Boulder County Purchasing
1325 Pearl Street
Boulder, CO 80302
purchasing@bouldercounty.org

INVITATION TO BID
COVER PAGE

BID Number:	**7113-20**
BID Title:	**Courthouse Fountain Repair**
Non-Mandatory Pre-Bid Meeting:	March 5, 2020, 10:00 a.m. Location: 1325 Pearl St., Boulder, CO
BID Questions Due:	March 10, 2020 – 2:00 p.m.
Submittal Due Date:	March 18, 2020 – 2:00 p.m.
Email Address:	purchasing@bouldercounty.org
Documents included in this package:	Cover Page Bid Instructions Terms and Conditions Insurance and W-9 Requirements Submittal Checklist Bid Submittal Signature Page Specifications w/ Table of Contents Sample Contract

Boulder County Purchasing
1325 Pearl Street
Boulder, CO 80302
purchasing@bouldercounty.org

INSTRUCTIONS

---

1. Background

Boulder County Public Works - Building Services is soliciting bids for the repair and rehabilitation of the historic Lions Club fountain located in the main plaza of the Boulder County Courthouse, 1325 Pearl Street in Boulder, CO. Work includes the repair of terra cotta, mortar and concrete, plus associated work as described in the attached Specifications.

2. Non-Mandatory Pre-Bid Meeting

A pre-bid meeting and site visit will be held on **March 5, 2020 at 10:00 a.m.** at the Project Site located at 1325 Pearl Street, Boulder, CO 80302. Interested bidders are to meet at the Lions Club Fountain located directly south of the Main Courthouse building.
The pre-bid conference is not mandatory, but bidders are strongly encouraged to attend.

It is the bidder's responsibility to be familiar with all pre-existing conditions that may affect their bid.

3. Written Inquiries

All inquiries regarding this BID will be submitted via email to the Boulder County Purchasing Office at purchasing@bouldercounty.org on or before 2:00 p.m. **March 10, 2020**. A response from the county to all inquiries will be posted and sent via email no later than **March 12, 2020**.

Please do not contact any other county department or personnel with questions or for information regarding this solicitation.

4. Submittal Instructions

BIDs are due at the Administrative Services Information Desk or email box (preferred) listed below, for time and date recording on or before **2:00 p.m. Mountain Time on March 18, 2020**. A bid opening will be conducted at 3:00 p.m. Mountain Time at county offices.

Your response can be submitted in the following ways. Please note that email responses to this solicitation are preferred, but are limited to a maximum of 50MB capacity. NO ZIP FILES ALLOWED. Electronic submittals must be received in the email box listed below. Submittals sent to any other box will NOT be forwarded or accepted. This email box is only accessed on the due date of your questions or proposals. Please use the Delivery Receipt option to verify receipt of your email. It is the sole responsibility of the proposer to ensure their documents are received before the deadline specified above. Boulder County does not accept responsibility under any circumstance for delayed or failed email or mailed submittals.

Email purchasing@bouldercounty.org**;** identified as **BID # 7113-20** in the subject line.

-OR-

US Mail One (1) unbound copy of your submittal, printed double-sided, 11 point, on at least 50% post-consumer, recycled paper must be submitted in a sealed envelope, clearly marked as **BID # 7113-20**, to the Administrative Services Information Desk located at 1325 Pearl Street, Boulder, CO 80302.

All BIDs must be received and time and date recorded by authorized county staff by the above due date and time. Sole responsibility rests with the bidder to see that their BID response is received on time at the stated location(s). Any BIDs received after due date and time will be returned to the bidder.

The Board of County Commissioners reserves the right to reject any and all BIDs, to waive any informalities or irregularities therein, and to accept the proposal that, in the opinion of the Board, is in the best interest of the Board and of the County of Boulder, State of Colorado.

Americans with Disabilities Act (ADA): If you need special services provided for under the Americans with Disabilities Act, contact the ADA Coordinator or the Human Resources office at (303) 441-3525 at least 48 hours before the scheduled event.

Boulder County Purchasing
1325 Pearl Street
Boulder, CO 80302
purchasing@bouldercounty.org

TERMS AND CONDITIONS

---

1. Bidders are expected to examine the drawing, specifications, schedule of delivery, and all instructions. Failure to do so will be at the bidder's risk.

2. Each bidder will furnish the information required in the Invitation to Bid.

3. The Contract/Purchase Order will be awarded to that responsible bidder whose submittal, conforming to the Invitation to Bid, will be most advantageous to the County of Boulder, based on best value not only price.

4. The County of Boulder reserves the right to reject any or all bids and to waive informalities and minor irregularities in bids received, and to accept any portion of or all items proposed if deemed in the best interest of the County of Boulder to do so.

5. No submittal will be withdrawn for a period of thirty (30) days subsequent to the opening of bids without the consent of the County Purchasing Agent or delegated representative.

6. A signed purchase order or contract furnished to the successful bidder results in a binding contract without further action by either party.

7. Late or unsigned bids will not be accepted or considered. It is the responsibility of bidders to ensure that the bid arrives at the Administrative Services Information Desk prior to the time indicated in the "Invitation to Bid."

8. The proposed price will be exclusive of any Federal or State taxes from which the County of Boulder is exempt by law.

9. Any interpretation, correction or change of the bid documents will be made by Addendum. Interpretations, corrections and changes of the bid documents made in any other manner will not be binding, and bidder will not rely upon such interpretations, corrections and changes. The County's Representative will not be responsible for oral clarification.

10. Confidential/Proprietary Information: Bids submitted in response to this "Invitation to Bid" and any resulting contract are subject to the provisions of the Colorado Public (Open) Records Act, 24-72-201 et.seq., C.R.S., as amended. Any restrictions on the use or inspection of material

contained within the bid and any resulting contract will be clearly stated in the bid itself. Confidential/proprietary information must be readily identified, marked and separated/packaged from the rest of the bid. **Co-mingling of confidential/proprietary and other information is NOT acceptable. Neither a bid, in its entirety, nor bid price information will be considered confidential/proprietary. Any information that will be included in any resulting contract cannot be considered confidential.**

The Boulder County Attorney's Office retains sole authority for determining whether the Colorado Open Records Act requires or permits Boulder County to disclose proposal or bid documents, or any information contained therein, pursuant to an open records request.

11. Boulder County promotes the purchase/leasing of energy efficient, materials efficient and reduced toxic level products where availability, quality and budget constraints allow. Bidders are expected whenever possible to provide products that earn the ENERGY STAR and meet the ENERGY STAR specifications for energy efficiency with power management features enabled. Bidders are encouraged to offer products and equipment with post-consumer recycled-content materials. Products should be packaged and delivered with a minimum amount of recycled packaging that adequately protects the product, but is not excessive.

12. Pursuant to Colorado law (House Bill 1292), in any bidding process for public works in which a bid is received from a non-resident bidder who is from a state that provides a percentage bidding preference, a comparable percentage disadvantage will be applied to the bid of that bidder. Bidders may obtain additional information from the Department of Personnel's website: http://www.colorado.gov/dpa/.

Boulder County Purchasing
1325 Pearl Street
Boulder, CO 80302
purchasing@bouldercounty.org

INSURANCE AND W-9 REQUIREMENTS

PAYMENT & PERFORMANCE BONDS

If your bid price meets or exceeds $50,000, both a payment and a performance bond are required for this project and must each equal 100% of the proposed cost. Bidder must include the cost of this bonding, if applicable, into the total proposed cost.

