HATFIELD MCCOY REGIONAL RECREATION AUTHORITY
MCDOWELL COUNTY, WV
PROPOSED
ASHLAND RESORT TOURISM PARK DEVELOPMENT PROJECT
REVISED - ADDENDUM #2

November 13, 2020
Thrasher Project #030-10061

TO WHOM IT MAY CONCERN:

A MANDATORY Pre-Bid Conference was held on Thursday November 5, 2020 on the above-referenced project. The following are clarifications and responses to questions posed by contractors for the above reference project.

CLARIFICATIONS:

1. The Opinion of Probable Cost for the Ashland Resort Tourism Development Project is approximately $1,700,000.

2. The AML program follows the "Buy American Act" for all of its projects. All material supplied for this project subject to this Act will need to meet the requirements of this Act. Document attached added to AML Requirements section.

3. Stream Crossing #1 details have been revised. Stream crossing #1 abutments and foundation have been included in the Drawings. See sheets 34, 60 and 61 of the Drawings.

4. The following specifications have been updated or added:
   Section 013000 – Administrative requirements
   Section 260500 – Basic Electrical Materials and Methods
   Section 333123 – Sanitary Sewerage Force Main Piping
   Section 333216 – Utility Wastewater Pumping Stations
   Section 462113.01 – Bar Screen Debris Basket.

5. Liquid level indicator has been removed from the Water Tank details. See sheets 43 & 46 of the drawings.

QUESTIONS AND RESPONSES:

QUESTION

1. Does Bid Item #9 Total Earthwork – 2,200-CY include excavation for the Roadway, Stream Bank Stabilization, Sewer Plant Site, Stream Crossing #1, and the Water Tank Foundation?

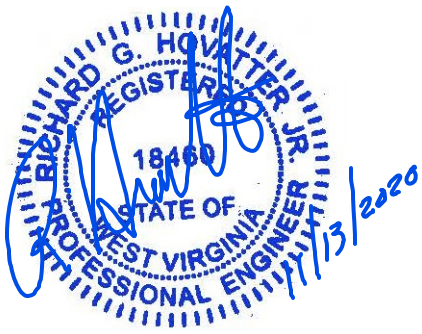
RESPONSE

The earthwork listed includes the excavation necessary to get the road and parking areas to subgrade as well as the excavation necessary around the bridge. All other excavation for footers, foundations, gabion baskets, stream banks, etc. will be incidental to those bid items.

If you have any questions or comments, please feel free to contact me at your earliest convenience. As a reminder, bids will be received until **1:00 p.m. Tuesday November 17, 2020** at office of The Thrasher Group, Inc. located at **160 Association Drive,** Charleston, WV. Good luck to everyone and thank you for your interest in the project.

Sincerely,
THE THRASHER GROUP, INC.

Richard Hovatter, PE
Project Manager



HATFIELD MCCOY REGIONAL RECREATION AUTHORITY
MCDOWELL COUNTY, WEST VIRGINIA
FOR THE

ASHLAND RESORT TOURISM PARK DEVELOPMENT PROJECT

- I N D E X –

AML SPECIFIC REQUIREMENTS

Article V – Special Conditions

WV Affirmative Action Certification

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Instructions for Completing the AML Contractor Form OMB #1029-0119

AML Contractor Information Form

Daily Activity Summary

Certifications Regarding Debarment

Electronic Media Requirements

Final Project Completion

Mobilization and Demobilization

Project Meetings

Pre-Construction Checklist – Notice to Proceed Requirements

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Bar Screen Debris Basket	462113.01

Buy American Act Requirements for

WVDEP AML Waterline and PILOT Projects

1.

The "Buy American Act" (41 U.S.C. 8301 et seq.) provides that the government give preference to domestic construction material.

Components, used in this clause, means those articles, materials and supplies incorporated directly into construction materials.

Construction material, as used in this clause, means articles, materials or supplies brought to the construction site for incorporation into the building or work. Construction material also includes as an item brought to the site pre-assembled from articles, materials or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm and audio evacuation systems, which are discrete systems incorporated into a public building or work and which are produced as a complete system, shall be evaluated as a single and distinct construction material regardless of when or how the individual parts or components of such systems are delivered to the construction site.

Domestic construction material, as used in this clause, means (a) an unmanufactured construction material mined or produced in the U.S., or (b) a construction material manufactured in the U.S., if the cost of its components mined, produced or manufactured in the U.S. exceeds fifty percent (50%) of the cost of all its components. Components of foreign origin of the same class or kind as the construction materials determined to be unavailable pursuant to §12.810(a)(3) of 43 CFR part 12, subpart E, shall be treated as domestic.

2.

The contractor agrees that only domestic construction material will be used by the contractor, subcontractor(s) and supplier(s) in the performance of the contract, except for foreign construction material, if any, listed in the contract.

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions, Division 01, and all related Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Coordination and Project conditions.

B. Preconstruction meeting.

C. Site mobilization meeting.

D. Progress meetings.

E. Closeout meeting.

F. Alteration procedures.

1.3 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various Sections of Contract Documents to ensure efficient and orderly sequence of installation of interdependent construction elements.

B. Verify that utility requirements and characteristics of operating equipment are compatible with existing utilities. Conduct pot holing or other utility locates as required to coordinate Work and avoid conflict with existing utilities.

C. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.

D. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.

E. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion.

1.4 PRECONSTRUCTION MEETING

A. Engineer will schedule and preside over meeting after Notice of Award.

B. Attendance Required: Engineer, Owner, Resident Project Representative, appropriate governmental agency representatives, utility representatives, DOH representatives, major Subcontractors, and Contractor.

C. Minimum Agenda

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of products, Schedule of Values, and Progress Schedule.
5. Designation of personnel representing parties in Contract and Engineer.
6. Communication procedures.
7. Procedures and processing of requests for interpretations, field decisions, Field Orders, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
8. Review of proposed Work Schedule.
9. Critical Work sequencing.
10. Safety.

D. Engineer shall record minutes and distribute copies to participants within two (2) days after meeting, with two (2) copies each to Engineer, Engineer's Resident Project Representative (RPR), Owner, Contractor, and those affected by decisions made.

1.5 SITE MOBILIZATION MEETING

A. Engineer will schedule and preside over meeting at Project Site prior to Contractor occupancy.

B. Attendance Required: Engineer, Engineer's RPR, Owner, Contractor, Contractor's superintendent, special consultants, and major Subcontractors.

C. Minimum Agenda

1. Use of premises by Owner and Contractor.
2. Owner's requirements.
3. Construction facilities and controls.
4. Temporary utilities.
5. Survey and layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Procedures for testing.
9. Procedures for maintaining record documents.
10. Requirements for startup of equipment.
11. Inspection and acceptance of equipment put into service during construction period.

D. Engineer shall record minutes and distribute copies to participants within two (2) days after meeting, with two (2) copies each to Engineer, Owner, and those affected by decisions made.

1.6 PROGRESS MEETINGS

A. Engineer shall schedule and administer meetings throughout progress of the Work at maximum monthly intervals.

B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.

C. Attendance Required: Owner, Engineer, Engineer's RPR, Contractor, major Subcontractors, Suppliers, and others as appropriate to agenda topics for each meeting.

D. Minimum Agenda

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal schedule and status of submittals.
6. Review of off-Site fabrication and delivery schedules.
7. Maintenance of Progress Schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding Work period.
10. Coordination of projected progress.
11. Maintenance of quality and Work standards.
12. Effect of proposed changes on Progress Schedule and coordination.
13. Other business relating to Work.

E. Engineer shall record minutes and distribute copies to participants within two (2) days after meeting with two (2) copies each to Engineer, Owner, and those affected by decisions made.

1.7 CLOSEOUT MEETING

A. Engineer shall schedule Project closeout meeting prior to startup with sufficient time to prepare for requesting Substantial Completion. Engineer shall preside over meeting and be responsible for minutes.

B. Attendance Required: Owner, Engineer, Engineer's RPR, Contractor, major Subcontractors, Suppliers, and others appropriate to agenda.

C. Engineer shall record minutes and distribute copies to participants within two (2) days after meeting, with two (2) copies each to Engineer, Owner, and those affected by decisions made.

D. Minimum Agenda

1. Start-up of facilities and systems.
2. Operations and maintenance manuals.
3. Testing, adjusting, and balancing.
4. System demonstration and observation.
5. Operation and maintenance instructions for Owner's personnel.

6. Contractor's inspection of Work.
7. Engineer preparation of a "punch list".
8. Procedure to request Engineer inspection to determine date of Substantial Completion.
9. Completion time for correcting deficiencies.
10. Inspections by authorities having jurisdiction.
11. Certificate of Occupancy and transfer of insurance responsibilities.
12. Partial release of retainage.
13. Final cleaning.
14. Preparation for final inspection.
15. Closeout Submittals:

    a. Project record documents.
    b. Operating and maintenance documents.
    c. Operating and maintenance materials.
    d. Affidavits.
    e. Taxes.

16. Final Application for Payment.
17. Contractor's demobilization of Site.
18. Maintenance.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 ALTERATION PROCEDURES

A. Materials: As specified in product Sections; match existing products with new products for patching and extending Work.

B. Employ skilled and experienced installer to perform alteration and renovation Work.

C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion. Comply with Section 017300 – Execution.

D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

E. Remove debris and abandoned items from area and from concealed spaces.

F. Prepare surface and remove surface finishes to permit installation of new Work and finishes.

G. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.

H. Remove, cut, and patch Work to minimize damage and to permit restoring products and finishes to original or specified condition.

I. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

J. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing other imperfections.

K. Finish surfaces as specified in individual product Sections.

END OF SECTION 013000

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SECTION 260500 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01, and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Supporting devices for electrical components.
2. Electrical identification.
3. Cutting and patching for electrical construction.
4. Touchup painting.

1.3 SUBMITTALS

A. Product Data: For electrical-metering equipment.

B. Shop Drawings: Dimensioned plans and sections or elevation layouts of electricity-metering equipment.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

1.5 COORDINATION

A. Coordinate chases, slots, inserts, sleeves, and openings with general construction work and arrange in building structure during progress of construction to facilitate the electrical installations that follow.

1. Set inserts and sleeves in poured-in-place concrete, masonry work, and other structural components as they are constructed.

B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning before closing in the building.

C. Coordinate electrical service connections to components furnished by utility companies.

1. Coordinate installation and connection of exterior underground and overhead utilities and services, including provision for electricity-metering components.
2. Comply with requirements of authorities having jurisdiction and of utility company providing electrical power and other services.

D. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces.

E. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.

F. Where electrical identification markings and devices will be concealed by acoustical ceilings and similar finishes, coordinate installation of these items before ceiling installation.

1.6 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services:

1. Notify Engineer at least seven days in advance of proposed utility interruptions. Identify extent and duration of utility interruptions.
2. Indicate method of providing temporary utilities.
3. Do not proceed with utility interruptions without Engineer's written permission.

PART 2 - PRODUCTS

2.1 SUPPORTING DEVICES

A. Material: Type 304 or 316 Stainless Steel for all supporting devices.

B. Slotted-Steel Channel Supports: Flange edges turned toward web, and 9/16-inch-diameter slotted holes at a maximum of 2 inches o.c., in webs.

1. Channel Thickness: Selected to suit structural loading.
2. Fittings and Accessories: Products of the same manufacturer as channel supports.

C. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.

D. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for nonarmored electrical cables in riser conduits. Plugs have number and size of conductor gripping holes as required to suit individual risers. Body constructed of malleable-iron casting with hot-dip galvanized finish.

