, local authorities, and as specified elsewhere in these specifications.

3.2 Utilities

- A. The Contractor shall be responsible for locating all utilities within the demolition area before any demolition is started. The Contractor shall not disconnect or cause interruption of service to any electrical, gas, or water or wastewater conveyance or treatment system without prior approval of the Owner and Engineer.

3.3 General Demolition

- A. The Drawings are based on the best available information, and may not contain all items requiring removal. The Contractor shall be responsible for determining the work required by inspecting the site.
- B. All vegetative and non-vegetative debris generated by demolition shall be hauled off-site and disposed of by the Contractor in a legally permissible manner.

3.4 Demolished and Cleared Material

- A. All materials including excavated materials, rock, vegetation, liner and piping demolished shall be the responsibility of the Contractor for removal and legal disposal, and shall be accomplished at no additional cost to the Owner.

END OF SECTION

SECTION 02102

DEWATERING

1. GENERAL

1.1 DESCRIPTION

- A. This section covers all necessary control and disposal of groundwater on a continual basis during construction.
- B. Dewatering shall include the lowering of the groundwater table to facilitate excavation, compaction and installation of the crushed base course supporting the concrete basin. It shall also include the intercepting of seepage which could otherwise emerge from the sides of the excavations and degrade construction activities.
- C. There is no current site data which establishes the location of the groundwater. Dewatering may be necessary to sufficiently lower the moisture level of the subgrade following removal of the biosolids material in the pond.
- D. The Contractor shall, based on site conditions, determine if dewatering is required.

2. MATERIALS (Not Used)

3. EXECUTION

3.1 CONTRACTOR'S RESPONSIBILITY

- A. The Contractor shall furnish all necessary labor, equipment, and incidentals necessary to dewater the project site during construction. The excavation shall be kept dry and free from water during all construction and the placement of materials.
- B. The Contractor shall, by pumped dewatering, berming, or by other methods or combinations thereof, keep the construction area free from water.
- C. The Contractor will be responsible for obtaining the necessary construction dewatering permits from the Montana Department of Environmental Quality (DEQ).

3.2 DISPOSAL OF WATER

Section 02102
DEWATERING

- A. Water shall not be discharged directly into the reservoir. Water shall, as directed by hatchery personnel, be pumped to outdoor raceways west of the construction zone allowing settlement of solids and reduction of suspended solids and then discharged to the reservoir.
- B. Following use of the raceways, the Contractor shall remove and dispose of all solids and sediment from the raceways to the satisfaction of the hatchery personnel.

3.3 FIELD QUALITY CONTROL

- A. It shall be the Contractor's responsibility to comply with all requirements and regulations of all federal, state, or local agencies that govern the work affecting the construction site or affected areas.
- B. Upon completion of the project tasks requiring the dewatering measures specified herein, the Contractor shall remove all such material and restore all areas so disturbed to their original conditions.
- C. The Contractor shall be responsible to repair any damage to buried utilities or Park facilities, and replace same if damaged to the pre-project condition and the full satisfaction of the Owner.

END OF SECTION

SECTION 02110

GEOTEXTILES

1. GENERAL

1.1 DESCRIPTION

- A. This section covers the work to furnish and install geotextile fabric under the crushed base course supporting the concrete basin slab.

2. MATERIALS

2.1. GENERAL

- A. The following referenced specifications shall apply to the geotextile installation:

Montana Public Works Standard Specifications (MPWSS) – 6th Edition (April 2010)

Section 02110 – Geotextiles

3. MODIFICATIONS

3.1 GENERAL

- A. No measurement shall be taken for the item. Payment shall be included in the lump sum amount for *Excavation & Backfill*.

3.2 PRODUCT

- A. Product shall be US 250NW, as manufactured by US Fabrics, Inc., Cincinnati OH 45245, 800-518-2290, www.usfabrics.com or equivalent 10 oz/square yard product.

END OF SECTION

Section 02110
GEOTEXTILES

SECTION 02210

EXCAVATION & BACKFILL

1. GENERAL

1.1 DESCRIPTION

- A. This section covers the work necessary to excavate and backfill for the concrete Settling Basin construction, as shown on the Drawings.
- B. See also Pipeline & Appurtenances Specification for additional pipe installation requirements.