Concrete washout

Prior to work commencing, the contractor is responsible for providing and maintaining a Boulder County approved concrete washout system to collect and retain all the concrete washout water and solids in leak proof containers so that the caustic material does not reach the soil surface and migrate into the ground water. The washout structure shall be sized large enough to contain washout from concrete placement, construction equipment cleaning operations, and residue from cutting, coring, grinding, grooving, and demolition work. Concrete washout water and solids are to be recycled when possible. Contractor shall ensure washout systems are inspected daily to check for leaks, plastic lining failures, and determine if they have been filled to over 75% capacity and need to be vacuumed off or allowed to evaporate to avoid overflows. The contractor is also responsible for overseeing all ready-mix deliveries and to ensure all sub-contractors follow the same proper washout procedures and avoid dumping of cementitious material while on project site. If a spill occurs, the Contractor must notify the County immediately.

INSURANCE REQUIREMENTS

General Liability	$1,000,000 Each Occurrence $2,000,000 General Aggregate $2,000,000 Products Completed Operations Aggregate 3 years Products/Completed Operations
Excess or Umbrella	May be required if higher limits are requested.
Automobile Liability	$1,000,000 Each Accident *Including Hired & Non-Owned Auto
Worker's Compensation and Employer's Liability	Statutory limits

Boulder County as Additional Insured: Boulder County shall be named as an additional insured for General Liability, Umbrella/Excess Liability, and Pollution Liability, as designated in this Contract. Additional insured shall be endorsed to the policy.

THE ADDITIONAL INSURED WORDING SHOULD BE AS FOLLOWS: County of Boulder, State of Colorado, a body corporate and politic, is named as Additional Insured.

Note that the above insurance amounts are the minimum required for this project. **Proof of current insurance must be provided with your proposal in the form of a sample certificate or your proposal will be deemed non-responsive.** If you require a waiver of insurance requirements (e.g. Workers' Compensation and sole proprietorships) you may request one in your response with an explanation.

New certificates will be requested if the contract process takes more than 30 days after an award.

W-9 REQUIREMENT

Provide a copy of your business's W-9 with your proposal.

Boulder County Purchasing
1325 Pearl Street
Boulder, CO 80302
purchasing@bouldercounty.org

SUBMITTAL CHECKLIST

The bidder's attention is especially called to the items listed below, which must be submitted in full as part of the BID. Failure to submit any of the documents listed below as a part of your BID, or failure to acknowledge any addendum in writing with your BID, or submitting a bid on any condition, limitation or provision not officially invited in this Invitation to Bid (BID) may be cause for rejection of the BID.

THIS CHECKLIST MUST BE SUBMITTED AS PART OF YOUR BID PACKAGE: Bidder will check each box indicating compliance:

INCLUDED	ITEM
	Name and Address of the Partners and Subcontractors if applicable
	A project schedule with an all-inclusive total cost
	Information on the relevant experience of key personnel
	State your compliance with the Terms and Conditions in the Sample Contract contained in this BID. Specifically list any deviations and provide justification for each deviation.
	Submit three references for similar projects your company has completed within the last three years and contact information
	Insurance Certificate
	W-9
	Signature Page
	Addendum Acknowledgement(s) (If Applicable)

Boulder County Purchasing
1325 Pearl Street
Boulder, CO 80302
purchasing@bouldercounty.org

BID SUBMITTAL

Provide a price for one and/or each item as listed below. Additional proposal back-up including but not limited to scope outline, product submittal data, photos indicating inclusions/exclusion, and breakout pricing with add alternates shall follow this Bid Submittal Form.

Work shall be awarded based on the most responsible Bid that best satisfies the requirements of the project, not necessarily on the lowest price. Boulder County reserves the right to make the award on the basis of the Proposal deemed most favorable to the County, to waive any informalities, or to reject any or all Proposals.

All work described in the Drawings, Specifications and Addenda for this project:

ITEM #1: COURTHOUSE FOUNTAIN TERRA COTTA, MORTAR AND CONCRETE REPAIR:

ITEM #1 Price: _____dollars

($_____)

Estimate of working days to complete Item #1: _____ working days.

NOTE: Attention of Bidders is particularly called to the requirement for certificates of State Tax exemption for the Contractors and Subcontractors upon award of Contract. (Title 39-26-114, 1973, CRS as amended). **DO NOT INCLUDE SALES TAX IN THE BID PROPOSAL**. Questions regarding this provision should be referred to the Colorado State Department of Revenue, Sales Tax Division.

Boulder County Purchasing
1325 Pearl Street
Boulder, CO 80302
purchasing@bouldercounty.org

SIGNATURE PAGE

Contact Information	Response
Company Name including DBA	
List Type of Organization (Corporation, Partnership, etc.)	
Name, Title, and Email Address of Person Authorized to Contract with Boulder County	
Company Address	
Company Phone Number	
Company Website	

By signing below I certify that:
I am authorized to bid on my company's behalf.
I am not currently an employee of Boulder County.
None of my employees or agents is currently an employee of Boulder County.
I am not related to any Boulder County employee or Elected Official.
(Sole Proprietorships Only) I am not a Public Employees' Retirement Association (PERA) retiree.

_____ _____
Signature of Person Authorized to Bid on Company's Behalf **Date**

Note: If you cannot certify the above statements, please explain in a statement of explanation.

Boulder County Purchasing
1325 Pearl Street
Boulder, CO 80302
purchasing@bouldercounty.org

SPECIFICATIONS

TABLE OF CONTENTS

NOTE: Some of the products required in the "Repair Procedures" section are not represented in the above CSI divisions. contractor shall refer to product data sheets and/or manufacturer's technical specifications for proper use and application.

ADDITIONAL DOCUMENTS:

- "BOULDER COUNTY COURTHOUSE LIONS CLUB FOUNTAIN REPAIR PROCEDURES 09-17-19" [51 pages: Includes Step-by-step Instructions, Fountain Reference Photos, and Specified Products in order of use]
- DWG. A1: FOUNTAIN PLAN
- DWG. A2: ELEVATIONS/SECTIONS
- DWG. A3: TERRA COTTA BLOCK STYLES

SECTION 011100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY OF WORK (**BID # 7113-20**):

A. Project Identification:
1. Location: Boulder County Courthouse Complex
1325 Pearl Street
Boulder, CO 80302
2. Owner: Boulder County
3. Description: The Historic Lions Club Fountain is located in the pedestrian plaza in front of the main Boulder County Courthouse between 13th and 14th Streets. Contractor will need to perform work in a limited area secured from public access. Awarded contractor shall submit a proposed schedule of work including staging area(s) for review prior to proceeding with any work.

B. The Work consists of all labor, materials, and equipment required for the following items. Please take these requirements into account when pricing and outline them in your proposals. Provide all additional back-up required to substantiate costs outlined. Include:
1. All steps required for proper preparation of the job site, including but not limited to fencing, screening, signage, storage, protection of surrounding plant material, and other safeguards as necessary.
2. Entire Project Scope, including all repairs of terra cotta, mortar and concrete as described in the *Boulder County Courthouse Lions Club Fountain Repair Procedures* document dated September 17, 2019 included in these Bid documents.
3. Cleanup of entire work site upon completion of project, including the use of tools and products appropriate for each material.
4. Any additional scope not described herein should be outlined in the bid proposal with costs associated for add alternate review/approval.
5. Boulder County (owner) shall perform or subcontract any plumbing and electrical repairs as needed for this project. Project schedule should allow for accommodating any and all required plumbing and electrical investigation and repairs required.