E. Expansion Anchors: Wedge or sleeve Type 304 or 316 Stainless Steel.

F. Toggle Bolts: Type 304 or 316 Stainless Steel, springhead type.

G. Powder-Driven Threaded Studs: Type 304 or 316 Stainless Steel, heat-treated.

2.2 ELECTRICAL IDENTIFICATION

A. Identification Devices: A single type of identification product for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.

B. Raceway and Cable Labels: Comply with ANSI A13.1, Table 3, for minimum size of letters for legend and minimum length of color field for each raceway and cable size.

1. Type: Preprinted, flexible, self-adhesive, vinyl. Legend is overlaminated with a clear, weather- and chemical-resistant coating.
2. Color: Black letters on orange background.
3. Legend: Indicates voltage.

C. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape, not less than 1 inch wide by 3 mils thick.

D. Underground Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape with the following features:

1. Not less than 6 inches wide by 4 mils thick.
2. Compounded for permanent direct-burial service.
3. Embedded continuous metallic strip or core.
4. Printed legend that indicates type of underground line.

E. Tape Markers for Wire: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.

F. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.

G. Engraved-Plastic Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched or drilled for mechanical fasteners 1/16-inch minimum thickness for signs up to 20 sq. in. and 1/8-inch minimum thickness for larger sizes. Engraved legend in black letters on white background.

H. Interior Warning and Caution Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145. Preprinted, aluminum, baked-enamel-finish signs, punched or drilled for mechanical fasteners, with colors, legend, and size appropriate to the application.

I. Exterior Warning and Caution Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch, galvanized-steel backing, with colors, legend, and size appropriate to the application. 1/4-inch grommets in corners for mounting.

J. Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.3 TOUCHUP PAINT

A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.

B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

3.1 ELECTRICAL EQUIPMENT INSTALLATION

A. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.

B. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.

3.2 ELECTRICAL SUPPORTING DEVICE APPLICATION

A. Damp Locations and Outdoors: Type 304 or 316 Stainless Steel, U-channel system components.

B. Dry Locations: Steel materials.

C. Support Clamps for PVC Raceways: Click-type clamp system.

D. Selection of Supports: Comply with manufacturer's written instructions.

E. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four; minimum of 200-lb design load.

3.3 SUPPORT INSTALLATION

A. Install support devices to securely and permanently fasten and support electrical components.

B. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assemblies and for securing hanger rods and conduits.

C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.

D. Size supports for multiple raceway installations so capacity can be increased by a 25 percent minimum in the future.

E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.

F. Install 1/4-inch-diameter or larger threaded stainless steel hanger rods, unless otherwise indicated.

G. Spring-steel fasteners specifically designed for supporting single conduits or tubing may be used instead of malleable-iron hangers for 1-1/2-inch and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings and for fastening raceways to slotted channel and angle supports.

H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.

I. Simultaneously install vertical conductor supports with conductors.

J. Separately support cast boxes that are threaded to raceways and used for fixture support. Support sheet-metal boxes directly from the building structure or by bar hangers. If bar hangers are used, attach bar to raceways on opposite sides of the box and support the raceway with an approved fastener not more than 24 inches from the box.

K. Install metal channel racks for mounting cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices unless components are mounted directly to structural elements of adequate strength.

L. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.

M. Securely fasten electrical items and their supports to the building structure, unless otherwise indicated. Perform fastening according to the following unless other fastening methods are indicated:

1. Wood: Fasten with wood screws or screw-type nails.
2. Masonry: Toggle bolts on hollow masonry units and expansion bolts on solid masonry units.
3. New Concrete: Concrete inserts with machine screws and bolts.
4. Existing Concrete: Expansion bolts.
5. Instead of expansion bolts, threaded studs driven by a powder charge and provided with lock washers may be used in existing concrete.

6. Steel: Welded threaded studs or spring-tension clamps on steel.

   a. Field Welding: Comply with AWS D1.1.

7. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or other items.
8. Light Steel: Sheet-metal screws.
9. Fasteners: Select so the load applied to each fastener does not exceed 25 percent of its proof-test load.

3.4 IDENTIFICATION MATERIALS AND DEVICES

A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.

B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.

C. Self-Adhesive Identification Products: Clean surfaces before applying.

D. Identify raceways and cables with color banding as follows:

1. Bands: Pretensioned, snap-around, colored plastic sleeves or colored adhesive marking tape. Make each color band 2 inches wide, completely encircling conduit, and place adjacent bands of two-color markings in contact, side by side.
2. Band Locations: At changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

E. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box. Color-coding may be used for voltage and phase identification.

F. Install continuous underground plastic markers during trench backfilling, for exterior underground power, control, signal, and communication lines located directly above power and communication lines. Locate 12 inches below finished grade. If width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches, use a single line marker. If width of common trench or concrete envelope exceeds 16 inches (400 mm), use multiple line markers spaced 16 inches (400 mm) on center.

G. Color-code 208/120-V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:

1. Phase A: Black.
2. Phase B: Red.
3. Phase C: Blue.
4. Neutral: White.
5. Ground: Green.

H. Color-code 480/277-V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:

1. Phase A: Brown.
2. Phase B: Orange.
3. Phase C: Yellow.
4. Neutral: White with a colored stripe or gray.
5. Ground: Green.

I. Install warning, caution, and instruction signs where required to comply with 29 CFR, Chapter XVII, Part 1910.145, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.

J. Install engraved-laminated emergency-operating signs with white letters on red background with minimum 3/8-inch-high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

3.5 CUTTING AND PATCHING

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.

B. Repair and refinish disturbed finish materials and other surfaces to match adjacent undisturbed surfaces. Install new fireproofing where existing firestopping has been disturbed. Repair and refinish materials and other surfaces by skilled mechanics of trades involved.

3.6 FIELD QUALITY CONTROL

A. Inspect installed components for damage and faulty work, including the following:

1. Supporting devices for electrical components.
2. Electrical identification.
3. Electrical demolition.
4. Cutting and patching for electrical construction.
5. Touchup painting.

3.7 REFINISHING AND TOUCHUP PAINTING

A. Refinish and touch up paint.

1. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.
2. Follow paint manufacturer’s written instructions for surface preparation and for timing and application of successive coats.

3. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
4. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.8 CLEANING AND PROTECTION

A. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.

B. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION 260500

SECTION 333123 – SANITARY SEWERAGE FORCE MAIN PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Force mains.
2. Bedding and cover materials.

B. Related Requirements:

1. Section 033000 - Cast-in-Place Concrete: Concrete material requirements.
2. Section 310516 - Aggregates for Earthwork: Aggregate for pipe bedding and cover.
3. Section 312316.13 – Trenching.
4. Section 330526 – Utility Identification.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. American Water Works Association:

1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C110 - Ductile-Iron and Gray-Iron Fittings.
3. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
4. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast.
5. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution.

C. ASTM International:

1. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3).
2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3).
3. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
4. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
5. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

6. ASTM D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
7. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

1.4 PREINSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Requirements for preinstallation meeting.

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information indicating pipe material used, pipe accessories, valves, restrained joint details and materials.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer Instructions: Submit special procedures required to install specified products.

E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.6 CLOSEOUT SUBMITTALS

A. Section 017700 - Closeout Procedures: Requirements for submittals.

B. Project Record Documents: Record invert elevations and actual locations of pipe runs and connections.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.7 QUALITY ASSURANCE

A. Perform Work according to manufacturer’s standards.

B. Maintain a copy of each standard affecting Work of this Section on Site.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage. The materials shall be inspected by the Engineer or Engineer’s Representative prior to installation.

C. Storage:

1. Store materials according to manufacturer instructions.
2. Do not place materials on private property without written permission of property owner.
3. Do not stack pipe higher than recommended by pipe manufacturer.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Store gaskets for mechanical and push-on joints in cool and dry location, out of direct sunlight, and not in contact with petroleum products.
3. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 FORCE MAIN

A. Plastic Pipe (HDPE):

1. Material: PE4710
2. Comply with ASTM D3350 DR9 (200 PSI)

    a. Inside Nominal Diameter: As shown on Drawings.
    b. 1-1/4 inch through 3 inch IPS AWWA C901 and ASTM D3035.

3. End Connections: ASTM D3261 injected molded fittings with end suitable for butt fusion. Socket fusion, saddle fusion and electrofusion jointing techniques and flange joints may be used instead of butt fusion when approved by Engineer.
4. Fittings:

a. HDPE fittings
b. Ductile Iron fittings in accordance with the following:

1) Material: Ductile Iron, minimum pressure class of 350 or greater.
2) Comply with AWWA C153.
3) Lining: Cement-mortar lined according to AWWA C104.
4) All underground fittings shall be **Domestic Made Only** mechanical joint ductile iron unless otherwise noted.
5) Joints: Rubber gasket joint devices complying with AWWA C111.

5. Joints:

a. Butt fusion joints.
b. Anchors: provide concrete anchors at pipe material transitions, fittings, and as shown on the drawings.

2.2 MATERIALS

A. Bedding and Cover: As specified in Section 310516 – Aggregates for Earthwork.

2.3 MIXES

A. Concrete: As specified in Section 033000 - Cast-in-Place Concrete.

2.4 ACCESSORIES

A. Pipe Markers: As specified in Section 330526 – Utility Identification.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 – Execution: Requirements for installation examination.

B. Verify that trench cut and/or excavation base is ready to receive Work.

C. Verify that excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Section 017300 – Execution: Requirements for installation examination.

B. Correct over-excavation with granular fill and compact as required until acceptable conditions are met.

C. Remove large stones or other hard matter capable of damaging pipe or of impeding consistent backfilling or compaction.

D. Protect and support existing sewer lines, utilities, and appurtenances.

E. Utilities:

1. Maintain profiles of utilities.
2. Coordinate with other utilities to eliminate interference.
3. Notify Engineer if crossing conflicts occur.

3.3 INSTALLATION

A. Bedding:

1. Excavate pipe trench as specified in Section 312316.13 - Trenching.
2. Place bedding material at trench bottom.
3. Level materials in continuous layers not exceeding 6 inches in depth.
4. Maintain optimum moisture content of bedding material to attain required compaction density.

B. Piping:

1. Install pipe, fittings, and accessories as indicated on Drawings.
2. Route piping in straight line.
3. Install bedding at sides and over top of pipe to minimum compacted thickness of 12 inches.
4. Backfilling and Compacting:

    a. As specified in Section 312316.13 - Trenching.
    b. Do not displace or damage pipe while compacting.

5. Connect to package wastewater treatment plant at premanufactured inlet elevation with all necessary appurtenances to create an operable connection between forcemain and package wastewater treatment plant.
6. Pipe Markers: As specified in Section 330526 – Utility Identification.

C. Thrust Restraints:

1. Provide pressure pipeline with restrained joints or concrete thrust blocking at pumps, bends, tees, and changes in direction.

D. Cradles and Encasements: Provide concrete cradles and encasements for pipelines where indicated on Drawings and as specified in Section 033000 - Cast-in-Place Concrete.

3.4 FIELD QUALITY CONTROL

A. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

B. Inspections: Request inspection by Engineer prior to and immediately after placing bedding.

C. Pressure Testing:

1. Pressure:

a. Not less than 250 psig.
b. Maintain pressure within plus or minus 5 psi of test pressure.

2. Time: Conduct test for minimum of two hours.
3. Initial Procedure:

a. Install corporation stops at high points.
b. Slowly fill section to be tested with water, expelling air from piping at high points from air vents and by opening corporation stops.
c. Close air vents and corporation stops after air is expelled.
d. Raise pressure to specified test pressure.

4. Testing:

a. Observe joints, fittings, and valves under test.
b. Remove and replace cracked pipes, joints, fittings, and valves showing visible leakage.
c. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate.

