

## Rockwerx Createk Stone Artificial Rock Play Structure Installations (Full Length version)

**Rockwerx Createk Stone** composite polymer fabrications have over 15 years of widespread daily use in custom installations for Disney, Cabella's, and other popular outdoor and indoor rock landscape and recreation settings. Createk Stone meets owner needs in a wide variety of applications, including zoo habitats, aquariums, resorts, pool environments, water features, rock gardens, rock climbing walls, site furnishings, and as components of natural playgrounds. Createk Stone is well known for its remarkable ability to mimic natural stone with through-colored, UV-stable, lightweight components. Additional Createk treatments can include artificial snow and ice, trees, plantings, and artificial wood surfaces.

The non-leaching, non-fading characteristics of Createk composite polymer fabrications make them the product of choice for facility owners looking for low-maintenance, high-realism rock and plant installations.

Createk Stone can withstand exposure to water, heat, cold, and sun. It typically withstands water pressure up to 2500 psi. A through-colored composite polymer material, it requires no treatment if chipped. This lightweight but extremely durable alternative to much heavier and harder cast products weighs only 2.25 psf for a typically 1/2 to 3/4 inch thick casting – 5 times lighter than similar GFRC products - making it easy to transport and install. It is available in a variety of standard colors and custom colors. Its very high UV resistance preserves the selected color for decades of exposure and use without the need for applied coatings. A Class 1 fire rating allows use in most interior applications. Createk Stone's superior material characteristics are backed by the manufacturer's 10 year warranty.

Createk's designers can work with architects and landscape architects to detail and customize artificial stone features utilizing turnkey 3-D design services, creating both virtual and physical models of proposed installations. Createk Stone can be customized to reproduce almost any design or moldable surface. More extensive installations include engineered structural supports.

Rockwerx products are found in the following MasterFormat 2010 sections:

Section 11 66 00.01 CLIMBING WALLS Rockwerx Natural Rock cast polymer engineered climbing structures

Section 11 66 00.02 CLIMBING WALLS Rockwerx GymRock modular panel engineered climbing walls

Section 11 68 13 ARTIFICIAL ROCK PLAY STRUCTURES Createk cast polymer play structures (interior or exterior – when playground design safety standards apply to the installation)

Section 12 92 13 INDOOR ARTIFICIAL PLANTS Createk cast polymer tree and plantscapes

Section 12 92 15 EXTERIOR ARTIFICIAL PLANTS Createk cast polymer tree and plantscapes

Section 32 39 33 ARTIFICIAL ROCK FABRICATIONS Createk cast polymer display installations (interior and exterior non-playground installations: museum and retail displays, non-accessible water features, aquariums, and similar installations)

For more information, contact Createk at (877)595-4155, [info@createkstone.com](mailto:info@createkstone.com), [www.createkstone.com](http://www.createkstone.com).

## SECTION 11 68 13 – ARTIFICIAL ROCK PLAY STRUCTURES

Specifier: This section may be edited for interior or exterior installations playground and play structure applications with steel or wood substructures. A companion specification section is available from Createk for installations not used as play structures. A short form version of this section is available for projects with less complex requirements.

Delete references to standards or construction not required on a project by project basis.

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

Specifier: Createk Stone installations can reach up to 15 feet in height without internal structural supports. Createk will provide engineering and internal supports for larger installations.

- A. Composite polymer artificial rock play structure installations[, with structural support system].

Specifier: If retaining Related Requirements article, edit to suit project.

Createk frequently installs plumbing and lighting systems within their work as part of their installation services.

#### 1.2 RELATED REQUIREMENTS

- A. Section 22 52 00 "Pool and Fountain Plumbing Systems" for water treatment and pump equipment and piping for water features associated with exterior artificial rock installations.
- B. Division 26 electrical power sections for power and control wiring for [plumbing] [and] [lighting] systems.
- C. Division 26 lighting sections for exterior light fixtures, controls, and related requirements.
- D. Section 31 20 00 "Earth Moving" for preparation of subbase materials supporting exterior artificial rock installations.