2. MATERIALS

2.1. GENERAL

- A. The following referenced specifications shall apply to all excavations and backfill placement:

Montana Public Works Standard Specifications (MPWSS) – 6th Edition (April 2010)

Section 02221 – Trench Excavation and Backfill for Pipelines and Appurtenant Structures

Section 02230 – Street Excavation, Backfill and Compactions

3. MODIFICATIONS

3.1 GENERAL

- A. Measurement and Payment Section does not apply.
- B. Blasting will not be allowed on the site.
- C. Excavation is unclassified.
- D. Excavated material coated with biosolids material or containing more than 10 percent biosolids material by volume, shall not be incorporated into subsequent use for fill or backfill in the completed structure.

Section 02210
EXCAVATION & BACKFILL

3.2 PREPARATIONS AND EXECUTION

- A. The Contractor shall be responsible to repair any damage to buried utilities, irrigation piping or Hatchery facilities, and replace same if damaged to the pre-project condition and the full satisfaction of the Owner.
- B. Contractor shall remove, segregate, and stockpile as possible all native topsoil to its full depth prior to basin excavations.
- C. Backfill walls with suitable native material or imported backfill material. Compact wall backfill to 90 percent of maximum as determined by ASTM D-698.
- D. Stockpiled topsoil shall be placed in the upper excavation and compacted to 85 percent of maximum as determined by ASTM D-698.
- E. Imported topsoil shall be loose, friable, loamy soil, free of acid and alkali. Assure that topsoil does not contain objectionable amounts of sod, hard lumps, gravel, sub-soil or other undesirable material that would form a poor seedbed.
- F. Testing requirements for fill materials may be waived at the option of the Engineer.

END OF SECTION

SECTION 02235

CRUSHED BASE COURSE

1. GENERAL

1.1 DESCRIPTION

- A. This section covers the placing of one or more base courses under the base slab of the concrete settling basin, as shown on the Drawings.
- B. Also covered is the placement of a crushed base course gravel layer as the final surface material where designated on the Drawings.

2. MATERIALS

2.1. GENERAL

- A. The following referenced specifications shall apply to all crushed base material and placement:

Montana Public Works Standard Specifications (MPWSS) – 6th Edition (April 2010)

Section 02235 – Crushed Base Course

3. MODIFICATIONS

3.1 GENERAL

- A. Sect 1.3 DENSITY CONTROL TESTING
- B. Laboratory Maximum Density and Optimum Moisture

Delete this section and add the following:

1. Quality assurance tests will be made by the Contractors independent testing laboratory for each source of off-site material, including borrow material, to determine the laboratory maximum density values and optimum compaction moisture content under AASHTO T99 or ASTM D698.

- B. Measurement and Payment Section 4.1 Cubic Yard Basis: Applies exclusively.

END OF SECTION

Section 02235
CRUSHED BASE COURSE

SECTION 02600

PIPELINES & APPURTENANCES

1. GENERAL

A. DESCRIPTION

1. This section covers the work necessary to install new buried and exposed waste lines, fittings, and appurtenances, including ductile iron and PVC piping. Pipelines include new buried inlet piping, the new fabricated Inlet Header, and exposed overflow piping from the existing waste pump station Riser Manhole, as shown on the Drawings.

2. MATERIALS

A. GENERAL

1. The following referenced specifications shall apply to all pipelines, including fittings and appurtenances, and the installation thereof, unless specifically modified below:

Montana Public Works Standard Specifications – 6th Edition (April 2010)

Section 01300 – Submittals

Section 02221 – Trench Excavation and Backfill for Pipelines and Appurtenance Structures

Section 02660 – Water Distribution

3. MODIFICATIONS

A. GENERAL

1. Measurement and Payment Sections do not apply.
2. The pressure testing requirements of *MPWSS* Section 02660-3.4 do not apply.
3. Pipe runs shall not have any intermediate joints or couplings other than as shown on the Drawings.
4. All flanged pipe connections shall be ANSI B16.1 Class 125 Standard pattern.
 - a. Bolting for all submerged PVC and DIP flanges shall be Type 316

stainless steel meeting ASTM A193, grade B8M hex, including nuts and washers.

- b. Standard, non-stainless bolting may be used for exposed, non-submerged flange applications.