5. Leakage:

a. Leakage is defined as quantity of water supplied to piping necessary to maintain test pressure during period of test.
b. Maximum Allowable Leakage:

1) L = SD x sqrt(P)/C.
2) L = testing allowance, gph.
3) S = length of pipe tested, feet.
4) D = nominal diameter of pipe, inches.
5) P = average test pressure during hydrostatic test, psig.
6) C = 148,000.

c. If pipe under test contains sections of various diameters, calculate allowable leakage from sum of computed leakage for each size.
d. If test of pipe indicates leakage greater than allowed, locate source of leakage, make corrections, and retest until leakage is within allowable limits.
e. Correct visible leaks regardless of quantity of leakage.

3.5 PROTECTION

A. Section 017300 – Execution: Requirements for protecting finished Work.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 333123

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SECTION 333216 - UTILITY WASTEWATER PUMPING STATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sewage pumping units for the Ashland Resort Lift Station. The Ashland Resort Lift Station shall consist of two (2) sewage pumping units. The pump manufacturer shall provide pumping units, level control system, electrical control panels, lift chains, guide rails, and all necessary appurtenances for a complete operable system.

B. Related Requirements:

1. Section 033000 - Cast-in-Place Concrete: Requirements for anti-flotation collar.
2. Section 260500 - Basic Electrical Materials and Methods
3. Section 310516 - Aggregates for Earthwork: Basin bedding, ballast, and backfill materials.
4. Section 312316 - Excavation: Excavation requirements.
5. Section 312000 - Earth Moving.
6. Section 330513 - Manholes and Structures
7. Section 333126 – Sanitary Pressure Sewer Piping: Connection to low-pressure sewerage system.

1.2 REFERENCE STANDARDS

A. American Bearing Manufacturers Association:

1. ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.

B. ASTM International:

1. ASTM A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

C. National Electrical Manufacturers Association:

1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.3 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with Union Public Service District, WVDOH, and other utilities within construction area.

1.4 SUBMITTALS

A. Submittals shall be submitted based on the requirements in Section 013300 - Submittal Procedures. Submittals shall include the following:

1. A copy of this specification section and the referencing section and all other applicable specification sections governing the pump, drive and driver, supports and specified appurtenances. The specification copies shall be complete with addendum updates included, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements. Check marks shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated and, therefore requested by the Contractor, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications. The submittal shall be accompanied by a detailed, written justification for each deviation. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
2. Submit pump type and capacity.
3. Submit certified pump curves showing pump performance characteristics with pump and system operating point plotted, including NPSH curve when applicable.
4. Submit electrical characteristics and connection requirements.
5. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
6. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
7. Manufacturer Reports: Certify that pumps have been installed according to manufacturer's instructions.
8. Qualifications Statement: Submit qualifications for manufacturer.

B. Product Data: Submit manufacturer information concerning materials of construction and fabrication.

1. Include AIS Certification for iron and steel products.

C. Shop Drawings: Submit detailed dimensions for materials and equipment, including pump basins, pumps, piping, controls including wiring schematics, and accessories.

D. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures, anchoring, and layout.

1.5 CLOSEOUT SUBMITTALS

A. Section 017700 - Closeout Procedures: Requirements for closeout submittals.

B. Project Record Documents: Record actual locations and final orientation of equipment and accessories.

1.6 QUALITY ASSURANCE

A. Perform Work according to specified standards.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.

B. To assure unit responsibility of the pumping station equipment, the sewage grinder pumping units, electrical control panel and all ancillary equipment shall be provided by the sewage grinder pumping unit manufacturer. The Contractor shall assume full responsibility for the satisfactory operation of the entire system as specified.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Handling:

1. Handle materials to prevent damage to interior or exterior surfaces.
2. Prepare pumps and accessories for shipment in such a manner as to prevent entry of foreign matter into product body.

D. Storage:

1. Store materials according to manufacturer instructions.
2. Store products in areas protected from weather, moisture, or possible damage.
3. Do not store products directly on ground.

E. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.9 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 CENTRIFUGAL GRINDER PUMPS

A. Grinder pump assembly shall include a duplex, semi-positive displacement, 5.4 HP, 3490 rpm, 230 V, 1 PH grinder pump unit, pre-cast concrete wet well with 1620 gallon capacity. Wet well shall be 6 feet in diameter and 17 feet deep. Duplex station to include 8" inlet connection sized to accept 8" PVC SDR-35 pipe. Station shall also include discharge connection, check and plug valves, controls, alarm/disconnect panel, and a spare pump to be provided and delivered to the Hatfield McCoy Regional Recreation Authority.

B. Manufacturer

1. The Owner and Engineer believe the following manufacturers are capable of producing equipment and products, which will satisfy the requirements of this Section. This statement, however, shall not be construed as an endorsement of a particular manufacturer's product, nor shall it be construed that a named manufacturer's standard product will comply with the requirements of this Section. It shall be the responsibility of the contractor to coordinate with the "selected" equipment manufacturer by use of this specification and all related design drawings for any necessary adjustments, modifications or alterations to standard products to ensure that the product complies with all sections of this specification.
2. Candidate manufacturers include the following.

    a. Flygt (Candidate Manufacturer – Basis of Design)
    b. Engineer's Approved Equal

C. Description:

1. Each grinder pump shall be a heavy duty pump modified to be used as a grinder. Each grinder pump shall contain special cutters to reduce sewage to a fine slurry. The stationary cutter shall consist of hardened 316 "L" stainless steel and the rotary cutter shall consist of chrome alloyed cast iron. The cutter materials shall provide maximum corrosion and abrasion resistance. The remaining portion of the grinder pumps, with the exception of seal materials and wet end, shall be similar to the heavy duty pumps used in larger pump stations for daily operation.

D. Performance and Design Criteria

1. Location: Ashland Resort Lift Station
2. Pump:

    a. Flygt MP 3102 LT 1~216 (Basis of Design)
    b. Pumps shall meet or exceed the following:

        1) 50 GPM at 24.5 TDH
        2) 75 GPM at 34 TDH
        3) 110 GPM at 51.5 TDH (Duty Point)
        4) 150 GPM at 79 TDH

3. Wet Well (Refer to Section 330513): 6' – 00" Diameter
4. Horsepower: 5.4 HP
5. Voltage: 230 V
6. Phase: Single (1) Phase

E. Pump Construction:

1. Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. The lifting handle shall be of stainless steel. All exposed nuts or bolts shall be AISI type 316 stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.
2. Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.
3. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

F. Impeller:

1. The impeller(s) shall be of grey cast iron, Class 35B, dynamically balanced, single shrouded design having a long throughlet without acute turns. The impellers shall be capable of handling fine slurry from the special cutters. Impeller(s) shall be taper collet fitted and retained with an Allen head bolt. All impellers shall be coated with an acrylic dispersion zinc phosphate primer.

G. Volute:

1. Pump volute(s) shall be single-piece grey cast iron, Class 35B, non-concentric design with smooth passages large enough to pass any media that may enter the impeller. Minimum inlet and discharge size shall be as specified.

H. Motor:

1. The pump motor shall be a NEMA B design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. The stator windings shall be insulated with moisture resistant Class H insulation rated for 180°C (356°F). The stator shall be insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95%. The motor shall be inverter duty rated in accordance with NEMA MG1, Part 31.The stator shall be heat-shrink fitted into the cast iron stator housing. The use of multiple step dip and bake-type stator insulation process is not acceptable. The use of bolts, pins or other fastening devices requiring penetration of the stator housing is not acceptable. The motor shall be designed for continuous duty handling pumped media of 40°C (104° F) and capable of no

less than 30 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of cast aluminum. Thermal switches set to open at 125°C (260°F) shall be embedded in the stator end coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The junction chamber containing the terminal board, shall be hermetically sealed from the motor by an elastomer compression seal. Connection between the cable conductors and stator leads shall be made with threaded compression type binding posts permanently affixed to a terminal board. The motor and the pump shall be produced by the same manufacturer.

2. The combined service factor (combined effect of voltage, frequency and specific gravity) shall be a minimum of 1.15. The motor shall have a voltage tolerance of plus or minus 10%. The motor shall be designed for operation up to 40°C (104°F) ambient and with a temperature rise not to exceed 80°C. A performance chart shall be provided upon request showing curves for torque, current, power factor, input/output kW and efficiency. This chart shall also include data on starting current and no-load characteristics.
3. The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The outer jacket of the cable shall be oil resistant chlorinated polyethylene rubber. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.
4. The motor horsepower shall be adequate so that the pump is non-overloading throughout the entire pump performance curve from shut-off through run-out.

I. Pump Shaft:

1. Pump and motor shaft shall be the same unit. The pump shaft is an extension of the motor shaft. Couplings shall not be acceptable. The shaft shall be stainless steel – ASTM A479 S43100-T.

J. Mechanical Seal:

1. Each pump shall be provided with a tandem mechanical shaft seal system consisting of two totally independent seal assemblies. The seals shall operate in a lubricant reservoir that hydro-dynamically lubricates the lapped seal faces at a constant rate. The lower, primary seal unit, located between the pump and the lubricant chamber, shall contain one stationary and one positively driven rotating, corrosion and abrasion resistant tungsten-carbide ring. The upper, secondary seal unit, located between the lubricant chamber and the motor housing, shall contain one stationary and one positively driven rotating, corrosion and abrasion resistant tungsten-carbide seal ring.
2. Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment nor depend on direction of rotation for sealing. The position of both mechanical seals shall depend on the shaft. Mounting of the lower mechanical seal on the impeller hub will not be acceptable. For special applications, other seal face materials shall be available.
3. The following seal types shall not be considered acceptable or equal to the dual independent seal specified: shaft seals without positively driven rotating members, or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces. No system requiring a pressure differential to offset pressure and to effect sealing shall be used.
4. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and to provide lubricant

expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication. The motor shall be able to operate dry without damage while pumping under load.

5. Where a seal cavity is present in the seal chamber, the area about the exterior of the lower mechanical seal in the cast iron housing shall have cast in an integral concentric spiral groove. This groove shall protect the seals by causing abrasive particulate entering the seal cavity to be forced out away from the seal due to centrifugal action.
6. Seal lubricant shall be non-hazardous.

K. Bearings:

1. The pump shaft shall rotate on two bearings. Motor bearings shall be permanently grease lubricated. The upper bearing shall be a single deep groove ball bearing. The lower bearing shall be a two row angular contact bearing to compensate for axial thrust and radial forces. Sleeve or single row lower bearings are not acceptable. The minimum L_{10} bearing life shall be 50,000 hours at any usable portion of the pump curve.

L. Cable Entry Seal:

1. The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of a single cylindrical elastomer grommet, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the body containing a strain relief function, separate from the function of sealing the cable. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the interior from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered acceptable.

M. Cooling Seal:

1. Motors shall be sufficiently cooled by the environmental atmosphere or pumped media. A water jacket is not required.

N. Accessories:

1. Access Doors:
   a. Manufacturers:

      1) Acceptable manufacturers include the following:

         a) Halliday Products
         b) Engineer's Approved Equal

   b. Performance and Design Requirements:

      1) Unless otherwise specified, each hatch leaf shall be capable of withstanding a live load of 300 pounds per square foot.