1.2 WORK RESTRICTIONS

A. Contractor's Use of Premises: During construction, Contractor shall have limited use of site and building 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. All work is to be coordinated with the designated Boulder County representative.

B. Site Conditions:
1. Fencing with mesh screen shall be required during construction to surround only the area being addressed.
2. Particular attention should be paid to public safety as all sides of site will be surrounded by pedestrian and/or vehicular traffic. Contractor vehicle access is allowed on the Pearl Street Mall (brick area) only until 10:00 am each day. Any alternate arrangements for this area must be made with the City of Boulder. Vehicle access points to the work site are at 13th and 14th street. Most of the Courthouse Plaza has a concrete slab under the existing Flagstone paving which will allow vehicle traffic; however, the southwest portion of the Plaza **cannot** be driven on with a vehicle due to the Flagstone bedding consisting of sand instead of concrete.

C. Contractor’s work must allow County crews and subcontractors access to building and site at all times.

D. Boulder County is strongly committed to the recycling of construction and waste materials. Please track and provide County Project Manager with a detailed account of all recycled items.

2.1 PROJECT SCHEDULE

A. Proposed schedule shall be provided by the awarded contractor.

END OF SECTION 011100

DIVISION 3 - CONCRETE
SECTION 030130 - CONCRETE REHABILITATION - DEEP

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Application of nonsag concrete repair mortar with integral corrosion inhibitor for vertical and overhead applications.

B. Related Sections:
   1. Section 030131 – Concrete Rehabilitation - Shallow.

1.2 SUBMITTALS

A. Comply with Division 01.

B. Product Data: Submit manufacturer's technical data sheets for each product.

C. Quality Control Submittals:
   1. Provide protection plan of surrounding areas and non-cementitious surfaces.

1.3 QUALITY ASSURANCE

A. Comply with Division 01.

B. Qualifications:
   1. Manufacturer Qualifications: Company with minimum 15 years of experience in manufacturing of specified products.
   2. Manufacturer Qualifications: Company shall be ISO 9001:2000 Certified.
   3. Applicator Qualifications: Company with minimum of 5 years' experience in application of specified products on projects of similar size and scope and is acceptable to product manufacturer.
      a. Successful completion of a minimum of 5 projects of similar size and complexity to specified Work.

C. Field Sample:
   1. Install at Project site or pre-selected area of building an area for field sample, using specified material.
   2. Apply material in accordance with manufacturer's written application instructions.
   3. Manufacturer's representative or designated representative will review technical aspects; surface preparation, repair, and workmanship.
   4. Field sample will be standard for judging workmanship on remainder of Project.
   5. Maintain field sample during construction for workmanship comparison.
   6. Do not alter, move, or destroy field sample until Work is completed and approved by Architect.
   7. Obtain Architect's written approval of field sample before start of material application, including approval of aesthetics, color, texture, and appearance.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with Division 01.

B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

C. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

D. Store tightly sealed materials off ground and away from moisture, direct sunlight, extreme heat, and freezing temperatures.

E. Precondition materials to 70 degrees F plus or minus 5 degrees F (21 degrees C plus or minus 3 degrees C) before mixing.

1.5 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not use products under conditions of precipitation or freezing weather. Do not apply material at temperatures below 40 degrees F (4 degrees C) or above 90 degrees F (32 degrees C). Use appropriate measures for protection and supplementary heating to ensure proper curing conditions per manufacturer's recommendations if application during inclement weather occurs.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products from the following manufacturer:

BASF Corporation
Construction Chemicals
889 Valley Park Drive
Shakopee, MN 55379
Customer Service: 800- 433-9517
Technical Service: 800-243-6739
Direct Phone: 952-496-6000
Internet: www.master-builders-solutions.basf.us

B. Substitutions: Comply with Division 01.

C. Specifications and Drawings are based on manufacturer's proprietary literature from BASF Construction Chemicals. Other manufacturers shall comply with minimum levels of material and detailing indicated in Specifications or on Drawings. Architect will be sole judge of appropriateness of substitutions.

2.2 MATERIALS

A. Nonsag, lightweight, 1-component, high-strength, polymer-modified, silica-fume-enhanced repair mortar with integral corrosion inhibitor for vertical and overhead applications.

1. Manufactured to be placed from 1/4 inch (6 mm) to 2 inches (51 mm) per lift.
2. Acceptable Product: MasterEmaco N 425 (formerly Gel Patch) by BASF.

B. Properties of mixed cementitious repair materials:

1. Working Time, 70 degrees F (21 degrees C): 20 to 30 minutes.
2. Color: Concrete gray

C. Properties of cured cementitious repair materials:

1. Compressive Strength, ASTM C109, Modified:
   a. 1 Day: 2,150 psi (14.8 MPa).
   b. 7 Days: 5,600 psi (38.6 MPa).
   c. 28 Days: 6,750 psi (46.5 MPa).
2. Splitting Tensile Strength, ASTM C496, Modified, wet cure:
   a. 1 Day: 310 psi (2.1 MPa).
   b. 7 Days: 560 psi (3.9 MPa).
   c. 28 Days: 610 psi (4.2 MPa).

3. Flexural Strength, ASTM C348, Modified:
   a. 1 Day: 500 psi (3.4 MPa).
   b. 7 Days: 800 psi (5.5 MPa).
   c. 28 Days: 1,110 psi (7.7 MPa).
4. Bond Strength, ASTM C882, Modified, mortar scrubbed into substrate:
   a. 1 Day: 900 psi (6.2 MPa).
   b. 7 Days: 1,900 psi (13.1 MPa).
   c. 28 Days: 2,450 psi (16.9 MPa).
5. Chloride Permeability, AASHTO T277, ASTM C1202 Table 1:
   a. Very low range.
6. Length Change, ASTM C157, wet cure:
   a. 1 Day: Plus 0.019 percent, in/in.
   b. 7 Days: Plus 0.028 percent, in/in.
   c. 28 Days: Plus 0.034 percent, in/in.
7. Length Change, ASTM C157, dry cure at 50 percent relative humidity:
   a. 1 Day: Minus 0.026 percent, in/in.
   b. 7 Days: Minus 0.11 percent, in/in.
   c. 28 Days: Minus 0.15 percent, in/in.
8. Modulus of Elasticity, ASTM C215:
   a. 5.6×10^5 psi (3,861 MPa).
9. Linear Coefficient of Thermal Expansion, ASTM C531:
   a. 5.3×10^{-6} in/in/degree F.
10. Water Absorption, ASTM C642:
    a. 28 Days: 4 percent.
11. VOC Content:
    a. 0 lbs. per gal (0 g/L), less water and exempt solvents.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Comply with Division 01.

3.2 SURFACE PREPARATION

A. Protection: Protect adjacent Work areas and finish surfaces from damage during repair mortar application.

B. Prepare surfaces in accordance with manufacturer's instructions.

C. Ensure surfaces are clean, sound, and free of laitance, standing water, dirt, duct, grease, oil, efflorescence, paint, curing compounds, form oils, and other surface contaminants.

D. Remove loose materials.

E. Prepare concrete substrate to fractured aggregate profile for proper adhesion.

F. Clean exposed steel reinforcement to white-metal finish and prime with anti-corrosion coating acceptable to product manufacturer.