Specifier: Createk also provides a variety of protective surfacing products as part of their artificial rock installations.

- E. Section 32 18 16 "Playground Protective Surfacing" for protective surfacing materials located at perimeter of artificial rock installations.
- F. Section 12 92 13 "Indoor Artificial Plants" for cast polymer artificial plant materials installed in conjunction with artificial rock installations.
- G. Section 12 92 15 "Exterior Artificial Plants" for cast polymer artificial plant materials installed in conjunction with artificial rock installations.

- H. Section 33 46 00 "Subdrainage" for drainage pipe and fittings associated with exterior artificial rock installations.

### 1.3 ABBREVIATIONS

- A. HDPE: High-density polyethylene.
- B. IPEMA: International Play Equipment Manufacturers Association.

### 1.4 DEFINITIONS

- A. Fall Height: According to ASTM F 1487, "the vertical distance between a designated play surface and the protective surfacing beneath it."
- B. Use Zone: According to ASTM F 1487, "the area beneath and immediately adjacent to a play structure that is designated for unrestricted circulation around the equipment and on whose surface it is predicted that a user would land when falling from or exiting the equipment."

Specifier: If retaining Reference Standards article, edit to suit project.

### 1.5 REFERENCE STANDARDS

- A. American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI):
  - 1. ASCE/SEI 7: Minimum Design Loads for Buildings and Other Structures.
- B. American Welding Society (AWS):
  - 1. AWS D1.1/D1.1M – Structural Welding Code – Steel.
- C. American Wood-Preservers' Association (AWPA):
  - 1. AWPA C2 - Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes.
  - 2. AWPA C15 - Wood for Commercial-Residential Construction - Preservative Treatment by Pressure Processes.
- D. ASTM International (ASTM):
  - 1. ASTM A 123/A 123M - Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 2. ASTM A 153/A 153M - Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 3. ASTM A 500 - Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  - 4. ASTM A 513 - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.
  - 5. ASTM A 653/A 653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

6. ASTM A 666 - Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
7. ASTM D 256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
8. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.
9. ASTM D 695 - Standard Test Method for Compressive Properties of Rigid Plastics.
10. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
11. ASTM D 2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
12. ASTM D 4329 - Standard Practice for Fluorescent UV Exposure of Plastics.
13. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
14. ASTM E 662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
15. ASTM F 1951 - Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
16. ASTM F 1487 – Standard Consumer Safety Performance Specification for Playground Equipment for Public Use.

E. Forest Stewardship Council (FSC):

1. FSC-STD-01-001 – FSC Principles and Criteria for Forest Stewardship.

F. U.S. Consumer Product Safety Commission (CPSC):

1. CPSC Publication No. 325 – Public Playground Safety Handbook.
2. CPSC-CH-E1002 – Standard Operating Procedure for Determining Total Lead (Pb) in Non-Metal Children's Products.

G. U.S. Department of Health and Human Services, Food and Drug Administration (FDA):

1. CFR Title 21 Food and Drugs, Part 177 Indirect Food Additives, Polymers, 177.2420 Polyester resins, cross-linked.

H. U.S. Department of Commerce, National Institute of Standards and Technology (NIST):

1. DOC PS 20 - American Softwood Lumber Standard.

## 1.6 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate artificial rock installations with related Work specified in other Sections.

Specifier: Retain below for larger or more complex projects. Edit options for type of conference required. On site conferences add to project cost. Consult with Createk representative.

- B. Preinstallation Conference: Conduct preinstallation [ teleconference] [ conference at Project site].

## 1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. LEED Submittals:

Specifier: Credit MR 4 may apply for steel items utilized for structural supports as well as use of certain polymers containing recycled content. Consult Createk for availability and percentages.

- 1. Credit MR 4: Submit documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include cost statement for each product.

Specifier: Credit MR 6 may apply for cast polymer products utilizing bio-based polymer resins in lieu of petroleum-based resins. Consult Createk for availability and percentages.

- 2. Credit MR 6: Submit documentation indicating percentages of rapidly renewable material in product. Include cost statement for each product.

Specifier: Credit MR 7 may apply to wood products utilized for structural supports.