2) Access hatches shall be provided with a hinged and lockable aluminum grating panel.
3) All hatches shall be provided with fall-thru protection.
4) All access hatches shall be watertight.
5) Operating Requirements: As shown on Drawings.

c. Components:

1) Unless otherwise specified, each hatch leaf shall be 0.25-inch anodized aluminum with diamond pattern capable of withstanding a live load of 300 pounds per square foot. Channels shall be 0.25-inch aluminum with an anchor flange all around the perimeter. Hatches shall be equipped with stainless steel hardware throughout. Hatches shall have spring operator for easy operation and an automatic hold-open arm with release handle. A snap lock with removable handle and integral gutter with threaded 1.5-inch drain connection shall be provided. Double-leaf hatches shall be provided with heavy-duty safety chain. Access hatch handles shall be inset and shall not constitute a tripping hazard.

d. Finishes:

1) Finish shall be anodized finish with bituminous coating to exterior of the frame and anchors.

2. Valves – Provide check valves and plug valves as shown on the drawings.
3. Discharge Piping – Provide discharge piping as shown on the drawings.
4. Guide Rails:

a. Provide a Type 316 stainless steel guide rail system for each pump
b. The guide rails shall be of adequate length to extend from the pump discharge elbow to the access opening.
c. Provide each pump rail system from the same manufacturer as the pumps and be complete with required pump guides and mounting hardware for raising and lowering the units.
d. Provide pump guides over 20 feet in length with intermediate stainless steel pump guide brackets.
e. Do not support any portion of the weight of the pumps with the pump guides, and shall provide for proper seating alignment.
f. The pump shall be automatically connected to the discharge connection elbow when lowered into place, and shall be easily removed for inspection or service.
g. There shall be no need for personnel to enter the wet well.

5. Guide Bracket

a. A sliding guide connector shall be an integral part of the pump unit and the pump casing shall have a mating connecting flange to connect with the discharge connection, which shall be bolted to the floor of the sump and so designed as to receive the pump connecting flange without the need of any bolts or nuts.
b. Accomplish sealing of the pumping unit to the discharge connection by a simple linear downward motion of the pump with the entire weight of the pumping unit guided to and pressing tightly against the discharge connection.

c. Do not bear any portion of the pump directly on the floor of the sump.
d. No rotary motion of the pump shall be required for sealing.
e. No other carrier shall be required.
f. The sliding guide connector shall be 300 series stainless steel wire formed.
g. When the pump approaches the bottom of the guide rail, the hydraulic sealing flange shall seat against the discharge elbow.

6. Mounting Assembly

a. Level, grout, and bolt a cast iron discharge base elbow to the floor and have a quick disconnect flange on the inlet side and a Class 125 American National Standards Institute (ANSI) flanged outlet.
b. The assembly shall include means of anchoring and aligning the guide rails to ensure a positive automatic connection between pump and elbow.
c. Provide and install a mounting assembly for each pump.
d. All anchors, nuts, washers, and fasteners shall be Type 316 stainless steel.

7. Float Mounting Bracket

a. Provide a 316 stainless steel float mounting bracket.
b. Float mounting bracket shall provide strain reliefs to hold level control cords and allow adjustment of level controls to desired pumping and alarm levels.
c. Continuous cords are to run from pump(s) and level control to the junction box at the wet well.
d. Make no splices in wiring.
e. Fabricate float mounting bracket from stainless steel and coated for corrosion resistance.
f. Attach float mounting bracket to the access frame with 300 series stainless steel fasteners.
g. Install a dielectric spacer between the aluminum access frame and the float mounting bracket.

8. Pressure Gauge: Furnish a pressure gauge on the discharge of the pumps. Mount pressure gauge as recommended by Manufacturer.
9. Leakage Sensor and Thermal Switch:

a. A leakage sensor shall be provided to detect water in the stator chamber. The Float leakage sensor shall be a small float switch used to detect the presence of water in the stator chamber. When activated, the sensor will send an alarm and, stop the motor.
b. All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. At 125°C (260°F) the thermal switches shall open, stop the motor and activate an alarm.
c. The thermal switches and leakage sensor shall be connected to a control and status monitoring unit. The control and monitoring unit shall be designed to be mounted in any control panel.

2.2 ELECTRICAL CONTROLS

1. Controls:

a. Electrical Supply: The Ashland Resort Lift Station incoming electrical supply is 240V 1 phase power.
b. Control Panel:

1) NEMA Type 4X enclosure rated for outdoor application.
2) Furnish across-the-line electric motor starters with ambient-compensated, quick-trip overloads in each phase and with manual trip and reset buttons, circuit breaker, control transformer, electro-mechanical alternator, HAND-OFF-AUTO selector switches, pilot lights, HIGH LEVEL alarm pilot light, and reset button.
3) Single point power connection and grounding lug.

c. Pump Level System:

1) The Ashland Resort Lift Station shall be provided with a pump level system consisting of a level transducer and redundant back-up float switches. The pump manufacturer shall provide all necessary cabling and relays for the system to operate.

a) Description: Steel shell encased in polyurethane foam with cast-iron weight for PUMP ON (each pump), PUMP OFF (common), and HIGH WATER ALARM.
b) Type: Mercury.

d. Accessories:

1) Circuit Breakers: The Ashland Resort Lift Station shall have the following additional circuit breakers mounted in the control panel by the pump manufacturer:

a) As shown on Drawings.

2. A control and status monitoring unit shall be provided by the manufacturer as part of the electrical control panel.

a. Pump manufacturer shall coordinate with Owner's existing telemetry manufacturer to ensure proper and complete integration and operation of telemetry unit.

2.3 SEQUENCE OF OPERATION

1. Duplex Control Sequence:

a. When basin liquid level increases to Elevation 2212.67, LEAD PUMP START switch energizes lead pump.
b. When basin liquid level decreases to Elevation 2210.67, PUMP STOP switch de-energizes lead pump.
c. When lead pump is de-energized, alternating relay indexes such that lag pump starts on next rise in basin liquid level.
d. If basin liquid level continues to rise to Elevation 2213.67, LAG PUMP START switch energizes lag pump.

e. When basin liquid level decreases to Elevation 2210.67, PUMP STOP switch de-energizes both pumps.
f. If basin liquid level continues to rise, HIGH-LEVEL alarm switch energizes alarm signal when liquid level reaches Elevation 2214.67.
g. All settings described above shall be initially set during the start-up phase of the Ashland Resort Lift Station. The Owner's operators shall have the ability to adjust any, and all settings in the future as desired.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide line-sized plug valve, line-sized lever and weight check valve on pump discharge.

B. Decrease from line size with long-radius reducing elbows or reducers.

C. Support piping adjacent to pump independently of pump casings.

D. Installation of access hatches shall conform to manufacturer's recommendations and as specified. Frame shall be accurately cast in place and securely anchored to concrete floor. Frame shall be set level and flush with surrounding surface. Installation shall be complete with all required hardware and gasketing to provide a weatherproof installation. Spring operator and automatic hold-open device shall be checked after installation to insure proper operation.

3.2 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Check, align, and certify alignment of pumps prior to startup.

C. Startup and Performance Testing: Pump stations shall be tested as follows utilizing permanent utility power as well as backup generator power.

1. Operate pump using clear water for continuous period of 10 minutes in presence of Engineer.
2. Verify pump performance by performing time-drawdown test.
3. Check pump and motor for high temperature and excessive vibration.
4. Check for motor overload by taking ampere readings.

D. Equipment Acceptance:

1. Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.

3.3 DEMONSTRATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for demonstration and training.

B. Demonstrate pump startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.

C. Contractor shall provide manufacturer representative to demonstrate pump operations and start-up utilizing emergency generator.

3.4 WARRANTY

A. All equipment, controls, and appurtenances supplied under this specification shall be provided with a two (2) year extended warranty from the date of Substantial Completion.

END OF SECTION 333216

SECTION 462113.01 – BAR SCREEN DEBRIS BASKET

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Perforated style series debris basket used to screen out solids that may otherwise damage pumping equipment.

1.2 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work with standards and utilities within construction area.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information concerning materials of construction and fabrication.

1. Include Buy American Certification as necessary.

C. Manufacturer Instructions: Submit detailed instruction on installation requirements, including storage and handling procedures, anchoring, and layout.

1.4 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for closeout procedures.

1.5 QUALITY ASSURANCE

A. Perform Work according to specified standards.

1.6 QUALIFICAITONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.

B. To assure unit responsibility of the bar screen debris basket, guide rails, portable hoist and portable hoist socket and all ancillary equipment shall be provided by the bar screen debris basket unit manufacturer. The Contractor shall assume full responsibility for the satisfactory operation of the entire system as specified.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Handling:

1. Handle materials to prevent damage to interior or exterior surfaces.

D. Storage:

1. Store materials according to manufacturer instructions.
2. Store products in areas protected from weather, moisture, or possible damage.
3. Do not store products directly on ground.

E. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 BAR SCREEN DEBRIS BASKET

A. Manufacturer:

1. The Owner and Engineer believe the following manufacturer is capable of producing equipment and products, which will satisfy the requirements of this Section. This statement, however, shall not be construed as an endorsement of a particular manufacturer’s product, nor shall it be construed that a named manufacturer’s standard product will comply with the requirement of this Section. It shall be the responsibility of the Contractor to coordinate with the “selected” equipment manufacturer by use of this specification and all related design drawings for any necessary adjustments, modifications or alterations to standard products to ensure that the product complies with all sections of this specification.
2. Candidate manufacturers include the following:

a. Halliday (Candidate Manufacturer – Basis of Design)

b. Engineer's Approved Equal

B. Design Criteria:

1. Location: Ashland Resort MH #1-1
2. Bar Screen Debris Basket:

a. Halliday B4A Basket (Basis of Design)
b. Construction:

1) Perforated Screen Style Basket

a) Dimensions: As shown on Drawings.
b) 2" holes on 3" centers

2) Basket Frame

a) 0.080 aluminum with tracking angles or 16 gauge stainless steel with tracking angles

3) Guide Rails

a) Dimensions: As shown on Drawings.
b) Extruded channels to facilitate easy operation

c. Portable Hoist Socket

a) As shown on Drawings.

C. Accessories:

1. Equipment manufacturer to supply angle basket stop.
2. Contractor to supply portable hoist as per manufacturer's recommendations.

2.2 FABRICATION

A. Fabricate rails to dimensions indicated on Drawings, and to specified design criteria.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution: Requirements for installation examination.

3.2 PREPARATION

A. Section 017000 - Execution: Requirements for installation preparation.

3.3 INSTALLATION

A. Rail system must be set plumb and with rails straddling the influent pipe.

B. Rails must be secured to the manhole wall at standoff locations with anchor bolts.

C. To ensure optimum screening, the influent pipe should be located within one (1) inch of the back of the rail system. The basket stop should be placed approximately 12 inches below the invert.

