



PROJECT MANUAL

Complex Security Fence Replacement

Grave Creek Mound Archaeological Complex
801 Jefferson Avenue
Moundsville, West Virginia

SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY OF WORK

- A. Project Identification: As follows:
 - 1. Project: Complex Fence Replacement
 - 2. Owner: West Virginia Division of Culture and History, Grave Creek Mound Archaeological Complex
- B. Contract Documents, dated March 21, 2011 were prepared by Mark Lynch, Manager for Facility Operations, West Virginia Division of Culture and History(Main Offices), 1900 Kanawha Boulevard East, The Cultural Center / Building 9, Charleston, West Virginia, 25305-0009
- C. The Work consists of the replacement of existing fencing at the Grave Creek Mound Archaeological Complex, 801 Jefferson Avenue, Moundsville WV 26041, as described in the Contract Documents.
- D. Work Not Included: The following will be provided by others:
 - 1. Archeology surveying services prior to fence installation.

1.2 WORK RESTRICTIONS

- A. Contractor's Use of Premises: During construction, Contractor shall have full use of site indicated. Contractor's use of premises is limited only by Owner's right to perform work or employ other contractors on portions of Project and as follows:
 - 1. The site is an archeology site of national significance. Contractor shall cooperate fully with site staff and contracted archeologists in order to minimally disturb the site while conducting the Work
 - a. If, during the Work, the Contractor's employees discover historical artifacts work shall immediately cease in the area of discovery and the Owner's Site Manager shall be contacted immediately for assessment prior to the Work resuming in the area of discovery.
- B. Contractor shall conduct work so that the site will remain secure to the Owner's satisfaction at each close of the Contractor's workday. Work shall be conducted during the business hours of the complex; 9A.M. to 5 P.M Monday through Friday

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01100

SECTION 01200 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 ALLOWANCES: (Not Applicable)

1.2 ALTERNATES: (Not Applicable)

1.3 UNIT PRICES: (Not Applicable)

1.4 CONTRACT MODIFICATION PROCEDURES

- A. On Owner's approval of a written proposal from Contractor, Owner's Representative will issue a Change Order, for all changes to Contract Sum or Contract Time.
- B. When Owner and Contractor disagree on the terms of a proposal, Owner's Representative may issue a Construction Change Directive, instructing Contractor to proceed with the change. Construction Change Directive will contain a description of the change and designate the method to be followed to determine changes to Contract Sum or Contract Time.

1.5 PAYMENT PROCEDURES

- A. Upon completion of the Work Contractor shall tender an Invoice in arrears for the entire amount. The Owner shall conduct a survey of the work and make note of any deficiencies in the Work. The Contractor shall make corrections to the Owner's satisfaction and the Owner will tender payment.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01200

SECTION 01300 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 PROJECT MANAGEMENT AND COORDINATION

- A. Verify layout information shown on Drawings, in relation to property survey and existing benchmarks, before laying out the Work.
- B. Coordinate construction to ensure efficient and orderly execution of each part of the Work.
- C. Progress meetings will be held at Project site every two (2) weeks. Notify Owner of meeting dates. Each subcontractor or other entity concerned with current progress or involved with planning or coordination of future activities, shall attend.
 - 1. Prepare minutes of each meeting and distribute to parties present.

1.2 CONSTRUCTION SCHEDULE

- A. Prepare a horizontal bar-chart or calendar construction schedule. Provide a separate time bar for each activity and a vertical line to identify the first workday of each week or submit a marked up calendar indicating Contractor and Sub-Contractor activity. As Work progresses, mark each bar or calendar item to indicate actual completion.
 - 1. Submit within ten (10) days after date established for Commencement of the Work.
 - 2. Coordinate each element with other activities. Show each activity in proper sequence. Indicate sequences necessary for completion of related Work.
 - 3. Indicate Substantial Completion and allow time for Owner's procedures necessary for certifying Substantial Completion.
 - 4. Schedule Distribution: Distribute copies to Owner, subcontractors, and parties required to comply with dates.
 - 5. Updating: Revise the schedule after each meeting or activity where revisions have been made. Distribute revised copies to Owner, subcontractors, and parties required to comply with dates.