B. PVC PIPELINES AND FITTINGS

1. New large-diameter (12") PVC piping for the Inlet Header and the waste pump station Riser Manhole Overflow shall be Schedule 80 gray PVC with iron pipe size (IPS) outside diameters intended for use in pressure-rated water delivery systems, and meeting the following requirements.
 - a. Pipe shall be legibly and permanently marked with nominal size, material type, dimension ratio, manufacturer's name, and production date code.
 - b. Pipe shall use a glued joint system for attaching socket-type fittings as shown on the Drawings.
 - i. Glued joints shall meet all pipe and solvent manufacturer's requirements for ambient temperature, solvent cleaning, and gluing.
 - ii. Solvent cement shall conform to ASTM D2564, with preparatory use of compatible pipe cleaner solvent.
 - c. Pipe, components and fittings shall meet ANSI/NSF 61 standards – including ASTM D-1785 for pipe, ASTM D-2466 for Schedule 40 socket fittings, and ASTM D-2467 for Schedule 80 socket fittings.
 - d. Schedule 80 PVC pipe threaded adaptor *SpearsMfg* item #835-120F, or equal. Threaded end plug shall be Schedule 40 *SpearsMfg* item #450-120F
 - e. Schedule 80 PVC elbows shall be *U.S. Plastics* item #28724, or equal.
 - f. PVC Van Stone flanges shall be Schedule 80 socket-style 150# PVC flanges.
 - i. Van Stone flanges shall be *Charlotte Pipe & Foundry Co. #PVC-08530-3200 (Ferguson p/n P80VSSF12)*, or equal.
 - ii. Flange gaskets shall be full-faced, 1/8" thick, fabricated from ethylene propylene rubber. Where a mating flange has a raised face, use flat ring gasket and provide filler gasket between the OD of the raised face and flange OD to protect the PVC flange from bolting moment.
2. Inlet Header fabrication shall include drilled ports at the locations shown on the Drawings. Drilling shall be done carefully to avoid pipe stress or cracking, and all drilled openings shall be fully de-burred with cut edges smoothed.
3. Metal Straps and supports for PVC piping shall be fabricated from rolled stainless steel of the nominal dimensions and configuration shown on the Drawings.

- a. Pipe support straps shall be padded around the full circumference of PVC pipes, including contact points with metal straps and concrete pylons. Pads shall be closed-cell neoprene of the nominal thicknesses shown on the Drawings.
- b. Note that underside pads on the new Inlet Header may need to be adjusted in thickness to achieve Header levelling requirements called on the Drawings.

C. DUCTILE IRON BURIED PIPELINES AND FITTINGS

1. DIP Wall Collars – Wall collars for DIP embedded at concrete floor penetrations shall be installed by the pipe manufacturer, and include an A36 steel ring of 17.19 OD x 0.38” thickness, with full circumferential weld to the pipe barrel.
2. Flanged Adapters – A flanged adapter shall be used to connect to the existing 12” overflow outlet from the Pump Station Riser Manhole, as shown on the Drawings. Flanged adapters shall be A536 ductile iron-bodied, with factory phosphatizing and powder coating. Flanged adapters shall use hardened setscrews, and be 200 psi rated. Flanged adapter shall be *EBAA Iron E-Z Flange Series 1012*, or equal.
3. Mechanical Joint Restraints – In lieu of concrete thrust blocks per *MPWSS -02600-3.2.C.10*, mechanical thrust restraints are required on all MJ fittings and connections.
 - a. Restraints shall be ASTM A536 grade 65-45-12 ductile iron, with multiple gripping wedges incorporated into a follower gland and self-limiting twist-off setscrews. Restraints shall be rated at 350 psi for use on DIP pipe, and meet the applicable requirements of ANSI/AWWA C110/A21.10.
 - b. Restraint hardware shall be thoroughly corrosion-protected, including phosphatizing and sealing followed by heat-cured polyester powder coating after manufacture. Buried restraints shall also be polyethylene-wrapped in the field in conjunction with DIP pipe and fittings.
 - c. Restraint products shall be furnished as packaged accessories complete with appropriate restraint, gasket, lubrication, and bolting hardware.
 - d. Mechanical joint restraints shall be *EBAA Iron Megalug Series 1100*, or equal.
4. Painting of Submerged DIP Fittings – Exposed DIP Pipe and fittings (12” tee) that will be submerged inside the new basin shall be cleaned and field painted to deter corrosion.
 - a. Clean exterior iron surfaces to SSPC-SP-7: “Brush-off Blast Cleaning.”
 - b. Apply (2) coats Coal Tar Epoxy at 10 mil dry film thickness per coat; 20 mil dry film thickness total. Use *Tnemec 46H-413 Hi-Build Tneme-Tar*, or equal.