D. Basket should be gently lowered into position. Never drop the basket into position.

3.4 MAINTENANCE

A. Check and tighten any loose anchor bolts and the basket stop attaching hardware.

B. Check and maintain hoisting cable connection.

C. Remove debris from basket and rails when required.

3.5 FIELD QUALITY CONTROL

A. Section 014000 – Quality Requirements: Requirements for inspecting and testing.

B. Equipment Acceptance:

1. Adjust, repair, modify, or replace components failing to perform as specified.

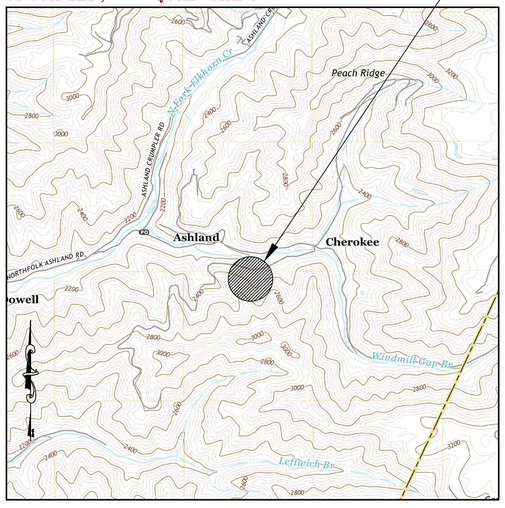
END OF SECTION 330517

HATFIELD McCOY
REGIONAL RECREATION AUTHORITY
ASHLAND RESORT EXPANSION
McDOWELL COUNTY, WEST VIRGINIA
NOVEMBER, 2020

REVISION NUMBER	REVISED SHEETS	BY	DATE	DESCRIPTION
1	1,3,18,E1,E2	SCB	11/9/20	ADDED ELECTRICAL SHEETS, ITEM TO QUANTITIES, BID ALTERNATE DESCRIPTIONS
2	34,43,46,60–61	SCB	11/13/20	REVISED DETAILS, ADDED STREAM CROSSING #1 ABUTMENT AND FOUNDATION DESIGN

SHEET INDEX

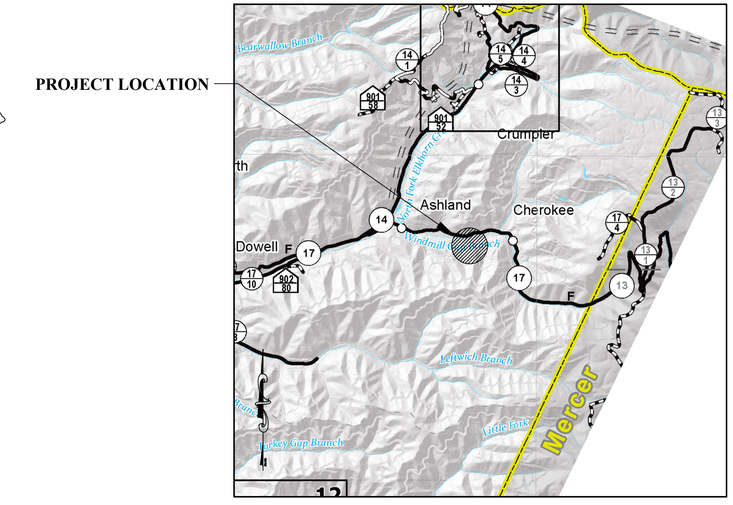
CRUMPLER, WV QUAD MAPS



1000 0 1000 2000

VICINITY MAP SCALE

McDOWELL COUNTY, WV HIGHWAY MAPS



1 MILE 0 1 MILE 2 MILES

VICINITY MAP SCALE

ONE CALL UTILITY SYSTEM CONTACT INFO

WEST VIRGINIA 811

CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM OF THE INTENDED EXCAVATION OR DEMOLITION NOT LESS THAN FORTY-EIGHT (48) HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL FEDERAL OR STATE HOLIDAYS, NOR MORE THAN TEN (10) WORK DAYS PRIOR TO THE BEGINNING OF SUCH WORK.

RICHARD G. HOVATTER, JR. REGISTERED 18400 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 11/13/2020

RICHARD G. HOVATTER, JR., PE

- ☐ APPROVED FOR PERMITS DATE: _____ BY: _____
- ☒ APPROVED FOR BIDS DATE: 11/13/2020 BY: RJH
- ☐ APPROVED FOR CONSTRUCTION DATE: _____ BY: _____

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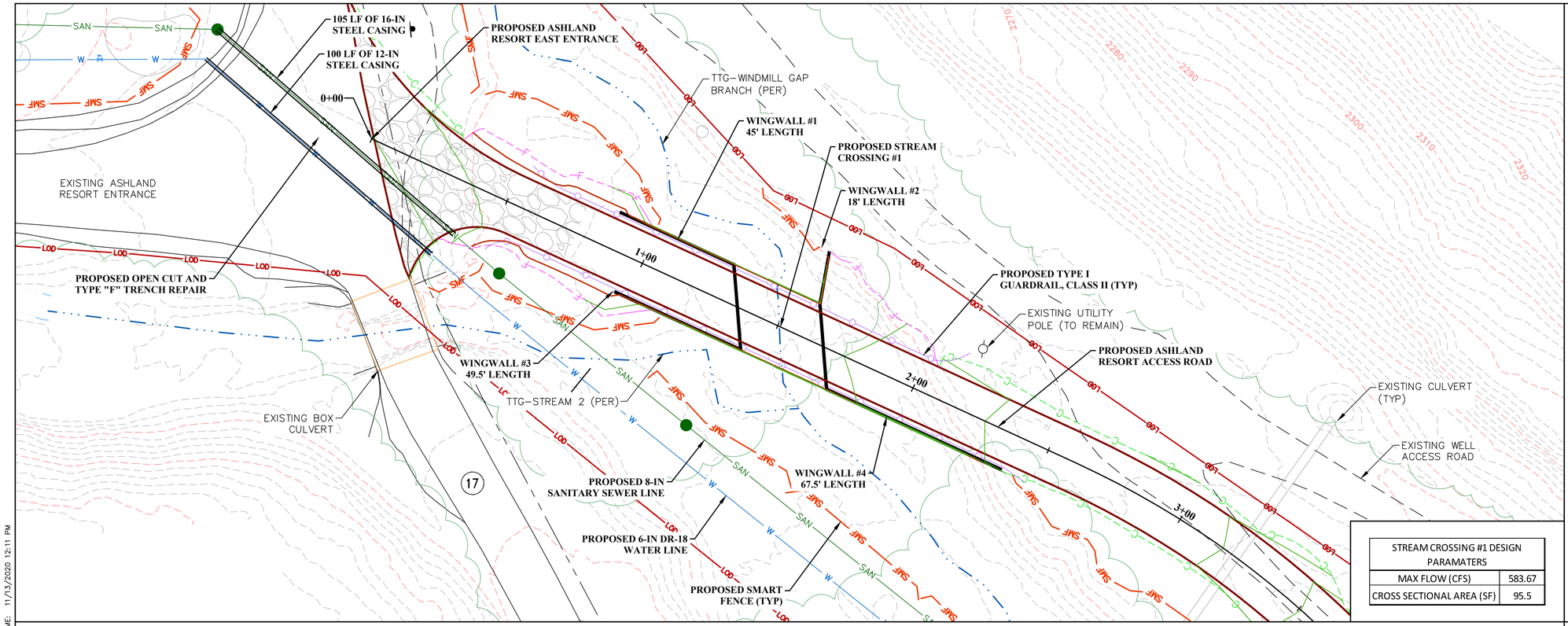


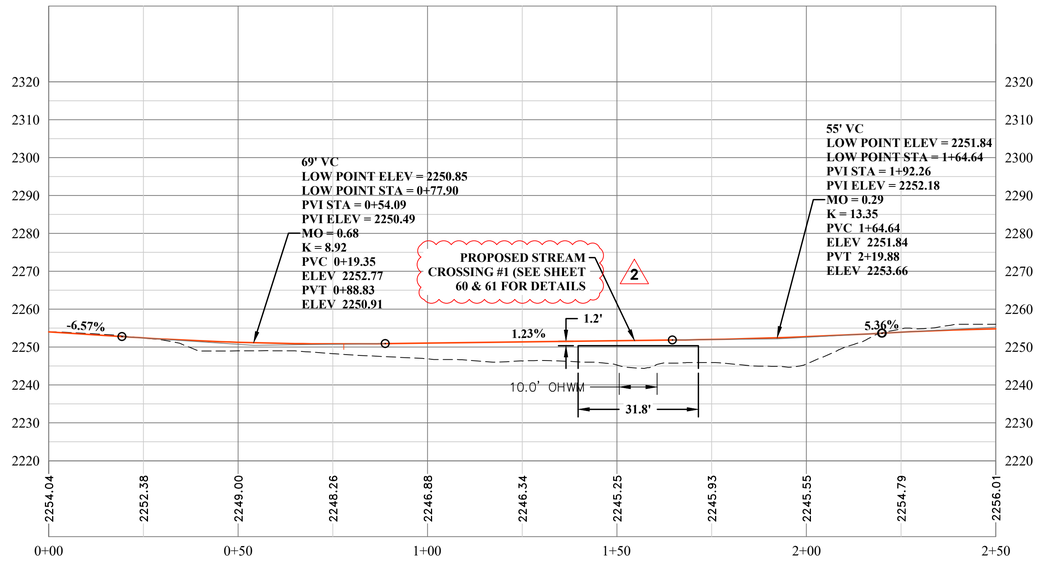
STREAM CROSSING #1 DESIGN PARAMATERS	
MAX FLOW (CFS)	583.67
CROSS SECTIONAL AREA (SF)	95.5

PLAN LEGEND

- EXISTING CONTOURS
- EXISTING PROPERTY LINES
- EXISTING EPHEMERAL STREAM
- EXISTING INTERMITTENT STREAM
- EXISTING PERENNIAL STREAM
- EXISTING WETLAND
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING FENCE LINE
- EXISTING OVERHEAD UTILITY
- EXISTING TREE LINE
- EXISTING CULVERT
- EXISTING DITCH
- EXISTING STRUCTURE
- EXISTING SPEED BUMP
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED CONTOURS
- PROPOSED CUT LIMIT
- PROPOSED FILL LIMIT
- PROPOSED SMART FENCE
- PROPOSED ROAD EDGE
- PROPOSED WATERLINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED DITCH LINE
- PROPOSED FENCE
- PROPOSED GUARDRAIL
- PROPOSED TOPSOIL STOCKPILE OUTLINE

20 ft. 0 20 ft. 40 ft.

ASHLAND RESORT ACCESS ROAD PROFILE



PROFILE LEGEND

- EXISTING GROUND
- PROPOSED GRADE

20 ft.
VERT. 0
0 20 ft.
HOR.

NO.	BY	DATE	DESCRIPTION
2	SCB	11/13/20	REVISED STREAM CROSSING #1 DETAILS

SCALE: AS SHOWN
DRAWN: DATE:
CHECKED: DATE:
APPROVED: DATE:
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:

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PHASE No.
CONTRACT No.
PROJECT No. 101–030–10061

HATFIELD McCOY
REGIONAL RECREATION AUTHORITY
ASHLAND RESORT EXPANSION
McDOWELL COUNTY, WV
STREAM CROSSING #1 PLAN & PROFILE