G. Saw-cut straight edges along repair area perimeters minimum of 1/4 inch (6 mm) deep to avoid featheredges.

H. Report cracks that appear in interface area of patch or overlay to Architect, and repair as directed.

I. Continue expansion and control joints through repair or as directed by Architect.

3.3 MIXING

A. Mix materials in accordance with manufacturer's instructions.

B. Mix no more material than can be placed in 20 to 30 minutes at 70 degrees F (21 degrees C) and 50 percent relative humidity.

3.4 APPLICATION

A. Apply and cure repair mortar in accordance with manufacturer's instructions.

B. Placement:
1. Dampen surface with clean water to obtain saturated surface-dry (SSD) with no standing water.
2. Apply small quantity of mixed repair mortar to SSD substrate. Thoroughly key-in and work material throughout cavity to promote bond.
3. Place repair mortar and key-in and compact thoroughly to secure bond.
4. Apply repair mortar in lifts of 1/4 inch (6 mm) to 2 inches (51 mm).
5. Avoid featheredging. For optimum mechanical bond on successive lifts, thoroughly score each lift and allow reaching initial set before next layer is applied.
6. Trowel repair mortar to desired finish after initial set.

C. Curing:
1. Damp cure for 3 days.
2. Use appropriate curing compound if surface cannot be damp cured.

3.5 PROTECTION

A. Protect repair mortar from damage during construction.

B. Protect from freezing for minimum of 24 hours after application.

END OF SECTION 030130

DIVISION 3 – CONCRETE

SECTION 030131 – CONCRETE REHABILITATION - SHALLOW

Part 1 – General

1.1 Summary

A. This specification describes the patching of exterior horizontal, vertical or overhead surfaces with a polymer modified, portland cement mortar.

1.2 Quality Assurance

A. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have experience with the application concrete repairs products preferably with the product specified.

B. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.3 Delivery, Storage, and Handling

A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, and product identification. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

1.4 Job Conditions

A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 50ºF (5ºC) and rising.

B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

1.5 Submittals

A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).

1.6 Warranty

A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year.

Part 2 - Products

2.1 Manufacturer

A. **PATCHCRETE**, as manufactured by Lyons Manufacturing, Inc, is considered to conform to the requirements of this specification.

2.2 Materials

A. **PATCHCRETE,** a Polymer-modified Portland cement mortar:

1. Component A shall be a liquid polymer emulsion of an acrylic copolymer base and additives.

2. Component B shall be a blend of selected portland cements, specially graded aggregates, admixtures for controlling setting time, water reducers for workability, and an organic accelerator.

3. The materials shall be non-combustible, both before and after cure.

4. The materials shall be supplied in a factory-proportioned unit.

5. The polymer-modified, portland cement mortar must be placeable from featheredge to 2 1/2" for horizontal underlayment applications, 3/8" to 2 1/2" for horizontal wearing surface applications, and no more than 2 1/2" for vertical/overhead applications per lift. Vertical and overhead applications are generally limited by mortar stiffness and configuration of repair.

B. Primer for standard absorbent concrete shall be **P-100 Primer**.

C. Aggregate for mixing, if used, shall be well graded, washed non-limestone gravel (3/8" or larger).

D. Water shall be clean, potable, and sufficiently cool (not warmer than 70°F).

2.3 Performance Criteria

A. Typical Properties of the mixed polymer-modified, portland cement mortar:

1. Working Time: Approximately 25 minutes

2. Initial Set: 4 Hours

3. Color: concrete gray

B. Typical Properties of the cured polymer-modified, portland cement mortar:

1. Compressive Strength (ASTM C-109 Modified)
    a. 7 day: 4000 psi min.
    c. 28 day: 5000 psi min.

2. Flexural Strength (ASTM C-348 Modified) @ 28 days: 1500 psi

3. Bond Strength (ASTM C-1043 Modified) @ 28 days: 1200 psi

Note: Tests above were performed with Air Cured

Part 3 – Execution

3.1 Surface Preparation

A. All surfaces must be clean and structurally sound; free of dust, grease, oil, paint, sealers, etc. Pores of the concrete surface must be open to permit proper bonding, especially on fresh “green” concrete. Any necessary surface preparation may be done by shotblasting, scarifying, sandblasting or acid etching. If acid etch is used, be sure to neutralize surface, clean and brush thoroughly.

B. For heavy traffic applications, mechanical abrasion of the surface is recommended.

C. When using as a wearing surface topping, install at least 3/8” thick

D. Concrete surfaces should be surface saturated but dry to touch (SSD).

E. Do not bridge cracks with **PATCHCRETE**. They will “telegraph” through. Fill cracks prior to placement of **PATCHCRETE**. Expansion joints should be extended through the **PATCHCRETE**.

F. For surfaces with low porosity, **EP-200 EPOXY PRIMER** can be used per installation instructions on the **EP-200** Literature.

G. For vertical or overhead applications where substantial build out is required consider improving bond of material to substrate by adding mechanical anchors into substrate for **PATCHCRETE** to form around, such as stainless steel screws or bolts.

3.2 Mixing and Application

A. **PATCHCRETE** may be mixed in a mortar mixer, with a heavy duty low-to-medium speed drill or by hand. Always use a clean mixing container. Place **PATCHCRETE Acrylic Polymer #1003** in container and add **PATCHCRETE Powder #1005**, mixing while adding powder. DO NOT ADD WATER. Added water will reduce strength and bonding. Mix for 2 to 3 minutes until a smooth, lump-free mixture is obtained. Mixing time should not exceed 3 minutes. DO NOT OVERMIX and DO NOT entrap air while mixing.

B. **HORIZONTAL USE AS UNDERLAYMENT OR TOPPING -** For use as an underlayment, mix to desired screedable consistency, no more liquid than 1 bag to 1 gallon of polymer. For areas over 1/2” in depth aggregate is required.

C. **VERTICAL or OVERHEAD USE AS A TROWELABLE NON-SAG REPAIR MATERIAL-** For wall and overhead repairs, mix about 3/4 to 7/8 of liquid polymer to a bag of powder to get a stiffer, trowelable non-sag consistency. Make a trial batch to get desired consistency. Lubricate trowel with polymer to prevent dragging. For wall applications such as coating or filling concrete block, **PATCHCRETE** may be applied with a hopper gun and then floated smooth.

D. **AGGREGATE MIX**: Dry clean, non-limestone 3/8" pea gravel is the aggregate recommended, not sand. Aggregate should be added after polymer and powder are mixed thoroughly. Aggregate should not exceed 22lbs per 45lb bag of material. Do Not add extra polymer or water with aggregate.

E. **BOND COAT** - To insure proper bonding, use **P-100 PRIMER** or apply a bond slurry coat scrubbed into the surface. The **P-100 PRIMER** will give more reliable and consistent results.

1. The bond slurry coat is a syrup-like consistency mix of **PATCHCRETE** Powder and **PATCHCRETE** Acrylic Polymer. Scrub the slurry coat into the surface with a brush. Place **PATCHCRETE** and smooth and spread while slurry coat is still damp. **DO NOT LET SLURRY COAT DRY.**

2. For situations where there is concern a bond slurry coat may dry before application of **PATCHCRETE** due to size of repair or timing, or areas where there is concern over surface preparation use **P-100 PRIMER** is an optional bond method. Apply **P-100 PRIMER** per instructions on **P-100 PRIMER** Literature**.** Allow the **P-100 PRIMER** to dry to touch (usually by 45 minutes) and install **PATCHCRETE** material. Material may be applied up to 24 hours after the **P-100 PRIMER**. **The P-100 PRIMER** will re-emulsify one time and may be used for inside and outside applications. (See **P-100 PRIMER** instructions for more details).