END OF SECTION

Section 02600
PIPELINES & APPURTENANCES

SECTION 02888

REMOVAL OF BIOSOLIDS

PART 1: GENERAL

1.1 Description

- A. This section covers removal of existing biosolids from the settling pond.

1.2 Quantity

- A. Elevations taken on March 23, 2022 were used to develop contours of the pond as shown on Sheet 3. The normal water surface elevation of 3,225 is maintained. The sludge depth based on visual observations on that date is estimated to be 1.25 feet over an area of 5,000 square feet. These estimates are given only as an estimate of the sludge depth and volume. Interested bidders must estimate to their satisfaction the volume of sludge and if requested will be allowed access to the pond to conduct sludge volume investigations.
- B. Hatchery personnel will release as much supernatant as possible to facilitate removal of biosolids and still remain within the limits of the discharge permit.

1.3 Submittals

- A. The following submittals for construction shall be made in accordance with the project submittal requirements described in the Supplementary Conditions.
 - 1. Experience of Biosolids Contractor
 - 2. Plan indicating methods to be used in removal and disposal of Biosolids.

PART 2: MATERIALS --- NOT USED

PART 3: EXECUTION

3.1 Removal

- A. The Contractor is able to use all reasonable methods to remove the sludge from the pond.

3.2 Storage

- A. Sludge may not be temporarily stored on the site.

3.3 Treatment

- A. Treatment of Biosolids shall meet 40 CFR 503 Regulations. In addition, the biosolids shall meet any state and local regulations, and any regulations stipulated by the receiving entity.
- B. The Contractor is able to use any reasonable treatment methods available. Methods are subject to the submittal process and all Federal, State, and Local Regulations.

3.4 Disposal

- A. The Contractor shall be responsible for all fees required by a landfill or treatment plant for disposal.

3.5 Experience Requirements

- A. The Contractor directly responsible for performing the removal, treatment, and disposal of the biosolids shall submit experience history detailing their experience on similar projects.
- B. The history shall include no less than (3) projects where removal, treatment, and disposal was performed.

PART 4: MEASUREMENT & PAYMENT

- A. Measurement: Measurement shall be by the gallon transported off site. Measurement may also be by weight. The Contractor shall submit the weight ticket (as measured by the receiving entity) from each load of biosolids disposed. These tickets shall be the basis of payment for the work. The conversion rate from pounds to gallons shall be 8.35 pounds equivalent to 1.00 gallons.
- B. Payment: Payment shall be by the unit price bid for BIOSOLIDS REMOVAL & DISPOSAL as listed in the proposal.

END OF SECTION

SECTION 02905

LANDSCAPING AND CLEANUP

1. GENERAL

A. DESCRIPTION

1. This section covers the work necessary for final grading and finish surface materials on all areas disturbed by construction. It also covers resetting perimeter fence and final site cleanup.
2. Within the Construction Zone, final landscaping shall consist of the following:
 - a. Areas located between the north wall of the settling basin and the north section of the chain-link fence as shown on the drawings are to be gravel surfaced.
 - b. All areas not designated for graveled surface to be fine graded with topsoil.

2. MATERIALS

A. GRAVELED SURFACES

1. Granular material shall be crushed base course as stipulated in Section 02235.
2. Weed Barrier: Polypropylene woven fabric, 3.2 oz Landscape Fabric Ground Cover Chemical-free by *Vevor*, or equal.

B. TOPSOIL

1. Use topsoil that is loose, friable, loamy soil, free of acid and alkali. Assure topsoil does not contain objectionable amounts of sod, hard lumps, gravel, sub-soil or other undesirable material that would form a poor seedbed.

3. EXECUTION

A. GRAVELED SURFACES

1. Fine grade backfill material to meet slope and elevation requirements. Finish grade the upper surface. Compact as indicated in *MPWSS* Section 02210.
2. Apply weed barrier and use landscape staples to anchor barrier. Fold over all

perimeter edges and joints and install stake at recommended centers.

