

SECTION 033712 - EXHIBIT ROCKWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior rockwork fabrications, made from shotcrete and/or natural boulders, sculpted and painted to replicate a highly natural appearance, including, but not limited to the following:
 - a. Artificial geology, landform, pools and mudbank.
2. Coloring, dying, and tinting of new shotcrete to achieve the required finish.
3. Natural stone boulders used in the exhibit.
4. Waterproofing of pools.
5. Theme painting.

B. Related Requirements:

1. Section 033713 "Shotcrete" for materials and installation requirements of shotcrete used to form exhibit rockwork.
2. Section 071616 "Crystalline Waterproofing" for waterproofing/protection of pools.
3. Division 23 and 26 Sections for required field coordination of all piping, plumbing, and electrical (including ground wire system) with Work of this Section.
4. Section 311000 "Site Clearing" for preparation of the site.
5. Section 312000 "Earthmoving" for preparation of subsurface conditions to receive exhibit rockwork.

1.2 DEFINITIONS

- A. Approved Exhibit Rockwork Contractor: Contractor whose proven experience, qualifications, and methods have been reviewed and accepted for the Work of this Section by the Owner and Architect after submitting the required information indicated under the Quality Assurance paragraph of this Section.
- B. Artificial Geology and stone walls (rockwork) Definition: Shall consist of the construction and placement of the artificial features indicated on the Drawings and Specifications herein.
- C. Carved or Embossed Shotcrete: Shall consist of premixed fine aggregate and cement and water pneumatically placed or applied by suitable mechanism. Texture shall be by hand carving and embossing.

1.3 DELEGATED DESIGN

- A. See Section 033713 "Shotcrete" for delegated design responsibilities.

1.4 QUALITY ASSURANCE – EXHIBIT CONTRACTOR

- A. Experience and Qualification of Bidders: The Exhibit Rockwork Contractor, in order to qualify as a specialty skilled craftsman for the exhibit rockwork fabrication under this Work, shall demonstrate experience in:
1. Specializing in the artistic construction of animal exhibit concrete work.
 2. Managing projects of this size and complexity.
 3. Coordination of this Work with other trades that affect this Work.
 4. Employing qualified and experienced crafts persons / and artists and meeting the criteria in section 1.4B.
- B. The Exhibit Rockwork Contractor shall submit the following with the bid:
1. A signed statement of experience certifying that the Contractor is an established business with a minimum of 5 years of experience and indicate in detail his experience in successfully constructing items described in paragraph 1.2.
 2. Photographic proof and reference material for evaluation of experience and ability to perform under this Work, including photographs (at least five (5) 8 1/2" x 11" color photographs of previous comparable work) to show the Contractor's capabilities to construct the above mentioned items for natural habitat exhibits and stone walls similar to those shown on the drawings, Contractor also to include a list of completed projects and references which demonstrate these capabilities. These projects and photographs of projects must have been the work of those craftsman and artist proposed for this work.
 3. Full documentation of the Construction crew, including resumes of lead personnel (on-site supervisor, and final texturing and finish experts, et al) lists of specific personnel to be used, and details of each listed person's experience and abilities to perform all phases of construction under this Work to the Architect's satisfaction. The assigned project on site supervisor and aesthetic coordinator's resume should show a minimum of four (4) years' experience in the management of project crews of no less than five persons, as well as experience in coordination with other trades in the completion of simulated rockwork fabrication projects under the Work.
- C. The following is a nonrestrictive list of pre-qualified Exhibit Rockwork Contractors. Contractor may submit alternate Exhibit Rockwork Contractor but must obtain pre-qualification, in writing, prior to bid from Owner and Architect.
1. Cemrock Landscapes, Inc.: attn: Chris Conley
4798 S. Julian Avenue
Tucson AZ 85714
(520) 571-1999
 2. Cost of Wisconsin, Inc.: attn: Jack Beatty
4201 County Road P
Jackson, Wisconsin 53037
(262) 677-6060
 3. Nassal Company: attn: Melissa Ruminot
415 W. Kaley Street
Orlando, FL 32806-3942
(407) 648-0400
 4. Paradise Labs
Baltimore, MD
 5. DreamScape Designs/attn: Stephanie Tommasello
Baltimore, MD
949-735-7122

- D. Other Exhibit Rockwork Contractors wishing to be approved under this Work may make application to General Contractor. Exhibit Rockwork Contractor to provide qualifications meeting criteria identified above the Contractor who will forward qualifications to the Owner and Architect for review.
- E. The Owner and Architect may require additional information and may request a visit to completed work in order to make a determination of the Exhibit Rockwork Contractor's qualifications to produce exhibit artifacts with the required criteria under this Work. The Owner and Architect may also require a submittal of high-quality digital documentation of the Exhibit Rockwork Contractor's completed work.
- F. The Owner and Architect reserve the right to reject non-qualified Contractors, based on qualification submittals and, at their option, review of past work and references.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site per the provision described in Section 033713 "Shotcrete".

1.6 INTENT

- A. It is intended that the Work involved create a highly natural appearance as illustrated on the Drawings and the accompanying images.
- B. The Exhibit Rockwork Contractor will perform this Work under the direction of the Architect and will be expected to cooperate fully in this process.
- C. The Architect explicitly reserves the right to continuously monitor the work for aesthetic quality and functional criteria of the work as it is performed.
- D. The Exhibit Rockwork Contractor is responsible to see that no loose materials used in the execution of this work remain after completion of the project.

1.7 COORDINATION

- A. The Exhibit Rockwork Contractor shall fully coordinate with the Work of the General Contractor, subcontractors and the Architect. If the Exhibit Rockwork Contractor suspects that a conflict may exist between Work in this Section and any other Work, he/she shall bring the issue to the attention of the Architect before proceeding.