1.3 SUBMITTAL PROCEDURES

- A. Coordinate submittal preparation with construction schedule, fabrication lead-times, other submittals, and activities that require sequential operations.
 - 1. No extension of Contract Time will be authorized due to failure to transmit submittals in time to permit processing sufficiently in advance of when materials are required in the Work.
 - 2. Architect will not accept submittals from sources other than Contractor.
- B. Prepare submittals by placing a permanent label on each for identification. Provide a 4- by 5-inch space on the label or beside title block to record review and approval markings and action taken. Include the following information on the label:
 - 1. Project name.
 - 2. Date.
 - 3. Name and address of Contractor.

West Virginia Division of Culture and History
Grave Creek Mound Archaeological Complex, Moundsville, WV
Complex Security Fence Replacement

4. Name and address of subcontractor or supplier.
 5. Number and title of appropriate Specification Section.
 6. Contractor's certification that materials comply with specified requirements.
- C. Coordinate each submittal with other submittals and with work that does not require submittals.
- D. Product Data: Mark each copy to show applicable choices and options. Include the following:
1. Data indicating compliance with specified standards and requirements.
 2. Notation of coordination requirements.
 3. For equipment data, include rated capacities, dimensions, weights, required clearances, and furnished specialties and accessories.
- E. Shop Drawings: Submit newly prepared information drawn to scale. Do not reproduce Contract Documents or copy standard information. Submit 1 reproducible print and 1 blue- or black-line print on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches. Owner will return the reproducible print. Include the following:
1. Dimensions, profiles, methods of attachment, coordination with adjoining work, large scale details, and other information, as appropriate for the Work.
 2. Identification of products and materials.
 3. Notation of coordination requirements.
 4. Notation of dimensions established by field measurement.
 5. Identification of deviations from Contract Documents.
- F. Samples: Submit Samples finished as specified and identical with the material proposed. Where variations are inherent in the material, submit sufficient units to show limits of the variations. Include product name or name of the manufacturer.
- G. Owner's representative will review each submittal, mark as appropriate to indicate action taken, and return copies less those retained. Compliance with specified requirements remains Contractor's responsibility.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01300

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Standards: Comply with NFPA 241, "Standard for Safeguarding Construction, Alterations, and Demolition Operations"; ANSI A10 Series standards for "Safety Requirements for Construction and Demolition"; and NECA Electrical Design Library's "Temporary Electrical Facilities."
 - 1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. At the earliest possible time, when acceptable to Owner, change over from use of temporary utility services to use of permanent utilities.
- C. Remove temporary facilities and controls before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 TEMPORARY UTILITIES

- A. Provide temporary utility services to Project site for use during construction (if required). Arrange for and coordinate utility services with local utility companies.
 - 1. Owner will pay use charges for temporary utilities.
- B. Provide temporary heat for curing or drying of work, and for protection of new construction from adverse effects of low temperatures. Use of gasoline-burning heaters and open-flame heaters is not permitted.

3.2 CONSTRUCTION FACILITIES

- A. Provide field offices, storage trailers, and other support facilities as necessary for efficient prosecution of the Work.
 - 1. Temporary facilities located within the construction area or within 30 feet of building lines shall be of noncombustible construction.
- B. Provide temporary sanitary facilities. Comply with regulations and health codes for type, number, location, and maintenance of facilities.
- C. Provide temporary enclosures for protection of construction and workers from exposure and inclement weather and for containment of heat.
- D. Do not install project identification and other signs.

West Virginia Division of Culture and History
Grave Creek Mound Archaeological Complex, Moundsville, WV
Complex Security Fence Replacement

- E. Collect waste daily and, when containers are full, legally dispose of waste off-site.
 - 1. Handle hazardous, dangerous, or unsanitary waste materials in separate closed waste containers. Dispose of material according to applicable laws and regulations.
 - 2. If possible, Contractor will recycle steel materials.