3. Apply 4 inches of thickness of gravel. Rake and compact to uniform thickness.

B. TOPSOIL SURFACES

1. All areas shall be fine-graded and raked to a nominal surface profile of $\pm 1/2$ " in preparation for future sod placement. All stones larger than 1.5-inch diameter, sticks and other debris shall be removed. Top soil shall be 6 in minimum in total thickness with the upper 3 inches being screened topsoil

C. FINAL GRADING AND CLEANUP

1. All exposed fill surfaces shall be fine-graded to ± 0.5 inches as measured across a five-foot span, and shall be suitable for future sodding. All new slopes and topsoil surfaces shall be hand raked to provide uniform appearance.
2. The Contractor shall maintain a clean and non-hazardous work site to the satisfaction of the Owners. Montana FWP representatives, and Hatchery staff are not trained in construction safety, and work site safety is the sole responsibility of the Contractor, including protection of his/her personnel, the public, area residents and property, and all other property.
3. The Contractor shall be responsible for final clean up at the end of the project to a level satisfactory to the Owner. The Contractor shall promptly clean up and properly dispose of all debris, litter, and leftover materials following completion of the Work. All 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 adjacent grade and material. or other re-surfacing and leave the site in conditions meeting the Owner's approval.

D. PERIMETER CHAIN LINK FENCE

1. Fencing and post removal and storage shall be accomplished without damage to the components. All reset posts shall be in concrete. Any damaged portions of fencing or posts shall be replaced new components. Resetting of the fence shall be performed to a level satisfactory to the Owner.

END OF SECTION

SECTION 03300

CONCRETE

1. GENERAL

A. DESCRIPTION

1. This section covers new cast-in-place concrete and reinforcing steel for structural and miscellaneous concrete for the settling basin.

2. MATERIALS

A. GENERAL

1. The following referenced specifications shall apply to all concrete work and reinforcing steel, unless specifically modified below:

Montana Public Works Standard Specifications (MPWSS) – 6th Edition (April 2010)

Section 03210 – Reinforcing Steel
Section 03310 – Structural Concrete

3. MODIFICATIONS

A. GENERAL

1. Measurement and Payment Section does not apply.
2. All reinforcing steel shall be Grade 60.
3. Waterstops shall be as follows:
 - a. Base slab construction joint: PVC ribbed waterstop, 4 in, style 781 by *Greenstreak Group* or equal.
 - b. Wall base to slab and vertical wall construction joint:
 1. PVC ribbed waterstop, 4 in, style 781 by *Greenstreak Group* or equal OR
 2. Hydrophilic rubber waterstop, style CJ-0725-ADK by *Sika* or equal.
4. Sealant for concrete joints: Polyurethane sealants shall be 2-component, premium-grade, polyurethane-based, elastomeric sealant, meeting ASTM C-920 and Federal Specification TT-S-00227E. Non-sag sealant shall be Sikaflex-2C NS, or equal.

B. CONCRETE CLASS AND PERFORMANCE REQUIREMENTS

1. Concrete class for all work shall be M-4000. Portland cement shall meet ASTM C 150 Type II. Portland cement content OR a combination of Portland cement and Fly Ash shall be a minimum of 540 lbs/cubic yard.
2. Fly Ash if used shall conform to ASTM C18, Type C or Type F. Fly Ash if used shall not to exceed 20 percent of cement by weight. The use of ground granulated blast-furnace slag in combination with cement shall not be permitted.
3. Concrete shall be air entrained to meet the Severe Exposure category as defined by *MPWSS Section 33110*.
4. Calcium Chloride shall not be permitted.

C. FORM MATERIALS

1. The Contractor shall construct framework for exposed concrete surfaces with plywood, metal, metal- framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection.
2. The Contractor shall use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
3. Formwork shall be designed by Contractor in accordance with "Recommended Practice for Concrete Formwork, ACI 347."
4. Formwork shall conform to shape, form, line, grade required, maintain rigid to prevent deformation under load. Forms are to be tight to prevent leakage.
5. The Contractor shall clean and oil all wood forms previous to pouring concrete and before reinforcing steel is in forms.
6. The Contractor shall remove all debris from bottom of forms.
7. The Contractor shall chamfer all edges and corners with 3/4-inch chamfer.
8. The Contractor shall construct forms so concrete surfaces will conform to the table, "Tolerances for Formed Surfaces," ACI 301 "Specification for Structural Concrete for Buildings."