SHEET No. 34

LAYOUT TAB: 34_STREAM CROSSING #1 PLAN & PROFILE
CAD FILE: R:\030\030-10061-Hatfield McCoy Ashland Resort AML-Hatfield McCoy Regional Recreation-\Drawing\10061-SitePlan.dwg
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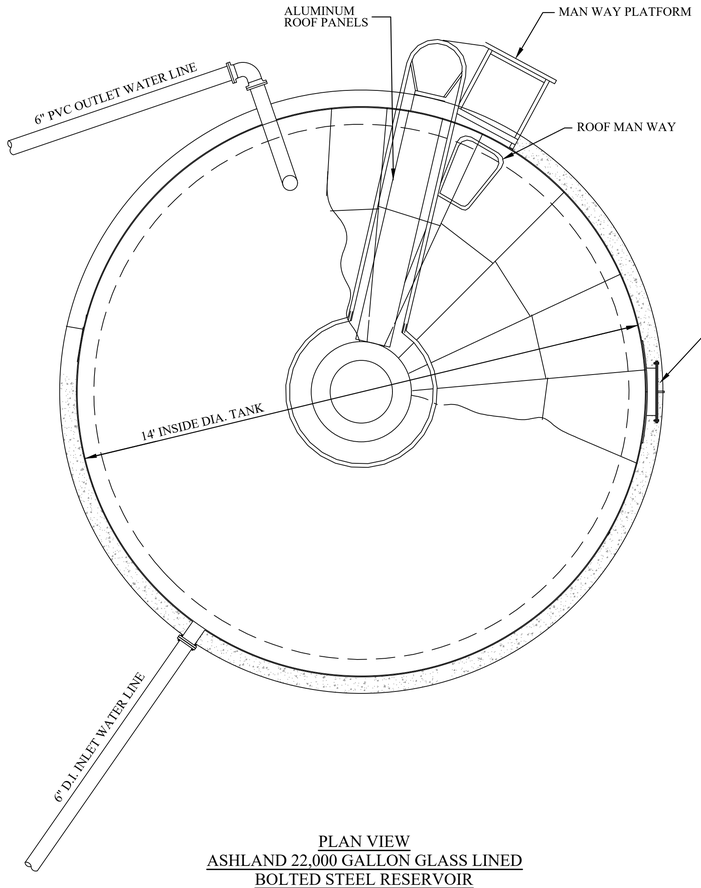
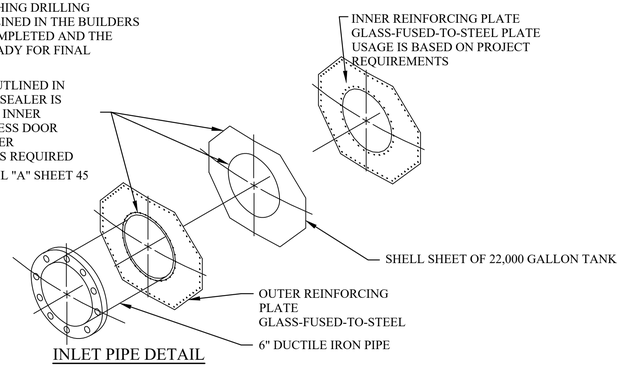


PLAN VIEW
ASHLAND 22,000 GALLON GLASS LINED
BOLTED STEEL RESERVOIR

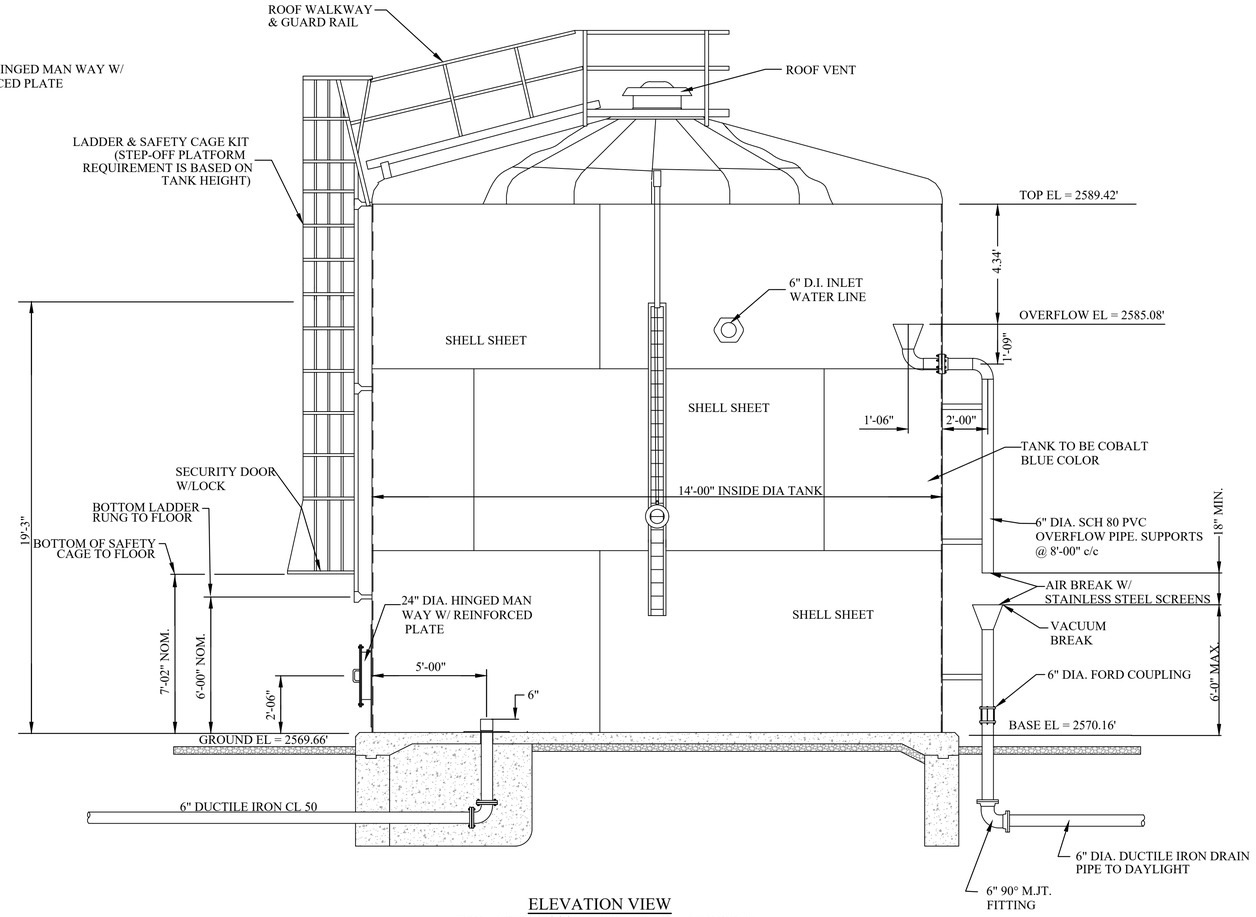
NOTE:
SEALER IS APPLIED TO THE COMPONENTS ONLY AFTER THE BUSHING DRILLING PROCEDURES AS OUTLINED IN THE BUILDERS GUIDE HAVE BEEN COMPLETED AND THE COMPONENTS ARE READY FOR FINAL ASSEMBLY.

SEALER - APPLY AS OUTLINED IN THE BUILDERS GUIDE SEALER IS ALSO PLACED ON THE INNER SURFACE OF THE ACCESS DOOR SHEET WHEN THE INNER REINFORCING PLATE IS REQUIRED

SEE ENLARGED DETAIL "A" SHEET 45



INLET PIPE DETAIL



ELEVATION VIEW
ASHLAND 22,000 GALLON GLASS LINED
BOLTED STEEL RESERVOIR

PROPOSED 22,000 GALLON (GLASS LINED BOLTED STEEL)
WATER STORAGE TANK
NOT TO SCALE

GENERAL CONSTRUCTION NOTES:
1. ALL WATER LINES ARE TO BE PLUGGED AT THE END OF EACH WORKING DAY BY MEANS OF A MECHANICAL JOINT CAP OR PLUG IN ORDER TO AVOID ROCKS, ANIMALS OR OTHER OBJECTS FROM ENTERING.

2. THE TANK FOUNDATION SHALL BE CONSTRUCTED IN ACCORDANCE WITH AWWA STD. D-103 SEISMIC ZONE O, AND 100 MPH WIND VELOCITY.

3. CONTRACTOR SHALL ASSUME A 3000 PSF SOIL BEARING CAPACITY.

GENERAL CONSTRUCTION NOTES:
1. ALL WATER LINES ARE TO BE PLUGGED AT THE END OF EACH WORKING DAY BY MEANS OF A MECHANICAL JOINT CAP OR PLUG IN ORDER TO AVOID ROCKS, ANIMALS OR OTHER OBJECTS FROM ENTERING.

2. THE TANK FOUNDATION SHALL BE CONSTRUCTED IN ACCORDANCE WITH AWWA STD. D-103 SEISMIC ZONE O, AND 100 MPH WIND VELOCITY.

3. CONTRACTOR SHALL ASSUME A 3000 PSF SOIL BEARING CAPACITY.

2

NO.	BY	DATE	DESCRIPTION
2	SCB	11/13/20	REMOVED LIQUID LEVEL INDICATOR

SCALE:	AS SHOWN
DRAWN:	DATE:
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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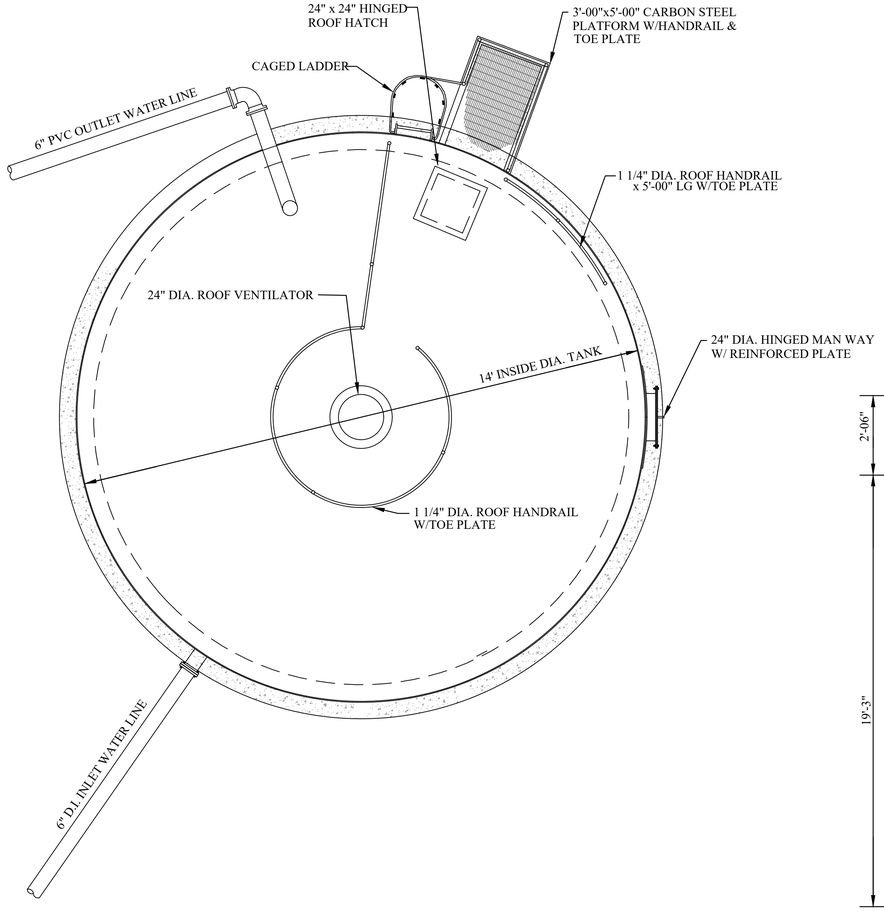
CONTRACT No.
PROJECT No. 101-030-10061

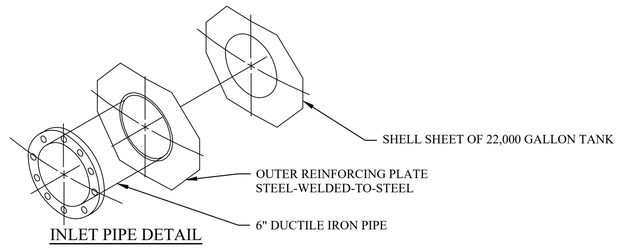
HATFIELD McCOY
REGIONAL RECREATION AUTHORITY
ASHLAND RESORT EXPANSION
McDOWELL COUNTY, WV
DETAILS