3.3 TEMPORARY CONTROLS

- A. Provide temporary fire protection until permanent systems supply fire-protection needs.
 - 1. Provide adequate numbers and types of fire extinguishers.
 - 2. Store combustible materials in fire-safe containers in fire-safe locations.
 - 3. Prohibit smoking in hazardous fire-exposure areas.
 - 4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
- B. Provide temporary barricades, warning signs, and lights to protect the public and construction personnel from construction hazards.
 - 1. Enclose construction areas with fences with lockable entrance gates, to prevent unauthorized access. Contractor shall ensure that site is secure at each close of the Contractor's work day. (also refer to: SECTION 01100-SUMMARY, 1.2 WORK RESTRICTIONS, B.)
- C. Provide temporary environmental controls as required by authorities having jurisdiction including, but not limited to, erosion and sediment control, dust control, noise control, and pollution control.

END OF SECTION 01500

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Provide products of same kind from a single source. The term "product" includes the terms "material," "equipment," "system," and similar terms.
- B. Deliver, store, and handle products according to manufacturer's written instructions, using means and methods that will prevent damage, deterioration, and loss, including theft.
 - 1. Schedule delivery to minimize long-term storage and to prevent overcrowding construction spaces.
 - 2. Deliver in manufacturer's original sealed packaging with labels and written instructions for handling, storing, protecting, and installing.
 - 3. Inspect products at time of delivery for compliance with the Contract Documents and to ensure items are undamaged and properly protected.
 - 4. Store heavy items in a manner that will not endanger supporting construction.
 - 5. Store products subject to damage on platforms or pallets, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required.
- C. Product Substitutions: Reasonable and timely requests for substitutions will be considered. Substitutions include products and methods of construction differing from that required by the Contract Documents and proposed by Contractor after award of Contract.
 - 1. Submit four (4) copies of each request for product substitution. Identify product to be replaced and provide complete documentation showing compliance of proposed substitution with applicable requirements. Include a full comparison with the specified product, a list of changes to other Work required to accommodate the substitution, and any proposed changes in Contract Sum or Contract Time should the substitution be accepted.
 - 2. Submit requests for product substitution in time to permit processing of request and subsequent Submittals, if any, sufficiently in advance of when materials are required in the Work. Do not submit unapproved substitutions on Shop Drawings or other submittals.
 - 3. Owner's Representative will review the proposed substitution and notify Contractor of its acceptance or rejection.

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

- A. Provide products that comply with the Contract Documents, are undamaged, and are new at the time of installation.
 - 1. Provide products complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.
- B. Do not attach manufacturer's labels or trademarks, except for required nameplates, on surfaces exposed to view in occupied spaces or on the exterior.

West Virginia Division of Culture and History
Grave Creek Mound Archaeological Complex, Moundsville, WV
Complex Security Fence Replacement

C. Select products as follows:

1. Where only a single product or manufacturer is named, provide the item indicated. No substitutions will be permitted.
2. Where two or more products or manufacturers are named, provide one of the items indicated. No substitutions will be permitted.
3. Where products or manufacturers are specified by name, accompanied by the term "or equal," provide the named item or comply with provisions concerning "product substitutions" to obtain approval for use of an unnamed product or manufacturer.
4. Where a product is described with required characteristics, with or without naming a brand or trademark, provide a product that complies with those characteristics and other Contract requirements.
5. Where compliance with performance requirements is specified, provide products that comply and are recommended in writing by the manufacturer for the application.
6. Where compliance with codes, regulations, or standards, is specified, select a product that complies with the codes, regulations, or standards referenced.

D. Unless otherwise indicated, Owner will select color, pattern, and texture of each product from manufacturer's full range of options.