3. For horizontal surfaces with low porosity, **EP-200 EPOXY PRIMER** can be used per installation instructions on the **EP-200** Literature.

F. **MATERIAL PLACEMENT - HORIZONTAL** As an underlayment, apply from featheredge to 2-1/2". Material may be screeded for low places or spread into place with a squeegee. When using as a wearing surface topping, install at least 3/8" thick. DO NOT FEATHEREDGE as a wearing surface topping. (Use aggregate for any application over 1/2"). Screed off to get a smooth flat surface. Use a trowel for touch-up and featheredging. DO NOT OVERTROWEL. Lubricate trowel with polymer to prevent dragging. The **#1003 Polymer** makes the materials darker. Less polymer will give a lighter finished surface. For best results, smooth and spread into place and touch-up as needed. A latex film will form when **PATCHCRETE** begins to set. This is normal and will disappear.

G. **MATERIAL PLACEMENT - VERTICAL/OVERHEAD** - Apply as much material as can be held in place based on stiffness and repair configuration. Vertical applications can be formed and poured if applicable to repair. Additional lifts can be applied after 24 hours, always reapply bonding coat between layers.

H. **CURING -** In general, **PATCHCRETE** will air cure without any need for curing products. However, care should be taken in areas where **PATCHCRETE** is exposed to rain, wind or direct sunlight, sometimes these can cause cracking as the top dries before the bottom has cured. For these fast drying situations, the **PATCHCRETE** should be covered with plastic for 48 hours. Avoid letting plastic touch surface of **PATCHCRETE**. Cold weather or substrate will slow **PATCHCRETE** cure significantly.

I. **POST INSTALLATION - FLOOR COVERINGS -** Normally floor coverings may be applied the next day. With thick applications or cold or damp weather, another day may be required. No heavy traffic should be permitted for 4 to 5 days. When used as an underlayment, always follow the directions of floor covering manufacturers concerning maximum moisture content and perform required tests.

J. **POST INSTALLATION - COATINGS PATCHCRETE** is more resistant to moisture penetration than regular concrete. Breathable water based sealers may be applied over **PATCHCRETE** as soon as 24 hours. Paints and coatings may be applied over **PATCHCRETE** as you would over concrete. For solvent based sealers and coatings, wait 3-4 days for the **PATCHCRETE** to harden. For non-breathable coatings, ensure moisture has left **PATCHCRETE**. A simple poly test can be performed over the deepest areas. Always follow manufacturer recommendations and testing for applying over fresh concrete.

3.05 Cleaning

A. The uncured polymer-modified portland cement mortar can be cleaned from tools with water. The cured polymer-modified portland cement mortar can only be removed mechanically.

B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

Prior to each use of any Lyons Manufacturing Inc product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Material Safety Data Sheet which are available at www.lyonsmanufacturing.com. Nothing contained in any Lyons Manufacturing Inc materials relieves the user of the obligation to read and follow the warnings and instructions for each Lyons Manufacturing Inc product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.

END OF SECTION 030131

DIVISION 4 – MASONRY

DIVISION 040120 – MASONRY RESTORATION AND CLEANING

Part 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Work of this section shall be governed by the Contract Documents. Provide materials, labor, equipment, and services necessary to furnish, deliver, and install all work of this section as shown on the drawings, as specified herein, and/or as required by job conditions.

1.2 SUMMARY OF WORK

A. This section includes, but is not limited to the following:

   a. Stain and dirt removal by chemicals from historic surfaces including limestone, sandstone, marble, unpolished granite, terra cotta, concrete, brownstone and brick. Mock-ups will determine the most appropriate method.

B. Protection of metals, glass, and other adjacent building materials during all other work activities in the related sections below.

C. Visual Requirements:
   a. Maintain aesthetic or historic qualities of Project by protecting Work designated to remain.

1.3 REFERENCES

A. Manufacturer's specifications and instructions.

1.4 SUBMITTAL

A. Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data: Submit manufacturer's specifications and installation instructions for products used including finishing materials and methods.

C. Submit manufacturer's technical data sheet for product indicated including recommendations for their application and use.

D. Submit a work plan describing capture, storage, and disposal as required and/or governed by any and all local, state, and/or federal laws, codes, and regulations.

E. Samples: Provide sample installation of product. Locations per the owner or owner's representative's directions.

1.5 QUALITY ASSURANCE

A. B. Mock-ups: Prepare sample of CSP Cleaners on the appropriate substrate indicated. See 1.6 Test Panels.

B. Provide at least one person who shall be present at all times during the execution of the work of this section, who shall be thoroughly familiar with the specified requirements, and the materials and methods needed for their execution, and who shall direct all work performed under this section.

C. Provide adequate numbers of workers skilled in the necessary crafts and properly informed of the specialized methods and materials to be used in this work.

1.6 TEST PANELS

A. The Contractor shall arrange for providing test panels. Minimum size of test panels should be an area as needed for proper determination. Manufacturer's application instructions shall be followed. Allow test panel to dry for 3 to 7 days before inspection. Keep test panels available for comparison throughout the cleaning project.

B. Contractor shall prepare a written report detailing results of testing including but not limited to description of methods employed, materials, thickness of cleaner applied, dwell times and other elements of the test procedures as defined above.

C. Each test panel must be clearly labeled, charted and photographed.

D. Approved test panels will become a part of the Work, and serve as the quality standard for similar type work on this project.

E. Notify the owner's representative seven (7) days in advance of the dates and time when the test panels will be installed.

1.7 PROJECT/SITE CONDITIONS

A. Contractor shall be responsible for protecting all existing materials such as wood, doors, windows, flashings, glass, roofing, and all other existing materials not intended to be treated.

B. Contractor shall be responsible for the repair of all damaged adjacent materials due to the execution of the work at no additional expense to the owner. Repairs shall be made by qualified mechanics skilled in the type of repairs required, to the satisfaction of the owner's representative.

C. Protect adjacent areas and surfaces not being treated with barriers suitable for the product being used. Appropriate care should be taken at air intakes, air conditioning vents and similar openings that may come in contact with the product.

D. Take appreciate precautions to avoid harm to building occupants, pedestrians and nearby property.

E. Safety: For any number of reasons it is essential to maintain a high degree of worker and occupant safety while working with a chemical solution.

PART 2 – PRODUCTS
2.1 MATERIALS

A. CSP Cleaners and CSP Bio-Cleaner

   a. CSP Cleaners should be used in their undiluted form. No acids, bases, caustics, solvents or other agents should be added. Products should be applied to limestone, sandstone, unpolished granite, terra cotta, concrete, brownstone, brick and other masonry surfaces. Acceptable products are available through Cathedral Stone Products. Tel: 410-782-9150; fax: 410-782-9155.