SHEET No. 43

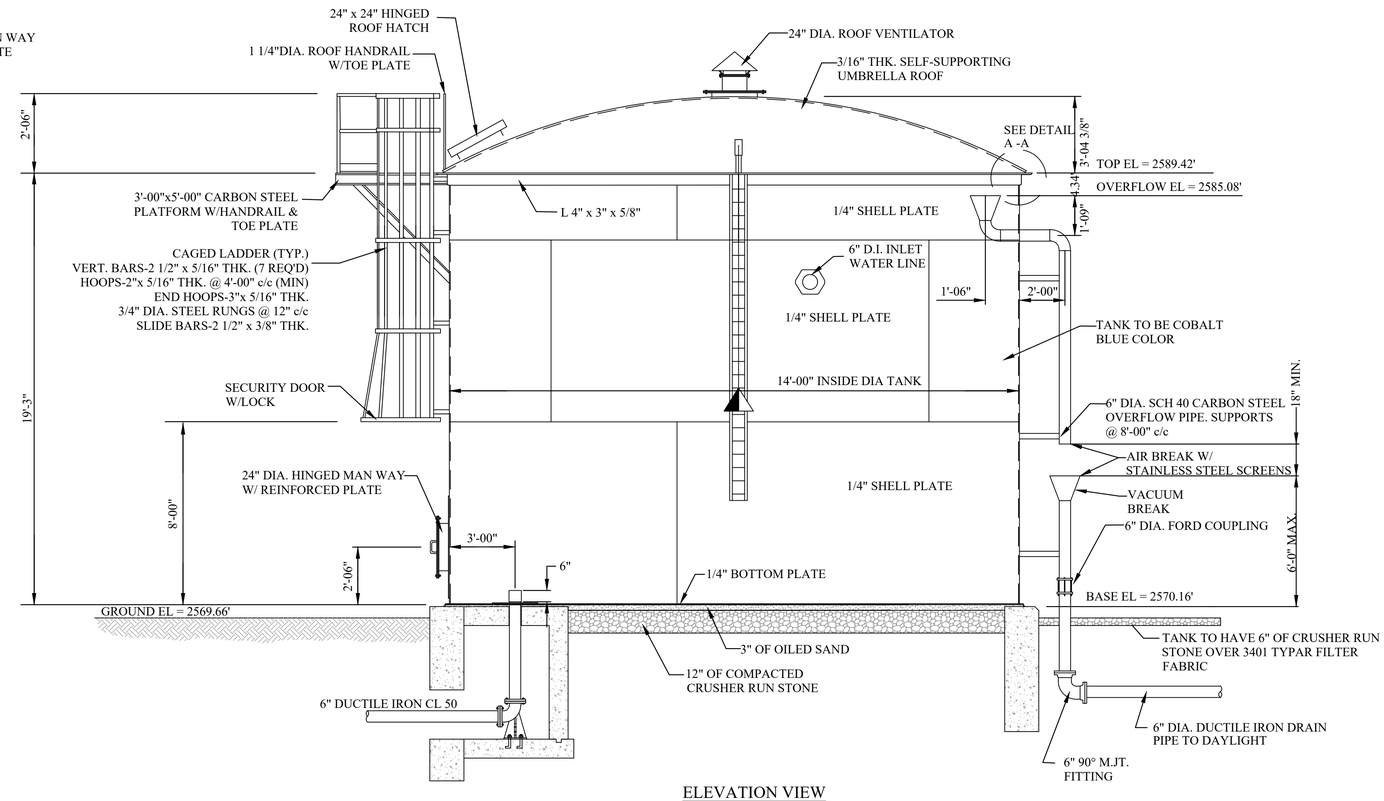
LAYOUT TAB: 43 DETAILS
CAD FILE: R:\030\030-10061-Hatfield McCoy Ashland Resort AML-Hatfield McCoy Regional Recreation-\Drawing\10061-Details.dwg
PLOT DATE/TIME: 11/13/2020 12:11 PM



PLAN VIEW
ASHLAND 22,000 GALLON WELDED STEEL RESERVOIR



INLET PIPE DETAIL



ELEVATION VIEW
ASHLAND 22,000 GALLON WELDED STEEL RESERVOIR

PROPOSED 22,000 GALLON (WELDED STEEL) WATER
STORAGE TANK
NOT TO SCALE

GENERAL CONSTRUCTION NOTES:

1. ALL WATER LINES ARE TO BE PLUGGED AT THE END OF EACH WORKING DAY BY MEANS OF A MECHANICAL JOINT CAP OR PLUG IN ORDER TO AVOID ROCKS, ANIMALS OR OTHER OBJECTS FROM ENTERING.

2. THE TANK FOUNDATION SHALL BE CONSTRUCTED IN ACCORDANCE WITH AWWA STD. D-103 SEISMIC ZONE O, AND 100 MPH WIND VELOCITY.

3. CONTRACTOR SHALL ASSUME A 3000 PSF SOIL BEARING CAPACITY.

2

NO.	BY	DATE	DESCRIPTION
2	SCB	11/13/20	REMOVED LIQUID LEVEL INDICATOR

SCALE: AS SHOWN	
DRAWN:	DATE:
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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PHASE No.	
CONTRACT No.	
PROJECT No.	101-030-10061

HATFIELD McCOY
REGIONAL RECREATION AUTHORITY
ASHLAND RESORT EXPANSION
McDOWELL COUNTY, WV
DETAILS

SHEET No.
46

LAYOUT TAB: 46 DETAILS
CAD FILE: R:\030\030-10061-Hatfield McCoy Ashland Resort AML-Hatfield McCoy Regional Recreation-\Drawing\10061-Details.dwg
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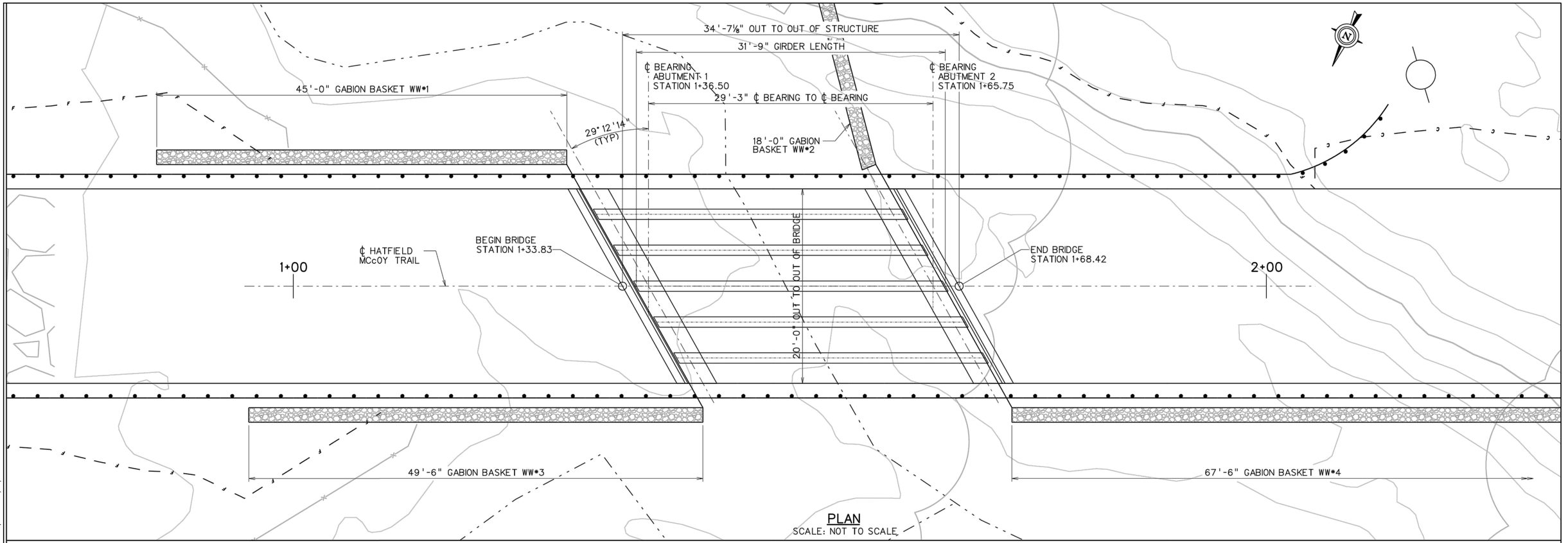
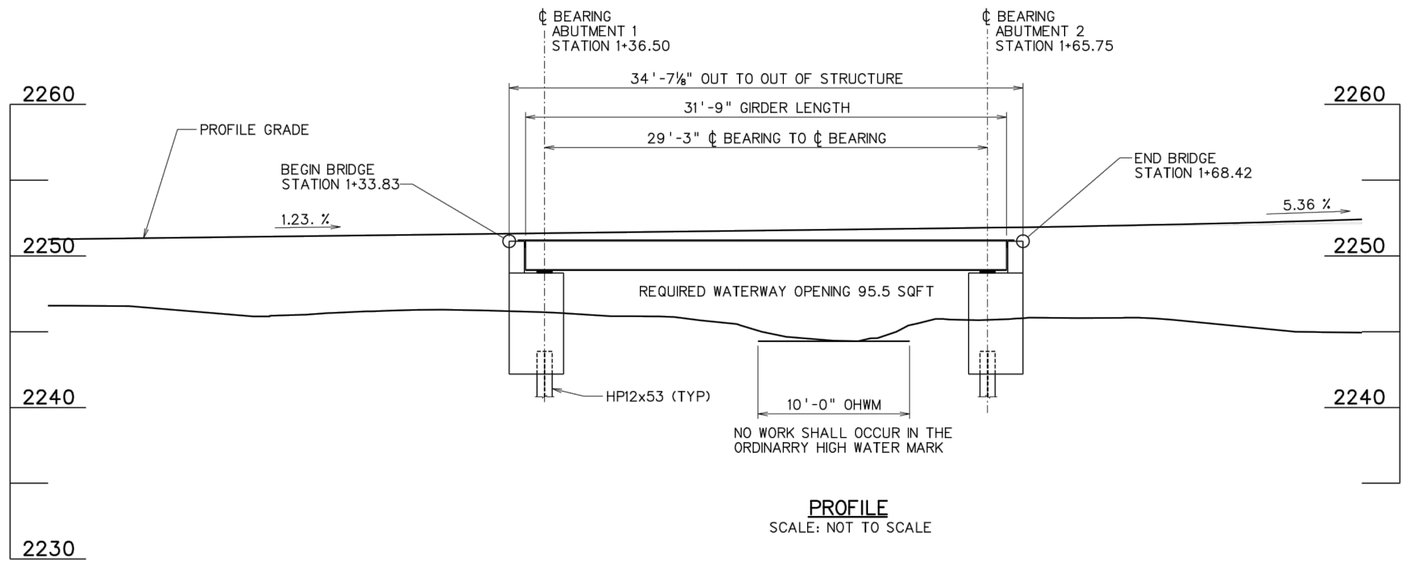


PLAN
SCALE: NOT TO SCALE



PROFILE
SCALE: NOT TO SCALE

NOTES:

A CONCEPTUAL DESIGN HAS BEEN PROVIDED BY BIG R BRIDGE. CONTRACTOR SHALL COORDINATE WITH BIG R BRIDGE OR EQUIVALENT FOR FINAL DESIGN.

CONTRACTOR SHALL PROVIDE A STRUCTURE WITH A CLEAR WIDTH OF 20'-0" CURB TO CURD AS SHOWN ON SHEET 61. THE STRUCTURE SHALL HAVE A WATERWAY OPENING OF 95.5 SQUARE FEET.

CONTRACTOR SHALL PROVIDE A DESIGN EQUAL TO DESIGN LOADS PROVIDED ON SHEET 61.

ABUTMENTS WERE DESIGNED BASED ON CONCEPTUAL LOADS PROVIDED BY BIG R BRIDGE. LOADS SHALL BE VERIFIED WITH FINAL DESIGN. IF LOADS EXCEED CONCEPTUAL LOADS. ABUTMENT DESIGN SHALL BE COMPLETED BY CONTRACTOR.