PART 3 - OWNER-FURNISHED PRODUCTS (Not Applicable)

PART 4 - EXECUTION (Not Applicable)

END OF SECTION 01600

SECTION 01700 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 CLOSEOUT SUBMITTALS

- A. Record Drawings: Maintain a set of Contract Drawings as Record Drawings. Mark to show installation that varies from the Work originally shown.
- B. Record Specifications: Maintain one copy of the Project Manual, including addenda, as Record Specifications. Mark to show variations in Work performed in comparison with the text of the Specifications and modifications.
- C. Operation and Maintenance Data: Organize data into three-ring binders, with pocket folders for folded sheet information. Mark identification on front and spine of each binder. Include the following:
 - 1. Emergency instructions.
 - 2. Spare parts list.
 - 3. Copies of warranties.
 - 4. Wiring diagrams.
 - 5. Shop Drawings and Product Data.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Examine substrates and conditions for compliance with manufacturer's written requirements including, but not limited to, surfaces that are sound, level, and plumb; substrates within installation tolerances; surfaces that are smooth, clean, and free of deleterious substances; and application conditions within environmental limits. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Where Drawings indicate dimensions of existing construction verify by field measurement. Where fabricated products are to be fitted to other construction verify dimensions by field measurement before fabricating and, when possible, allow for fitting and trimming during installation.

PART 1 - CUTTING AND PATCHING (Not Applicable)

1.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installation. Anchor each product securely in place, accurately located and aligned. Clean exposed surfaces and protect from damage. If applicable, prepare surfaces for field finishing.
- B. Comply with NFPA 70 for installation of electrically operated equipment and electrical components and materials.

1.2 FINAL CLEANING

- A. Clean each surface or item as follows before requesting inspection for certification of Substantial Completion:
 - 1. Remove labels that are not permanent.
 - 2. Clean exposed finishes to a dust-free condition, free of stains, films, and foreign substances.
 - 3. Wipe surfaces. Remove excess lubrication.
 - 4. Clean the site. Sweep paved areas; remove stains, spills, and foreign deposits.

1.3 CLOSEOUT PROCEDURES

- A. Request Substantial Completion inspection once the following are complete:
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Submit Record Drawings and Specifications, maintenance manuals, warranties, and similar record information.
 - 3. Deliver spare parts, extra materials, and similar items.
 - 4. Change over locks and transmit keys to Owner.
 - 5. Complete startup testing of systems and instruction of operation and maintenance personnel.
 - 6. Remove temporary facilities and controls.
 - 7. Complete final cleanup.
 - 8. Touch up, repair, and restore marred, exposed finishes.
 - 9. Obtain final inspections from authorities having jurisdiction.
- B. On receipt of a request for inspection, Owner's Representative will proceed with inspection or advise Contractor of unfilled requirements. Owner's Representative will prepare the Certificate of Substantial Completion after inspection or advise Contractor of items that must be completed or corrected before the certificate will be issued.
- C. Arrange for each installer of equipment that requires operation and maintenance to provide instruction to Owner's personnel. Include a detailed review of the following:
 - 1. Emergency operations and safety procedures.
 - 2. Noise and vibration adjustments.
 - 3. Maintenance manuals.
 - 4. Spare parts, tools, and materials.
 - 5. Identification systems.
 - 6. Control sequences.
 - 7. Hazards.
 - 8. Warranties and bonds.
- D. Request inspection for certification of final acceptance, once the following are complete:
 - 1. Submit a copy of the Substantial Completion inspection list stating that each item has been completed or otherwise resolved for acceptance.
 - 2. Submit final meter readings for utilities, a record of stored fuel, and similar data as of the date of Substantial Completion.
- E. Owner's Representative will re-inspect the Work on receipt of notice that the Work has been completed.

West Virginia Division of Culture and History
Grave Creek Mound Archaeological Complex, Moundsville, WV
Complex Security Fence Replacement

1. On completion of re-inspection, Owner's Representative will prepare a certificate of final acceptance. If the Work is incomplete, Owner's Representative will advise Contractor of the Work that is incomplete or obligations that have not yet been fulfilled.

END OF SECTION 01700

SECTION 01732 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Unless otherwise indicated, demolished materials become Contractor's property. Remove from Project site.
- B. Items indicated to be removed and salvaged remain Owner's property. Remove, clean, and deliver to Owner's designated storage area.
- C. Comply with EPA regulations and disposal regulations of authorities having jurisdiction.
- D. Conduct demolition without disrupting Owner's use of the site
- E. Demolish such that the site will remain secure at close of Contractors work day (Also refer to SECTION 01100-SUMMARY, 1.2 WORK RESTRICTIONS, B and SECTION 01500, 3.3 TEMPORARY CONTROLS, B.).