9. Construction joints shall be made and located as detailed on the drawings. If additional construction joints are required, the joints shall be approved by the Engineer.
10. The Contractor shall use an approved design of form ties, with adjustable length, free of devices that will leave hole or depression larger than 7/8" in diameter back of exposed concrete surface, such that when forms are removed, leave no metal within 1" of finished surface. Use combination spreader tie rods. Do not use wood spreaders

D. PUMPED CONCRETE

1. At the Contractor's option, concrete pumping may be used to reach portions of the work site. Where pumped concrete is used, mix formulation shall include plasticizer or other admixtures to enhance pumping characteristics, subject to the requirements for Submittal review.

E. CONCRETE FINISHES

1. Concrete Walls – Ordinary Formed Finish: An ordinary finish is defined as the concrete surface left by the removal of the forms after all holes caused by the form ties, trapped air and all other defects are repaired. The finished surface shall be true and even, free from all stone pockets, depressions, or projections beyond the surface.
 - a. Patching and Cleaning: The Contractor shall inspect all concrete surfaces immediately after removal of forms. Cut out voids over 1/2-inch in any dimension, gravel pockets, etc., back to solid surface but at least 1-inch deep forming a key for cement mortar fill.
 - b. The Contractor shall prepare and apply patching mortar in accordance with ACI 301. If concrete being patched has been in place more than 7 days, bond the patching mortar with an approved epoxy. Damp cure patch for 7 days.
 - c. All work shall be performed to the satisfaction of the Engineer, and the finished surface shall be of uniform texture and color. All surfaces that cannot be repaired to the satisfaction of the Engineer shall be given a rubbed finish.
2. Concrete Base Slab - The base slab surface shall be screeded and given an initial float finish followed by additional floating and troweling where required. Troweling shall be performed after the second floating when the surface has hardened sufficient to prevent an excess of fines being drawn to the surface. Troweling shall produce a dense, smooth, and uniform surface.

F. CONCRETE COMPRESSION TESTING

1. Provide for test purposes, sets of 3 cylinders each taken for each 50 cubic yards or portion placed each day. Test one cylinder per set at 7 days, the others at 28 days. Make and cure cylinders per ASTM C31. Concrete placements less than 10 cubic yards do not require compression testing. For the entire project, a minimum of 5 test sets shall be obtained.

G. CONCRETE TEST REPORTING

1. The testing laboratory employed by the Contractor shall perform all onsite acceptance testing during placement of the concrete. All test results, obtained either in the laboratory or onsite shall be reported to the Engineer in digital form within 48 hours of the completion of the tests.

END OF SECTION 03300

SECTION 05500

METAL WORK AND GRATING

PART 1: GENERAL

1.1 Description

- A. This section covers the work necessary to furnish and install fabricated metal work and grating as shown on the drawings.

1.2 Submittals

- A. The following submittals for construction shall be made in accordance with the project submittal requirements as described in the Supplementary Conditions.
 - 1. Product Data: Furnish the following:
 - c. Product Data and Installation Instructions: Furnish for all materials and products used, including miscellaneous fabricated metals.
 - 2. Shop Drawings: Submit for all field-assembled metal work.

PART 2: MATERIALS

2.1 Grating

- A. Grating shall be Grip Strut Safety Grating, 8 diamond plank by 2 inch edge depth. Furnish in 12 foot lengths, 15 required. Material shall be 12 guage mill galvanized steel with standard serrated surface. Furnish mill-galvanized diamond washers for connection to concrete.

2.2 Aluminum Guide Slots

- A. Standard channel 3” x 1.48 lbs/ft with welded aluminum concrete anchor as indicated on the drawings. Provide standard electrolytic protective coating for surfaces with permanent contact with cement concrete.