B. Miscellaneous Equipment

   a. Natural bristle brush
   b. Paint roller
   c. Airless sprayer
   d. Clean rags
   e. Latex gloves
   f. Eye and skin protection
   g. Garden hose with running water supply
   h. Pressure washer using 600 to 1200 psi
   i. Soft bristle scrub brush

PART 3- EXECUTION
3.1 PREPRATION

A. Follow instructions provided by the manufacturer (See Data Sheet).

B. Work only in sections that can easily be cleaned in a single shift.

C. Substrate and any repairs must be fully cured prior to cleaning.

D. Clearly mark area to be cleaned.

E. Protect adjacent material when applicable with tape, drop cloths, paper, plastic or other means.

F. Remove any loose particulate.

G. To ensure even application of the CSP Cleaner make the substrate damp with clean water.

3.2 GENERAL APPLICATION of CSP CLEANERS

A. Follow instructions provided by the manufacturer (See Data Sheet).

B. Clearly mark or identify the time of application and dwell time.

C. Apply cleaner using a brush, roller, or airless sprayer to the desired thickness. Thicknesses of cleaner on test patches will determine appreciate thickness.

D. Leave cleaner on substrate only as long as determined acceptable in the mock-ups and approved by the owner or their representatives.

E. If the approved dwell time has elapsed and a stain or blemish persists use a soft bristle scrub brush to agitate the area.

F. Apply a small amount of CSP Cleaner to the brush then scrub the area again to facilitate in the removal of the stain if necessary.

3.3 REMOVAL of CSP CLEANERS

A. Follow instructions provided by the manufacturer (See Data Sheet).

B. Begin at the top of each section and pressure wash the cleaner and residue off the substrate. Use appropriate pressure as determined in the mock-up.

C. Pressure wash should be performed at a pressure which will not damage the substrate yet provide adequate removal of cleaner and residue.

D. Be sure all of the cleaner and residue are washed off the substrate.

E. Exercise caution during cleaning operations to avoid wind drift of materials to adjacent properties, persons, or cars below. Schedule cleaning operations for times or days when risk to pedestrians or vehicles is at a minimum.

F. Use only methods and materials determined during testing phase and approved by owner's representative. Clean surface to degree accepted by owner's representative. Do not permit cleaning to continue if methods and materials employed results in any permanent damage to surfaces.

G. Contractor shall reclaim, characterize and dispose of all waste and residue used in conjunction with this project in accordance with applicable laws. Disposal sites shall be approved by the owner's representative.

3.4 CLEAN UP

A. During the work, remove from the site discarded cleaning and coating materials, rubbish, cans and rags at the end of each workday.

B. Upon completion of work, remove all protective coverings and coatings, and clean window glass and other spattered surfaces. Remove spattered coatings by proper methods as recommended by manufacturer, using care not to damage adjacent surfaces.

PART 4 – CONTRACTOR QUALITY CONTROL

4.1 QUALITY CONTROL

A. The implementation of a Contractor Quality Control Program does not relieve the Contractor from the responsibility to provide work in accordance with the Contract Documents, applicable codes, regulations, and governing authorities. The Contractor Quality Control Program shall include, but not be limited to, the elements herein. These elements are provided only as a minimum starting point for the Contractor to use to generate the complete Contractor's Quality Control Program. Conform to all applicable provisions of Section 01400 CONTRACTOR QUALITY CONTROL.

END OF SECTION 040120

DIVISION 4 – MASONRY

SECTION 040513
MASONRY RESTORATION MORTARING - DEEP

Part 1 – GENERAL

1.1 SUMMARY OF WORK

A. For repairing brick, terra cotta and marble.

1.2 SUBMITTAL

A. Submit the following items in time to prevent delay of the work and to allow adequate time for review and resubmittals, if needed; do not order materials or start work before receiving the written approval:

1. Certificates should be submitted stating that all Installers of the repair mortar have successfully completed the training workshop for installation of the mortar. (Three-day workshops* for Installers of Jahn Restoration Mortars are offered by Cathedral Stone® Products, Inc. and held at 7266 Park Circle Drive, Hanover, MD 21076; tel. (410) 782-9150; fax. (410) 782-9155)

2. Samples of all specified materials and Material Safety Data Sheets (MSDS) as appropriate.

3. Install mortar samples on masonry—preferably on the building. Do not make samples in cups or apply to plywood or other non-masonry surfaces.

4. *Written verification from the Contractor that all specified items will be used. Provide purchase orders, shipping tickets, receipts, etc. to prove that the specified materials were ordered an*d received.

1.3 QUALITY ASSURANCE/TEST REQUIREMENTS

A. *Installer certification:* All repairs should be performed by a trained installer holding a Training Workshop Certificate from Cathedral Stone Products, Inc.. Contractor shall maintain proof of this credential for each installer at the site at all times.

B. *Mortar Samples:* Prepare a sample of each type of repair listed below, using masonry removed from the building where designated by the Owner. Prepare, install, and finish each sample repair according to the specifications. **All samples must be applied to masonry.** Prepare samples in an area where they will be exposed to the same conditions as will be present on the building during curing. **Allow samples to cure at least three days (or longer, if possible) before obtaining Owner's approval for color match.** Mortar colors will continue to lighten as they cure and are exposed to the weather, so samples should be installed as far in advance as possible. A slightly darker color will give better long-term results. **Samples should be viewed from a minimum distance of 18-22 feet.**

***** Successful completion of Cathedral Stone® Products' three-day workshop is the minimum required for certification. More comprehensive four and five -day training workshops are also available. Cathedral Stone® Products will conduct training programs on site by special arrangement.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Materials are to be delivered, stored, and handled to protect them from damage, extreme temperature, and moisture in accordance with Manufacturer's written instructions.

B. Deliver and store material in Manufacturer's original, unopened containers with the production date shown on the container or packaging.

C. Comply with the Manufacturer's written specifications and recommendations for mixing, application, and curing of mortars.

1.5 PROTECTION/SITE CONDITIONS

A. *Cold Weather Requirements:* Do not work in temperatures below 40° F, when the substrate is colder than 40° F, or when the temperature is expected to fall below 40° F for 48 hours after installation of repair mortars. Building an enclosure and heating areas to maintain this temperature may only be done with the written approval of the Specifier.

B. *Hot Weather Requirements:* **Protect repair mortar from direct sunlight and wind.** Do not use or prepare mortar when ambient air temperature is above 90° F.

Part 2 – PRODUCTS

2.1 MASONRY REPAIR

A. Jahn Restoration Mortars are distributed by Cathedral Stone Products, Inc., 7266 Park Circle Drive, Hanover, MD 21076; tel. (410) 782-9150; fax. (410) 782-9155; website: www.cathedralstone.com email: info@cathedralstone.com. Jahn Mortars are premixed cementitious repair materials formulated to match the color and texture of the existing masonry, and do not contain any acrylic, latex, or other synthetic polymer additives. Mix the mortar with clean, potable water. *Substitutions:* If proposed equal is submitted, lab test to establish equivalent performance levels. Use an independent testing laboratory, as determined by the Specifier, and paid for by the submitting party.

B. *Setting anchors in existing masonry:* Jahn Anchor Setting Mortar (M80).

C. *Mechanical anchors and dowels*: Stainless steel threaded rod (ASTM F593) with a diameter as indicated on Contract Drawings, bent and cut to lengths required to achieve embedments shown on the Contract Drawings.

Part 3 – EXECUTION

3.1 WORKMANSHIP

A. Do not use any additives, such as bonding agents, accelerators, or retardants in the mortar.

3.2 PREPARATION FOR REPAIRS

A. Remove all loose mortar and masonry prior to installation of the repair mortar. "Sound" masonry with a hammer to verify its integrity. If necessary, cut away an additional 1/2" of the substrate to ensure the surface to be repaired is solid and stable. Remove any sealant residue.