- 3. Credit MR 7: Submit chain-of-custody certificates for products indicated as FSC-certified wood. Include cost statement for each product.

C. Shop Drawings:

- 1. Include [three-dimensional model,] plans, elevations, sections, and attachment details.
- 2. Include details of assemblies. Indicate dimensions, methods of field assembly, and components.
- 3. Detail fabrication and assembly of concealed structure.
- 4. Indicate coordination for power and control wiring and piping for associated plumbing and lighting systems specified in other sections.
- 5. Extent of surface systems and use zones for artificial rock installations.
- 6. Critical heights for playground surfaces, or fall heights for artificial rock installations.
- 7. Indicate [dead loads] [superimposed loads] [and] [live loads] for artificial rock installations.

D. Samples: For each exposed product and for each color and texture specified.

E. Delegated-Design Submittal: Analysis data signed and sealed by qualified professional engineer responsible for preparation.

- 1. Compliance Review: Qualified professional engineer responsible for design shall review and approve submittals and field quality-control reports for compliance with design.

1.8 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Product Certificates: Indicate compliance with standards specified in this Section.
- C. Material certificates: For cast polymer used in artificial rock fabrications.
- D. Sample warranty.

- E. Qualification Statements: For manufacturer and installer.

#### 1.9 CLOSEOUT SUBMITTALS

- A. Maintenance data.

#### 1.10 QUALITY ASSURANCE

- A. Manufacturer Certification: A firm whose playground equipment components have been certified by IPEMA's third-party product certification service.
  - 1. Provide playground equipment and play structure components bearing the IPEMA Certification Seal.

Specifier: Paragraph below provides specific requirements for requests for approval or substitution of products for this section.

- B. Manufacturer Qualifications: Approved manufacturer listed in this section, with minimum [5] years experience in the manufacture and assembly of cast polymer artificial rock installations used in similar applications. Manufacturers seeking approval must submit the following in accordance with Instructions to Bidders and Division 01 General Requirements:
  - 1. Product data, including descriptive information and test data from qualified independent testing agency indicating compliance with requirements.
  - 2. Samples of each product specified.
  - 3. List of successful installations of similar products available for evaluation by Architect.
- C. Licensed Professionals Qualifications: Qualified professional engineer, experienced in design of artificial rock installations similar to those required for Project, and licensed in the Project state.

Specifier: For more complex projects and projects with a high degree of human contact, Rockwerx recommends requiring installation by manufacturer.

- D. Installer Qualifications: [Manufacturer of products] [Experienced in installations of this type with a record of satisfactory performance].
- E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code – Steel."

Specifier: Retain one of the following two paragraphs. For large scale and complex installations, it is common practice to assemble artificial rock installations at the manufacturer's facility for approval by the owner or architect prior to shipping to jobsite.

- F. Manufacturer's Mock-ups: Construct mockup of artificial rock installations at manufacturer's facility to establish quality standards for installation. Coordinate schedule for mockup construction with Architect.
  - 1. Construct complete installation including [structural support system] [integrated water feature] [lighting system].
  - 2. Upon approval by Architect, disassemble and prepare installation for shipping.

Specifier: For less complex installations, it is common to begin assembly on site and allow review by the owner or architect before proceeding with the work.

- G. Site Mock-ups: Construct mockups at project site to establish quality standards for installation.
  - 1. Approved mockups may remain as part of completed Work.

#### 1.11 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of artificial rock installations that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: [5] year(s) from date of Substantial Completion.
  - 2. Color Retention Warranty: [10] years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide artificial rock installations by **Createk Stone Inc, Division of Rockwerx**, Barre MA, (877)595-4155, [info@createkstone.com](mailto:info@createkstone.com), [www.createkstone.com](http://www.createkstone.com).

#### 2.2 ASSEMBLY DESCRIPTION

- A. Artificial Rock Installations: Custom-fabricated cast polymer artificial rocks, UV-resistant, through-colored, molded and finished to match approved samples and models, bolted in place for permanent site installation [, with structural support system] [, with integrated water feature] [, with integrated lighting].