1.8 ACTION SUBMITTALS

- A. The Exhibit Rockwork Contractor shall submit the following shop drawings for review:
 - 1. Layout Plan: The layout plan shall indicate and identify the following:
 - a. All rockwork by indicated categories.
 - b. Locations of all required footings and foundations.
 - c. Footing and foundation types and all pertinent dimensions.

2. Steel Reinforcing: Indicate sizes, types and locations of all steel reinforcing involved in Work of this Section. Provide the seal and signature of a licensed professional Engineer within project site jurisdiction to steel reinforcement shop drawings, indicating compliance with all government codes for reinforced concrete structures. Include structural calculations for all conditions.
 3. Literature, Specifications and Mix Designs: Submit all product literature, specifications and mix designs used in the production of rockwork.
- B. Delegated-Design Submittal: For rockwork indicated to comply with performance requirements and design criteria, per Section 33713 "Shotcrete".
- C. At least thirty days prior to beginning any exhibit work, the Exhibit Rockwork Contractor shall deliver to the project site one 4' x 4' or other approved size sample panel for each of the rockwork and themed material types listed in the exhibit rockwork theming to the Architect for approval. The types are reiterated in the following rockwork and theming type list:
1. Mudbank
 2. Pools.
- D. Samples shall represent finished surfaces with texturing, coloring, etching, etc.
- E. Samples rejected by the Architect shall be resubmitted for approval by the Exhibit Rockwork Contractor at no additional cost to the Owner. Sample panels shall not be removed until the completion of the work.
- F. Model: Not required
- 1.9 PRE-CONSTRUCTION CONDITIONS
- A. All artificial rockwork locations shall be approved by the Architect prior to actual shotcrete application and texturing.
- B. Methods of Construction: The Exhibit Rockwork Contractor shall submit with bid proposed methods of construction for all Work in this section. Such documentation shall include the following:
1. Statement of understanding the overall project schedule and required completion of all rockwork and artifacts.
 2. A detailed description of proposed fabrication and finish techniques (including materials) for artificial geology and alternate structural systems (if applicable).
 3. Recommend additional cost effective alternative methods of construction prior to start of work for consideration by Architect and Owner.

PART 2 - PRODUCTS

2.1 EXHIBIT ARTIFACT AND MISCELLANEOUS MATERIAL

- A. Paint shall be acrylic latex, highest quality exterior grade, matte finish.

PART 3 - EXECUTION

3.1 PLACEMENT OF EXHIBIT FEATURES

- A. Layout: All items shall be placed at locations on the site and grades shown on the Drawings, shop drawings, and as directed by the Architect.

3.2 INSTALLATION, GENERAL

- A. See Section 033713 "Shotcrete" for requirements relating to excavation, subdrainage, steel reinforcement, placement of concrete, and backfilling.

3.3 PROVISIONS FOR OTHER TRADES

- A. The Exhibit Rockwork Contractor shall be responsible for coordinating Work of all other trades in contact with their Work as well as Owner supplied items needed to fully complete the habitat setting.
- B. Provide sleeved openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, drains, cavities, and chases from trades providing such items. All non-sleeved piping shall be set by the appropriate contractor except that sleeves shall be provided by the appropriate contractor and installed by the Exhibit Rockwork Contractor. Accurately place and securely support items built into forms.

3.4 WATERPROOFING

- A. See Section 071616 "Crystalline Waterproofing" for material and installation requirements for waterproofing shotcrete formed pools.

3.5 FINISHES

- A. The Exhibit Rockwork Contractor shall provide experts to complete the desired finishing for all work to receive a natural appearance. Such finishing and coloring shall cover all surfaces exposed to public viewing and extend at least 12" beyond view or below final backfill or grading. Architect to provide color samples as a point of beginning for painting work.
- B. Carved Rockwork Formations: Artificially constructed geology and sedimentary geologic formations, as illustrated on the Drawings, to match the existing exhibit rockwork.

3.6 PAINTING

- A. Paint all exposed surfaces of shotcrete. Painting shall make exhibit artifacts look as natural as possible. Architect shall be final judge of acceptable quality of painting.
- B. In order to blend in with surrounding artificial rockwork, additional items in and around shotcrete such as miscellaneous hardware, concrete walls, and paving segmental retaining wall, etc., are to receive matching paint finishes in order to achieve an overall uniform look.

- C. Rockwork items to be painted, including theme painted concrete and boulders should have a minimum of three different paint colors.

3.7 BOULDERS

- A. The Owner has a collection of boulders that are to be moved from the Owner's on-site storage yard. Use these boulders to form new boulder formations as illustrated on the Drawings. Additional/new boulders, if existing boulders are not sufficient to complete the scope of Work, are to match existing in quality, color, texture, and form.

3.8 CLEAN-UP

- A. Clean-up rebound from operations and dispose of off-site on a daily basis.
- B. Do not leave or bury loose pieces of reinforcing, sheet or expanded metal, tie wire, plastics or any other material not fully embedded in concrete.
- C. Clean overspray and rebound from adjacent work (including natural boulders) at the completion of each day's placing (or sooner if required). Leave all surfaces broom-clean and unstained at the completion of the work.

3.9 FINAL COMPLETION

- A. Exhibit Rockwork Contractor shall repair and patch all punch list items to the satisfaction of the Architect.
- B. Exhibit Rockwork Contractor shall carefully inspect all construction areas to remove all debris, particularly stones, steel bars, and other materials, which could be uncovered by the Animals.

END OF SECTION 033712