B. Where cramp anchors, threaded rod anchors, or dowels have been cut and pieces remain embedded in the substrate: Anchors that are free of rust, solidly embedded, and do not project beyond the surface of the masonry unit may remain. All others should be removed.

C. Cut the edges of the repair area to provide a minimum depth of 1/4". The edges of the repair should be square cut. **Do not allow any feathered edges in the repair area.**

FOR DEEP OR OVERHANGING REPAIRS OR FOR USE IN HIGH RISE CONSTRUCTION, PROCEED WITH D-F, OTHERWISE SKIP TO G

D. Install mechanical anchors in all repair areas if specified on the Contract Drawing or as otherwise directed by the Specifier.

E. *Install anchors as follows:*

1. Drill holes to diameter specified on Contract Drawing.

2. Clean holes using compressed, oil-free air, and bristle brushes, until no dust cloud is produced when a brush, inserted the full depth of the hole, is pulled out of the hole.

3. Embed anchors in back-up using Jahn M80, mixed according to Manufacturer's instructions.

4. Anchors should be covered with a minimum of 3/4" repair material.

F. Clean all dust from surface and pores of the substrate, using clean water and a scrub brush.

G. For very dry or porous surfaces, pre-wet the substrate ahead of time to prevent the substrate from drawing moisture out of the repair too quickly. Re-wet the surface immediately before applying the repair material.

3.3 MIXING MORTAR FOR REPAIR

A. It is recommended that a dust mask be worn during mixing. Do not mix more material than can be used within 30 minutes. Discard any mixed material that has been unused for 30 minutes or more.

B. Mixing ratios for limestone, sandstone, granite, marble, brick, terra cotta, precast concrete, and structural concrete are as follows:

1. Approximately 4 ½ to 5 parts dry material to 1 part water:
   M100 - Brick and Terra Cotta
   M120 - Marble

C. Add water to dry ingredients and mix well. Adjust amount of water according to the weather and the porosity of the substrate.

3.4 APPLICATION OF REPAIR MATERIAL

A. Apply the mortar mix using a trowel in a series 1" lifts allowing mortar to dry approximately 10-20 minuets between lifts. If applied in layers, scrape off any cement skin that has formed and continue application. Dampen the surface before applying the next layer. Work mortar firmly into the surface of the masonry, including the corners, and under and around all mechanical anchors.

B. Build up repair material so that it is slightly above the adjacent masonry surface. Allow mortar 15 to 30 minutes to set slightly (wait time will vary with temperature and humidity–longer in cool weather), and then scrape off excess material using a straight edge (a plasterer's miter rod is good for this). Do not press down or "float" the repair. Where repairs occur at panel edges or corners, form mortar to match the profile of the surrounding masonry. In all cases, finish and texture repair so that it is as indistinguishable as possible from the adjacent masonry.

3.5 FINISHING TECHNIQUES

A. To obtain a smooth finish to match terra cotta, marble, or brick, the finished repair can be trowelled to leave a smooth surface. This may cause the repair to lighten and may need to be stained or painted to match. Glazed surfaces can be matched using Cathedral Stone's masonRE Mineral Coating and masonRE Terra Coat. (see data sheet)

B. Clean any mortar residues from area surrounding the repair by sponging as many times as necessary with clean water. This should be done before repair material sets.

C. Patching mortar can be textured to match rough surfaces using a variety of finishing tools. (Contact Cathedral Stone Representative)

D. After the repair has been cured and allowed to dry for at least one week, if the appearance of a repair does not meet the specifications of the job, the surface color of the repair may be enhanced by applying a vapor permeable, mineral based pigmented stain. (masonRE Stain Kit, a mineral based pigmented stain is available from Cathedral Stone® Products, Inc., 7266 Park Circle Drive, Hanover, MD 21076; tel. (410) 782-9150; fax. (410) 782-9155.)

3.6 CURING PROCEDURE

A. Lightly mist the repair with water to wet the entire surface of the finished repair approximately 30 minutes to 1 hour after completion on hot sunny days, and approximately 2 hours or longer, on cool or cloudy days. Time will vary with temperature and humidity. Mist several times a day during the 72 hours following the repair installation. Should access to the repairs be impossible for a period of time, plastic may be used to cover them temporarily. The application of plastic, however, does not remove the need for normal curing techniques. *Never cover repairs with plastic immediately after finishing—the water in the repair will be trapped on the surface, causing it to lighten.*

3.7 CLEAN UP

A. Remove uncured mortar from the perimeter of the repair before it dries using clean water and a rubber sponge. Repeat several times with clean water to prevent a halo effect (staining of adjacent masonry). Cured mortar may only be removed chemically or mechanically.

B. Remove uncured mortar from tools and equipment with water as soon as possible. Cured material may only be removed chemically or mechanically.

END OF SECTION 040513

DIVISION 4 – MASONRY

SECTION 040514
MASONRY RESTORATION MORTARING - SHALLOW

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Dutchman stone replacement utilizing epoxy repair compound Furnish all materials, labor, and equipment.

1.2 RELATED SECTIONS

A. Section 04500 - Masonry Cleaning

1.3 REFERENCE STANDARDS

A. ASTM D 638 Test method for Tensile Properties of Plastics.

B. ASTM D 648 Test method for Deflection Temperature of Plastics under Flexural Load.

C. ASTM D 695 Test Method for Compressive Properties of Rigid Plastics.

D. ASTM D 790 Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

E. ASTM D 2240 Test Method for Rubber Property - Durometer Hardness.

1.4 QUALITY ASSURANCE

A. Manufacturer qualifications: Company regularly engaged in the manufacturing of the products specified in this section.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets for each product.

B. Store products above 60 degrees F in an area protected from precipitation, construction activity, and direct sunlight. Store material in original containers. When opened, reseal opened containers tightly, and as soon as possible, to avoid moisture absorption from the atmosphere.

C. Condition products to a temperature between 60 to 85 degrees F before application.

D. Handle all products in accordance with Material Safety Data Sheets.

1.6 PROJECT CONDITIONS

A. Apply product under ambient conditions between 60 and 85 degrees F. Protect site from precipitation or apply product only after stone has thoroughly dried.

B. Mask or otherwise protect all adjacent work from epoxy repair compound or its components.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Bonstone Materials Corporation; 707 Swan Drive; Mukwonago, WI 53149; 414-363-9877; conforms to the requirements of this specification.

B. Substitutions:

1. Alternates to the acceptable manufacturer will be considered only upon the basis of written request and shall include substantiation of product performance as listed in section 2.02 below.

2.2 PERFORMANCE CRITERIA

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS

A. Contractor qualifications: Company regularly engaged in the repair and installation of dimension stone.

3.2 EXAMINATION

A. Inspect all areas to be repaired for possible exposure to precipitation, soundness of stone to be repaired, need for masking of adjacent stone, and the existence of any coating or contamination on the stone surface.

3.3 PREPARATION

A. Protect all adjacent surroundings from exposure to mixed epoxy repair compound or its components.

B. Ensure that all coatings or contaminates are removed before application of epoxy repair compound to a stone surface.

C. Ensure that all stone surfaces are clean, dry, sound, and dust free.

3.4 APPLICATION

A. Mixing Procedure:

1. Precondition materials to a temperature between 60 and 85 degrees F for the Bonstone® Clear Gel Epoxy. For Temperature below 40F use the Fast Set Extreme epoxy.