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 DEMOLITION

- A. Maintain and protect existing utilities to remain in service before proceeding with demolition, providing bypass connections to other parts of the building, if required.
- B. Locate, identify, shut off, disconnect, and cap off utility services to be demolished, if required
- C. Conduct demolition operations and remove debris to prevent injury to people and damage to adjacent buildings and site improvements.
- D. Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse.
- E. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.
- F. Remove and dispose demolished fence post foundations. In areas identified by the Owner's Representative or the Site Manager as "archaeologically sensitive" the removal must be monitored by an archeologist. Infill unused existing post holes with soil.
- G. Promptly patch and repair holes and damaged surfaces of building caused by demolition. Restore exposed finishes of patched areas and extend finish restoration into remaining adjoining construction.
- H. Promptly remove demolished materials from Owner's property and legally dispose of them. Do not burn demolished materials.

West Virginia Division of Culture and History
Grave Creek Mound Archaeological Complex, Moundsville, WV
Complex Security Fence Replacement
END OF SECTION 01732

SECTION 02300 - EARTHWORK

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by Owner's Representative or the excavation of materials in a designative "archaeologically sensitive" area without the presence of an assigned Archeologist . Unauthorized excavation and remedial work shall be at Contractor's expense.
- B. Do not interrupt existing utilities serving facilities occupied by Owner. Provide temporary utility services.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, or other deleterious matter.
- B. Unsatisfactory Soil: ASTM D 2487 Soil Classification Groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.
- C. Backfill and Fill: Satisfactory soil materials.
- D. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, ASTM D 2940, with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- E. Bedding: Subbase materials with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch sieve and not more than 5 percent passing a No. 8 sieve.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Protect subgrades and foundation soils from softening and damage by water, freezing temperatures, or frost.
- B. Explosives: (not applicable).
- C. Excavate to subgrade elevations regardless of character of materials and obstructions encountered.

West Virginia Division of Culture and History
Grave Creek Mound Archaeological Complex, Moundsville, WV
Complex Security Fence Replacement

- D. Excavate for structures, building slabs, pavements, and walkways. Trim subgrades to required lines and grades.
- E. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface, pulverize, moisture-condition or aerate soil, and recompact.
- F. Place backfill and fill in layers not more than 8 inches in loose depth at optimum moisture content. Compact each layer under structures, building slabs, pavements, and walkways to **95** percent of maximum dry unit weight according to ASTM D 698; elsewhere to 90 percent.
- G. Grade areas to a smooth surface to cross sections, lines, and elevations indicated. Grade lawns, walkways, and unpaved subgrades to tolerances of plus or minus 1-1/4 inch and pavements and areas within building lines to plus or minus 1/2 inch.
- H. Under pavements and walkways, place subbase course material on prepared subgrades and compact at optimum moisture content to required grades, lines, cross sections, and thicknesses.
- I. Under slabs-on-grade, place drainage fill on prepared subgrade and compact to required cross section and thickness.
- J. Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300

SECTION 323119- DECORATIVE METAL FENCES AND GATES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals-Product Data

B. References-

1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.
3. ASTM D523 - Test Method for Specular Gloss. 0020
4. ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint.
5. ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.
6. ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
7. ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
8. ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
9. ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.
10. ASTM F2408 – Ornamental Fences Employing Galvanized Steel Tubular Pickets.

C. Product Handling and Storage-

1. Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. AMERISTAR FENCE PRODUCTS (Or approved equal)

- B. The fence system shall conform to Montage Industrial welded ornamental fence ***Welded and Rackable*** ATF – All Terrain Flexibility Ornamental Steel, Classic, 4” air gap design, extended picket bottom rail treatment, 2-rail style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma.
<http://www.ameristarfence.com>

2.2 MATERIAL

- A. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 45,000 psi (310 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.60 oz/ft² (184 g/m²), Coating Designation G-60. A minimum of 62% of the steel material shall be derived from recycled scrap metal.
- B. Material for pickets shall be 3/4” square x 14 Ga. tubing. The rails shall be steel channel, 1.5” x 1.4375” x 14 Ga. Picket holes in the rail shall be spaced 4.675” o.c. . Fence posts and gate posts shall meet the minimum size requirements of Table 1