2

NO.	BY	DATE	DESCRIPTION
2	SCB	11/13/20	REVISED STREAM CROSSING #1 DETAILS

SCALE:	AS SHOWN
DRAWN:	DATE:
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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PHASE No.

CONTRACT No.

PROJECT No.
101-030-10061

HATFIELD McCOY
REGIONAL RECREATION AUTHORITY
ASHLAND RESORT EXPANSION
McDOWELL COUNTY, WV
DETAILS

SHEET No.
60

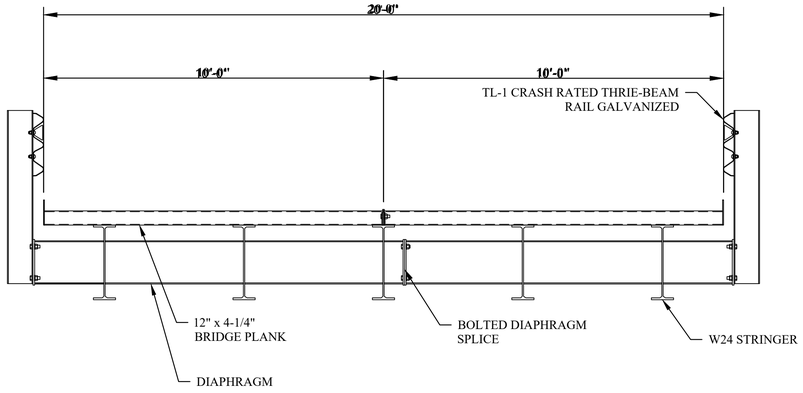
LAYOUT TAB: 60 DETAILS
CAD FILE: R:\030\030-10061-Hatfield McCoy Ashland Resort AML-Hatfield McCoy Regional Recreation-\Drawing\10061-Details.dwg
PLOT DATE/TIME: 11/13/2020 12:11 PM

THRASHER GENERAL NOTES

1. THIS SHEET AND DETAILS ARE TAKEN FROM CONTECH, AND ARE FOR INFORMATIONAL PURPOSES ONLY.
2. DESIGN LOADS ARE BASED ON A CONCEPTUAL DESIGN BY CONTECH AND ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL VERIFY DESIGN WITH CONTECH OR PROVIDE EQUIVALENT STRUCTURE DESIGN

CONTECH GENERAL NOTES

1. CONTECH ENGINEERED SOLUTIONS HAS AISC QUALITY CERTIFIED BRIDGE FABRICATION-ADVANCED (MAJOR) WITH A FRACTURE CRITICAL AND SOPHISTICATED PAINT ENDORSMENT
2. DESIGN IS IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
3. MATERIALS (UNLESS NOTED OTHERWISE):
   - a. STRUCTURAL STEEL: ASTM A588 WEATHERING STEEL
   - b. BRIDGE PLANK: ASTM A653 GRADE 50 CLASS 1 (GALV)
   - c. STRUCTURAL BOLTS: ASTM F3125 GRADE A325 (GALV)
   - d. GUARDRAIL BOLTS: ASTM A307 (GALV)
   - e. SHEET PILING ASTM A929 (GLAV)
4. DESIGN LOADINGS:
   - a. BRIDGE DEAD LOAD PLUS 80 PSF TOTAL WEARING SURFACE.
   - b. VEHICLE LIVE LOAD: HL-93
   - i.a. MAX AVERAGE DAILY TRUCK TRAFFIC (ADTT) = 200
   - ii.b. MAX LL DEFLECTION = LENGTH/500
   - ij. OWNER SPECIFIED LIVE LOAD: U80
   - ik. WIND LOADING PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SETION 3.8.
   - il. SEISMIC LOADING PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 3.10.
5. BRIDGE RAIL DESIGNED FOR TL-1 OR TL-2 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS APPENDIX A13.2 OR ONLY USED AS A GUIDE RAIL (RAIL HAS NOT BEEN CRASH TESTED). SEE TYPICAL DETIALS FOR BIG R EXPRESS DODULAR NON-CRASH TESTED BRIDGE RAILS FOR RAIL OPTIONS.
6. BRIDGE TO BE BUILT TO THE REQUIREMENTS OF AWS D1.5.
7. ALL EXPOSED SURFACES OF STRUCTURAL STEEL TO BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACE PREPARATION SPECIFICATIONS NO. 1, SSPC-SP1 SOLVENT CLEANING. EXPOSED SURFACES OF STEEL SHALL BE DEFINED AS THOSE SURFACES SEEN FROM THE DECK OR FROM THE OUTSIDE OF THE STRUCTURE. ALL OTHER SURFACES TO HAVE STANDARD MILL FINISH.
8. MAINTENANCE NOTE: CONTECH RECOMMENDS NOT APPLYING DE-ICING OR DUST PROHIBITIVE CHEMICALS OR SALTS TO ANY PART OF THE BRIDGE STRUCTURE. IF DE-ICING OR DUST PROHIBITIVE CHEMICALS OR SALTS ARE APPLIED TO ANY PART OF THE BRIDGE STRUCTURE, CONTECH WILL NOT BE RESPONSIBLE FOR ANY RESULTANT ACCELERATED CORROSION.
9. ELASTOMERIC PADS ARE USED TO PROVIDE A LEVEL BEARING SURFACE ONLY.
10. 12" x 4-1/4" BRIDGE PLANKS ARE SHOP WELDED TO THE GIRDERS AND ARE THE STRUCTURAL DECKING SYSTEM. THE WEARING SURFACE IS ONLY TO PROVIDE A SMOOTH RUNNING SURFACE AND NOT REQUIRED STRUCTURALLY.
11. DECK MAUY BE FINISHED WITH GRAVEL, ASPHALY, CONCRETE, WOOD OR ANY OTHER SUITABLE WEARING SURFACE MATERIAL AT THE OWNERS DISCRETION. TYPICAL WEARING SURFACE LOAD OF 80 PSF WILL ACCOMMODATE UP TO 5 ¼" OF GRAVEL BASE (130 PSF) OR 4 ¼" OF CONCRETE OR ASPHALT (150 PCF) SURFACING ABOVE THE STEEL BRIDGE DECK PLANK CORRUGATIONS. FOR CONCRETE WEARING SURFACES CONTECH RECOMMENDS USING CRACK CONTROL REINFORCING AND IF LATERAL SHIFTING OR UPLUFT OF THE CONCRETE WEARING SURFACE IS A CONCERN, CONTECH RECCOMENDS ATTACHING HEADED ANCHOR STUDS IN THE VALLEYS OF THE CORRUGATIONS.



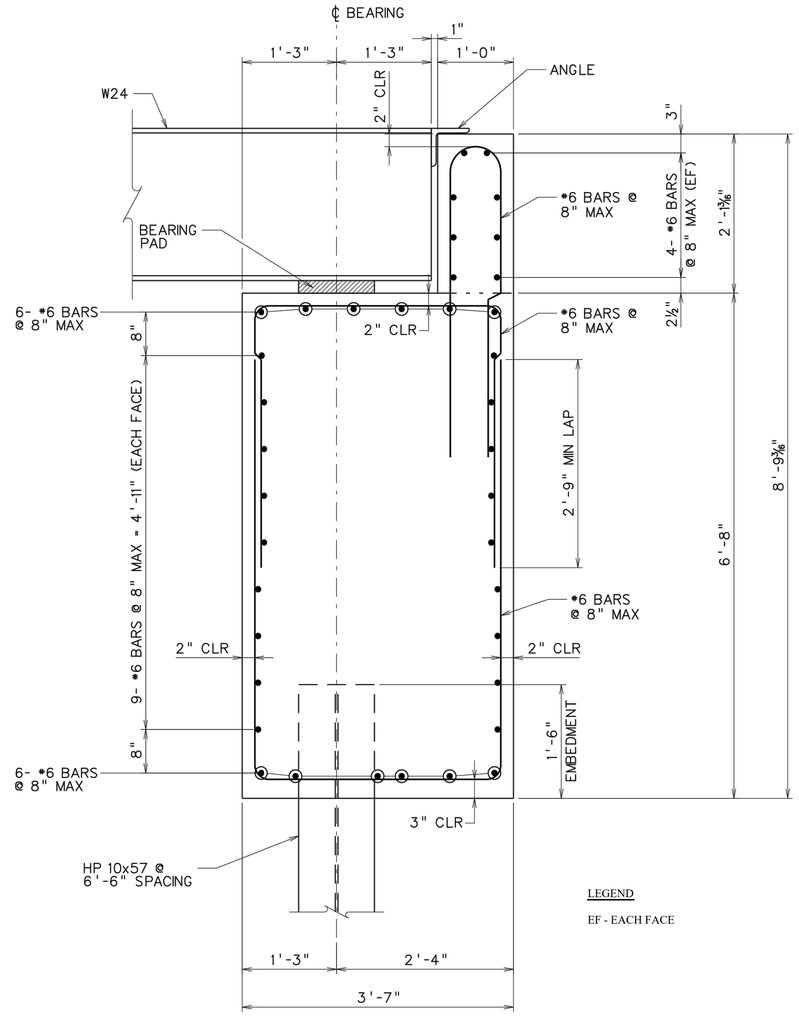
SECTION VIEW
NOT TO SCALE

BRIDGE LOADING AND UNFACTORED BEARING REACTIONS IN KIPS		MAX AT INTERIOR GIRDER			MAX AT EXTERIOR GIRDER			TOTAL AT ABUTMENT		
		P	H	L	P	H	L	P	H	L
DEAD LOAD (DC)		1.63			2.29			9.49		
TOTAL WEARING SURFACE (DW) = 80 PSF		4.43			4.15			21.60		
HL-93 DESIGN VEHICLE MAX. ADTT = 1025	LL	35.09			27.34			58.48		
	LL+IM	42.57			33.17			74.68		
U80 OWNER SPECIFIED VEHICLE	LL	44.99			40.31			89.98		
	LL+IM	52.78			47.29			105.57		
WINDLOAD (WS) = 50 PSF		-5.40	0.90			0.90		-5.40	4.50	
THERMAL LOAD (TU)				1.26			1.26			6.30
BREAKING FORCE (BR)				4.32			4.32			21.60
SEISMIC LOAD (EQ)		CONTACT YOUR CONTECH BRIDGE CONSULTANT FOR SEISMIC INFORMATION								

MIN MODULE WEIGHT (LBS)	MAX MODULE WEIGHT (LBS)
9500	13700

"P": VERTICAL LOAD
"H": HORIZONTAL LOAD TRANSVERSE TO THE STRUCTURE
"L": HORIZONTAL LOAD LONGITUDINAL TO THE STRUCTURE
*WIND LOAD UPLIFT ASSUMES FULL 20 PSF TO DECK AREA IS APPLIED TO ONE STRINGER LINE

STREAM CROSSING #1 DETAILS (CONTINUED)
NOT TO SCALE



LEGEND
EF - EACH FACE

ABUTMENT TYPICAL SECTION

STREAM CROSSING #1 DETAILS (CONTINUED)
NOT TO SCALE

2

NO.	BY	DATE	DESCRIPTION
2	SCB	11/13/20	REVISED STREAM CROSSING #1 DETAILS

SCALE: AS SHOWN
DRAWN: DATE:
CHECKED: DATE:
APPROVED: DATE:
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:

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HATFIELD McCOY
REGIONAL RECREATION AUTHORITY
ASHLAND RESORT EXPANSION
McDOWELL COUNTY, WV
DETAILS

SHEET No. 61

LAYOUT TAB: 61 DETAILS
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