2.3 General

- A. Unless otherwise indicated, materials shall meet the latest issue of ASTM Specifications as follows:

<u>Item</u>	<u>ASTM Specification</u>
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Stainless Steel:

Bars & Shapes	A276, Type 304
Steelplate, Sheet & Strip	A167, Type 304
Bolts	A193, Type 304, B8MN, B8M2, or B8M3
Nuts	A194, Type 304, B8MN, B8M2, or B8M3
Aluminum:	
Structural Shapes & Plates	Alloy 6061-T6, referenced specifications & ASTM sections found in Aluminum Association current Construction Manual Series
Stainless	A193, Type 304
Galvanized Steel Bolts and Nuts	A153, Zinc Coating for A307 or A36
Connection Bolts for Aluminum	A2024-T4; or Use Appropriate Stainless Steel

All products of one manufacturer in order to achieve standardization for appearance, maintenance, and replacement.

2.4 Anchoring System for Concrete

- A. Expansion Anchors:
1. Self-drilling anchors, snap-off type or flush type.
 2. Provide anchors in Type 316 Stainless Steel.
Expansion anchors shall not be used for submerged applications.
 3. Nondrilling Anchors: Flush type for use with bolt or stud type with projecting threaded stud.
 4. Provide in dry areas only where future corrosion is not a problem unless expansion anchors are 316 stainless steel.
 5. In wet or damp areas, provide wedge anchors as specified, or in submerged conditions, adhesive anchors as specified.
 6. Manufacturer:
 - a. ITT Phillips Drill Div., Michigan City, IN.
 - b. Hilti, Inc., Tulsa, OK, Hilti HDI Drop-In Anchors.
- B. Adhesive Anchor Systems:
1. Provide for anchoring metal components at or below a point 1 foot 6 inches above maximum water surface elevation in water-holding structures, or buried in earth conditions. Do not use where fire or elevated temperatures can occur.
 2. Two-component, insensitive to moisture, designed to be installed in adverse freeze/thaw environments.

3. Cure Temperature, Pot Life, and Workability: Compatible for intended use and anticipated environmental conditions.
4. Container Markings: Include manufacturer's name, product name, batch number, product expiration date ANSI hazard classification, and appropriate ANSI handling precautions.
5. Mixed Adhesive: Manufacturer to submit current test data indicating cured adhesive meets or exceeds design loads required.
6. Storage of Adhesive Products:
 - a. Store components on pallets or shelving in a covered storage area with locking door.
 - b. Control temperature to within 41E to 77E F and dispose of product if shelf life has expired.
 - c. If stored at temperatures above manufacturer's recommended maximum, test components prior to use to determine if they still meet specified requirements.
7. Anchor Rods:
 - a. Threaded Rods: Sized for design loads required and adhesive system used, by adhesive manufacturer:
 - 1) ASTM A193, Type 316, stainless steel.
8. Manufacturers:
 - a. HIT Doweling Anchor System (HIT C-100), by Hilti, Inc., 5400 South 122 East Avenue, Tulsa, OK 74146; (918) 252-6000.
 - b. Or equal.

2.5 Bolts and Fasteners

- A. Type 316 stainless steel.

PART 3: EXECUTION

- A. Aluminum:
 1. Fabricate as shown, and in accordance with the Aluminum Association Standards and manufacturer's recommendations as approved.
 2. Grind smooth sheared edges exposed in finished work.

3.3 Installation of Fabricated Metal Work

- A. General:
 1. Install in accordance with shop drawings, the Drawings, and these Specifications.

3.4 Anchor Bolts

- A. Accurately locate and hold anchor bolts in place with templates at the time concrete is placed.

3.5 Concrete Anchors

- A. Do not begin installation until concrete or masonry receiving anchors have attained design strength.
- B. Do not install an anchor closer than six times its diameter to either an edge of concrete or masonry, or to another anchor, unless specifically shown otherwise.
- C. Install in accordance with manufacturer's specific quality control submittal instructions specified hereinbefore. Use manufacturer's recommended drills and equipment. Hole diameters are critical to installation, use only drills recommended by anchor manufacturer. Follow manufacturer's safe handling instructions.
- D. Follow specific manufacturer safe handling practices when handling and/or installing all concrete anchors.

3.7 Electrolytic Protection

- A. Aluminum:
 - 1. Where in contact with dissimilar metals, or embedded in masonry or concrete, protect surfaces with recommended coating.
 - 2. Allow paint to dry before installation of the material.
 - 3. Protect painted surfaces during installation.
 - 4. Should coating become marred, prepare and touch up per paint manufacturer's written instructions.

END OF SECTION