West Virginia Division of Culture and History
 Grave Creek Archaeological Complex, Moundsville, WV
 Complex Security Fence Replacement

Table 1 – Minimum Sizes for Posts			
<u>Fence Posts</u>	<u>Panel Height</u>		
2-1/2" x 14 Ga.	7' & 8' Heights		
<u>Gate Leaf</u>	<u>Gate Height</u>		
	<u>Up to & Including 4'</u>	<u>Over 4' Up to & Including 6'</u>	<u>Over 6' Up to & Including 8'</u>
Up to 4'	2-1/2" x 14 Ga.	3" x 12 Ga.	3" x 12 Ga.
4'1" to 6'	3" x 12 Ga.	3" x 12 Ga.	4" x 12 Ga.
6'1" to 16'	3" x 12 Ga.	4" x 12 Ga.	6" x 12 Ga.

2.3 FABRICATION

- A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.
- B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by Ameristar's proprietary fusion welding process (or approved equal), thus completing the rigid panel assembly.
- C. The manufactured panels and posts shall be subjected to an inline electrode position coating (E-Coat) process consisting of a multi-stage pretreatment/wash (with zinc phosphate), followed by a duplex application of an epoxy primer and an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.058 mm). The color shall be Bronze. The coated panels and posts shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2 (Note: The requirements in Table 2 meet or exceed the coating performance criteria of ASTM F2408).

Table 2 – Coating Performance Requirements		
<u>Quality Characteristics</u>	<u>ASTM Test Method</u>	<u>Performance Requirements</u>
Adhesion	D3359 – Method B	Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).
Corrosion Resistance	B117, D714 & D1654	Corrosion Resistance over 1,500 hours (Scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball).
Weathering Resistance	D822 D2244, D523 (60° Method)	Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).

- D. The manufactured fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements for Industrial weight fences under ASTM F2408.
- E. Gates shall be fabricated using fusion welded ornamental panel material and 1-3/4" sq. x 14ga. gate ends. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

PART 3 - EXECUTION

3.1 PREPERATION

- A. All new installation shall be laid out by the contractor in accordance with the construction plans.

3.2 INSTALATION

- A. Fence post shall be spaced according to Table 3, plus or minus 1/2". For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade. Fence panels shall be attached to posts with brackets supplied by the manufacturer. Posts shall be set in concrete footers having a minimum depth of 36" (Note: In some cases, local restrictions of freezing weather conditions may require a greater depth). The "Earthwork" and "Concrete" sections of this specification shall govern material requirements for the concrete footer. Posts setting by other methods such as plated posts or grouted core-

West Virginia Division of Culture and History
 Grave Creek Archaeological Complex, Moundsville, WV
 Complex Security Fence Replacement

drilled footers are permissible only if shown by engineering analysis to be sufficient in strength for the intended application.

Table 3 – Montage Commercial – Post Spacing By Bracket Type						
Span	For CLASSIC 8' Nominal (91.95" Rail)					
Post Size	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"
Bracket Type	Montage Commercial Universal (BB112)	Montage Commercial Line Blvd. (BB114)	Montage Commercial Flat Mount (BB111)		Montage Commercial Swivel (BB113)*	
Post Settings ± 1/2" O.C.	95-1/2"	95-1/2"	95-1/2"	96"	*95-1/2"	*96"
*Note: When using BB304 swivel brackets on either or both ends of a panel installation, care must be taken to ensure the spacing between post and adjoining pickets meets applicable codes. This will require trimming one or both ends of the panel.						

3.3 FENCE INSTALLATION MAINTENANCE

- A. When cutting/drilling rails or posts adhere to the following steps to seal the exposed steel surfaces; 1) Remove all metal shavings from cut area. 2) Apply zinc-rich primer to thoroughly cover cut edge and/or drilled hole; let dry. 3) Apply 2 coats of custom finish paint matching fence color. Failure to seal exposed surfaces per steps 1-3 above will negate warranty. Ameristar (or approved equal) spray cans or paint pens shall be used to prime and finish exposed surfaces; it is recommended that paint pens be used to prevent overspray. Use of non-Ameristar (or approved equal) parts or components will negate the manufactures' warranty.