#### 2.3 PERFORMANCE AND DESIGN CRITERIA

- A. Delegated Design: Design artificial rock installations, including comprehensive engineering analysis of structural framework, supports, and connections by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Artificial rock installations shall withstand the effects of gravity loads, wind loads, and live loads determined according to ASCE/SEI 7 and requirements of authorities having jurisdiction.

Specifier: Retain and edit requirement in paragraph below if project site is subject to seismic design requirements.

- C. Seismic Performance: Artificial rock installations shall withstand the effects of earthquake motions determined according to ASCE/SEI 7 and requirements indicated.

- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes for temperature change of 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

Specifier: Retain requirement below for interior applications after verifying that it is required by authorities having jurisdiction. Below will add additional cost to project.

- E. Surface-Burning Characteristics:
1. Flame-Spread Index, ASTM E 84: 25 or less.
  2. Smoke-Developed Index, ASTM E 84: [450] or less.
- F. Safety Standards: Manufacture and fabricate artificial rock installations to comply with requirements of ASTM F 1487 and CPSC No. 325.
- G. Accessibility of Surface Systems: According to ASTM F 1951.

## 2.4 MATERIALS

- A. Polyester Composite: Color impregnated, UV stabilized, non-mold-supporting, formed from corrosion-resistant polyester resin; with 1/2- to 3/4- inch (12 to 18 mm) wall thickness, with the following characteristics:
1. Strength Characteristics:
    - a. Flexural Strength, ASTM D 790: 18,000 psi (124 MPa), minimum.
    - b. Tensile Strength, ASTM D 638: 9,000 psi (62 MPa), minimum.
    - c. Compressive Strength, ASTM D 695: 17,000 psi (117 MPa), minimum.
    - d. Barcol Hardness, ASTM D 2583: 40 minimum.
  2. Consumer Contact Characteristics:
    - a. Food Contact Approval, CFR Title 21, 177.2420: Component ingredients FDA approved.
    - b. Lead Content, CPSC CH-E1002: Less than 40 ppm: Passed.

Specifier: Retain one or both of the following paragraphs and edit as required to stipulate minimum polymer content meeting sustainability requirements. Bio-based material requirement is related to both Federal project sustainability mandates and LEED rapidly renewable materials credits. Recycled content requirement is related to both Federal project sustainability mandates and LEED recycled content credits. Consult with Createk regarding availability of bio-based or recycled content polymers, which vary due to project design and color requirements. Requirements below will affect product cost.

1. Bio-Based Material Content of Polymer Fabrications: Provide cast polymer fabrications utilizing bio-based polymer resins[ meeting requirements of Division 01 Section "Sustainable Design Requirements"].
2. Recycled Content of Polymer Fabrications: Provide cast polymer fabrications utilizing post-consumer recycled content plus one-half of preconsumer recycled content of not less than [25] percent.

Specifier: Retain one of two paragraphs below if internal structural supports are required due to installation size. Consult with Createk representative. Retain paragraph below if steel structural supports are required.

B. Steel Structural Supports:

1. Steel Structural Tubing: ASTM A 500, Grade B, hot-dip galvanized according to ASTM A 123/A 123M.
2. Steel Mechanical Tubing: ASTM A 513, welded steel mechanical tubing, hot-dip galvanized according to ASTM A 123/A 123M.

Specifier: Retain paragraph below if utilizing wood in lieu of steel structural supports.

C. Wood Structural Supports:

1. Lumber: Meet DOC 20 and stamp with grade stamp meeting ALSC grading rules.
2. Certified Lumber: Meet FSC STD-01-001.
3. Dimension Lumber and Timber: 19 percent moisture maximum; Construction or No. 2 grade or better.

Specifier: Retain requirement for preservative treatment for exterior wood structural supports or for interior supports exposed to moisture. Delete if retaining requirement for fire retardant treatment.