3.4 GATE INSTALATION

- A. Gate posts shall be spaced according to the manufacturers' gate drawings, dependent on standard out-to-out gate leaf dimensions and gate hardware selected. Type and quantity of gate hinges shall be based on the application; weight, height, and number of gate cycles. The manufacturers' gate drawings shall identify the necessary gate hardware required for the application. Gate hardware shall be provided by the manufacture of the gate and shall be installed per manufacturer's recommendations. Provide internal locking devices with ground receiver set in concrete.

3.5 CLEANING

- A. The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

END OF SECTION 323119

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data.
- B. Comply with ASTM C 94; ACI 301, "Specification for Structural Concrete"; ACI 117, "Specifications for Tolerances for Concrete Construction and Materials"; and CRSI's "Manual of Standard Practice."

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Deformed Reinforcing Bars: ASTM A 615/A 615M, Grade 60.
- B. Plain Steel Wire: ASTM A 82, as drawn.
- C. Steel Welded-Wire Fabric: ASTM A 185, flat sheets not rolls.
- D. Portland Cement: ASTM C 150, Type I or II.
- E. Fly Ash: ASTM C 618, Type C or F.
- F. Aggregates: ASTM C 33, uniformly graded.
- G. Fiber Reinforcement: ASTM C 1116, Type III, synthetic fibers, 1/2 to 1 inch .
- H. Air-Entraining Admixture: ASTM C 260.
- I. Chemical Admixtures: ASTM C 494].
- J. Water Stops: (not applicable).
- K. Vapor Retarder: (not applicable).
- L. Liquid Membrane-Forming Curing Compound: ASTM C 309, clear.
- M. Liquid Membrane-Forming Curing and Sealing Compound: ASTM C 1315, clear, Type I, Class A, **sol-vent borne**
- N. Slip-Resistive Aggregate: (not applicable).
- O. Mineral Dry-Shake Floor Hardener: (not applicable).
- P. Joint-Filler Strps: (not applicable).
- Q. Repair Underlayment: (not applicable).

- R. Repair Topping: (not applicable).

2.2 MIXES

- A. Proportion normal-weight concrete mixes to provide the following properties:
 - 1. Compressive Strength: 3500 psi at 28 days.
 - 2. Slump Limit: 4 inches at point of placement.
 - 3. Air Content: 5.5 to 7.0 percent for concrete exposed to freezing and thawing, 2 to 4 percent elsewhere.

PART 3 - EXECUTION

3.1 CONCRETING

- A. Construct formwork and maintain tolerances and surface irregularities within ACI 117 limits of Class A for concrete exposed to view and Class C for other concrete surfaces.
- B. Accurately position, support, and secure reinforcement.
- C. Place concrete in a continuous operation and consolidate using mechanical vibrating equipment where needed.
- D. Protect concrete from physical damage, premature drying, and reduced strength due to hot or cold weather during mixing, placing, and curing.
- E. Formed Surface Finish: Smooth-formed finish for concrete exposed to view, coated, or covered by waterproofing or other direct-applied material; rough-formed finish elsewhere.
- F. Slab Finishes: Troweled finish
- G. Cure formed surfaces by moist curing for at least seven days.
- H. Begin curing concrete slabs after finishing. Keep concrete continuously moist for at least seven days.
- I. Protect concrete from damage. Repair surface defects in formed concrete.

END OF SECTION 03300

West Virginia Division of Culture and History
Grave Creek Mound Archaeological Complex, Moundsville, WV
Complex Security Fence Replacement

BID RETURN CERTIFICATE

Supply all Labor, Materials, and Transportation to remove and replace Security fencing at the Grave Creek Archaeological Complex located at 801 Jefferson Avenue, Moundsville, WV per the Contract Documents.

TOTAL COST.....\$_____

Firm Name _____

Address _____

Telephone _____

Fax _____

Date _____

Signature _____

Title _____