4. Preservative Treatment: AWPA C2 or C15, with treatment quality mark. Do not use chemicals containing arsenic or chromium.
  - a. Fasteners: Stainless steel.
  - b. Framing Anchors: [Hot-dip, zinc-coated steel sheet ASTM A 653/A 653M] [Stainless steel A 666 Type 304], sizes and types selected by artificial rock installation manufacturer to meet allowable design loads published by framing anchor manufacturer, and as indicated on approved shop drawings.

Specifier: Retain requirement for fire retardant treatment of wood structural supports in lieu of preservative treatment when required by authorities having jurisdiction.

5. Fire Retardant Treatment: Flame spread index of 25 or less per ASTM E 84 and as required by authorities having jurisdiction, with treatment identification mark.
    - a. Fasteners: Stainless steel or galvanized steel.
  6. Framing Anchors: Hot-dip, zinc-coated steel sheet ASTM A 653/A 653M, sizes and types selected by artificial rock installation manufacturer to meet allowable design loads published by framing anchor manufacturer, and as indicated on approved shop drawings.
- D. Artificial Rock Unit Fasteners: Manufacturer's standard; corrosion-resistant; hot-dip galvanized or plated steel and iron, or stainless steel; permanently capped, and theft resistant.
- E. Anchorages: Anchor bolts, hot-dip galvanized according to ASTM A 153/A 153M.

Specifier: Retain Concrete paragraph below if foundations for artificial rock installations is part of the work of this section.

- F. Concrete for Artificial Rock Installation Foundations: Minimum compressive strength 3000 psi/28 days. Refer to requirements of Division 03 Section "Cast-in-Place Concrete."

## 2.5 ARTIFICIAL ROCK INSTALLATION FABRICATION

- A. Fabrication, General: Assemble artificial rock installations in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

Specifier: Retain paragraph below if structural support is required due to size or loading conditions. Consult Createk representative.

- B. Structural Supports: Fabricate structural supports with cross-section profile and dimensions as indicated on approved Shop Drawings.

Specifier: Retain paragraph below if utilizing steel structural supports.

- 1. Fabricate secondary frame members, bracing, and connections from steel materials specified.
  - a. Comply with AWS recommended practices for shop welding.
  - b. Provide weep holes where water may accumulate.
  - c. Provide necessary rebates, lugs, and brackets to assemble units and to attach to other work.

Specifier: Retain paragraph below if utilizing wood structural supports.

- 2. Fabricate secondary frame members, bracing, and connections from wood materials specified.
  - a. Comply with American Forest and Paper Association recommended practices for framing.
  - b. Install framing anchors per manufacturer's instructions.
  - c. Field treat cut ends of treated lumber.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Examine areas where artificial rock installations are to be installed, with Installer present. Verify compliance with requirements for installation tolerances and other conditions affecting installation and performance.

1. Verify conditions meet requirements for site clearing, earthwork, site drainage, and other requirements of manufacturer.
2. Correct unsatisfactory conditions prior to proceeding with installation.

Specifier: Retain and edit Foundation Article if required for Project.

### 3.2 FOUNDATION

- A. Install concrete footings and anchors for artificial rock installations in accordance with approved submittals and requirements of Division 03 Section "Cast-in-Place Concrete."

### 3.3 ERECTION OF ARTIFICIAL ROCK INSTALLATIONS

- A. General: Comply with manufacturer's written instructions and approved Shop Drawings. Support, anchor, and fasten components securely using anchors and fasteners recommended by manufacturer for application.
- B. Safety Standards: Install artificial rock installations to comply with requirements of ASTM F 1487 and CPSC No. 325.
- C. Erection of Structural Supports: Erect structural supports in accordance with approved submittals. Anchor and fasten using fasteners indicated. Utilize structural components furnished by manufacturer; do not modify components in field without manufacturer approval.

Specifier: Retain paragraph below to coordinate with electrical and plumbing components of artificial rock installations if required for project.

- D. Coordination with Electrical and Plumbing Work: Coordinate with artificial rock installation with installation of related electrical and plumbing components.

### 3.4 CLEANING

- A. Repair or replace defective work as directed by Architect upon inspection.
- B. Clean installed unit surfaces. Touch up, refinish, or replace damaged components in a manner acceptable to Architect.

END OF SECTION