2. Premix each component of the epoxy repair compound separately before mixing. When using cartridges, dispense approximately 3 to 4 inches from mix nozzle before applying to hole or bonding surface.

3. Determine the amount of repair compound which can be utilized within the pot-life at the existing temperature.

4. Measure by weight or volume 2 parts of A Clear Gel Epoxy and 1 part Clear Gel hardener B into a clean mixing container. Mix thoroughly for at least 40-50 seconds. Use either a stainless steel spatula when mixing by hand, or a slow speed mixer (400 RPM) with a clean stainless steel mixing paddle. Avoid the use of waxed paper cups as mixing containers.

5. Ensure that no unmixed product exists on the sides or bottom of the mixing container and mix an additional one minute minimum.

6. Should additional thickening powder be necessary for high temperatures slowly add thickening powder while mixing to achieve the desired lump free consistency.
Note: When using Bonstone® cartridge systems refer to instruction sheets for dispensing epoxy.

B. Dutchman Repair of spalled stone.

Preparation:

1. Remove a right rectangular section of stone from the panel as follows:
To a depth of Z inches, remove stone *(X plus or minus Y)* inches past the furthest interior point of the spall. Remove stone *(X plus or minus Y)* inches above and below the highest and lowest point of the spall.

Manufacture of Dutchman assembly:

2. Prepare a replacement stone (Dutchman) of dimensions such that it will fit into the remaining space left by stone removal with a gap of 1/16th of an inch, plus or minus 1/32nd of an inch on all sides.

Installation of Dutchman:

3. Mask face of stone panel and Dutchman adjoining each other.

4. Apply epoxy prepared as in 3.04-A-(1 through 5) to adjoining sides of Dutchman and stainless steel anchor if required. When applying epoxy (especially a clear epoxy) to the sides of the limestone remember to leave epoxy roughly 1/2 to 3/4 inch from face/ surface of stone. This will eliminate any squeeze-out of epoxy on the face of the limestone. Tape may be used to mask off joint as well.

5. Install Dutchman into existing stone assuring true and level fit

6. Allow joint to cure and remove forms, masking and holding devices.

7. Apply flush with surface the Bonstone® HRM Mortar to the Dutchman surface joint for aesthetic repair.

Bonstone® HRM PRODUCT DESCRIPTION:
A two-component, lime-based, latex modified mortar for the restoration of historic masonry structures.
INSTALLATION Surface Preparation & Use:
Use gloves, wear eye protection, and avoid skin contact. When grinding cured materials, wear a dust mask. Mix only the amount of material which can be used in 15 minutes. Clean uncured HRM Historic Restoration Mortar from tools with hot, soapy water. Remove cured material mechanically.
Recommend testing an area of the structure before applying to large sections MIXING INSTRUCTIONS:
All materials should be at or above 55°F. Priming: For best adhesion, do not apply product to dry surfaces- light misting is appropriate. MIX PART B WELL BEFORE USING. Combine the two ingredients of powder and liquid until a slurry or knife grade desired consistency is obtained. Determine the powder to liquid proportion that works and handles the best for your particular application. Use a straight edge trowel to spread the material. Lightly mist the repair mortar with clean water immediately after application. Allow to cure before carving, grinding, or shaping.

3.5 FIELD QUALITY CONTROL

A. Keep samples of cured epoxy for quality control. Log time and dates of use.

3.6 CLEANING

A. Remove uncured epoxy repair compound from tools and equipment with dry towel or with xylene or MEK.

B. Remove cured epoxy repair compound mechanically.

C. Remove all debris related to the epoxy repair application from the work site in accordance with all applicable regulations for hazardous waste disposal.

END OF SECTION 040513

DIVISION 4 – MASONRY

SECTION 040531
MASONRY POINTING

Part 1 – GENERAL

1.1 SUMMARY OF WORK

A. For pointing of limestone, sandstone, precast concrete, structural concrete, brick, terra cotta, marble, or granite.

1.2 SUBMITTAL

A. Submit the following items in time to prevent delay of the work and to allow adequate time for review and resubmittals, if needed; do not order materials or start work before receiving the written approval:

1. Pointing mortar shall be: Jahn M110 Pointing Mortar available through:
   Cathedral Stone Products, Inc.
   7266 Park Circle Drive
   Hanover, MD 21076
   Samples shall be submitted for color matching to the same address.

2. Samples of all specified materials and Safety Data Sheets (SDS) as appropriate.

3. Install mortar samples on the building. Do not make samples in cups or apply to plywood or other non-masonry surfaces.

5. *Written verification from the Contractor that all specified items will be used. Provide purchase orders, shipping tickets, receipts, etc. to prove that the specified materials were ordered an*d received.

1.3 QUALITY ASSURANCE/TEST REQUIREMENTS

A. *Mortar Samples:* Prepare a sample of each type of repair listed below, using masonry removed from the building where designated by the Owner. Prepare, install, and finish each sample repair according to the specifications. **All samples must be applied to masonry.** Prepare samples in an area where they will be exposed to the same conditions as will be present on the building during curing. **Allow samples to cure at least three days (or longer, if possible) before obtaining Owner's approval for color match.** Mortar colors will continue to lighten as they cure and are exposed to the weather, so samples should be installed as far in advance as possible. A slightly darker color will give better long-term results. **Samples should be viewed from a minimum distance of 18-22 feet.**

1.4 DELIVERY, STORAGE, AND HANDLING

A. Materials are to be delivered, stored, and handled to protect them from damage, extreme temperature, and moisture in accordance with Manufacturer's written instructions.

B. Deliver and store material in Manufacturer's original, unopened containers with the production date shown on the container or packaging.

C. Comply with the Manufacturer's written specifications and recommendations for mixing, application, and curing of mortars.

1.5 PROTECTION/SITE CONDITIONS

A. *Cold Weather Requirements:* Do not work in temperatures below 40° F, when the substrate is colder than 40° F, or when the temperature is expected to fall below 40° F for 72 hours after installation of repair mortars. Building an enclosure and heating areas to maintain this temperature may only be done with the written approval of the Specifier.

B. *Hot Weather Requirements:* **Protect repair mortar from direct sunlight and wind.** Do not use or prepare mortar when ambient air temperature is above 90° F.

Part 2 – PRODUCTS

2.1 MASONRY POINTING

A. Jahn Pointing Mortars are distributed by Cathedral Stone® Products, Inc., 7266 Park Circle Drive, Hanover, MD 27016; tel. (410) 782-9150; fax. (410) 782-9155; website: www.cathedralstone.com email: info@cathedralstone.com. Mix the mortar with clean, potable water. Excessive water will lighten the color of the cured mortar.

Substitutions: If proposed equal is submitted, lab test to establish equivalent performance levels. Use an independent testing laboratory, as determined by the Specifier, and paid for by the submitting party.

Part 3 – EXECUTION

3.1 WORKMANSHIP

A. Do not use any additives, such as bonding agents, accelerators, or retardants in the mortar.

3.2 PREPARATION FOR POINTING

A. Existing mortar shall be removed to a minimum depth of 2 ½ times the width of the joint. In all instances, remove all unsound mortar. Do not remove mortar in excess of one-third the dept of the masonry unit. Dust and debris should be removed from the joint by brushing, rinsing with water, or compressed air.

B. Joints should be dampened prior to pointing, but there should not be any standing water.

3.3 MIXING MORTAR

A. It is recommended that a dust mask be worn during mixing. Do not mix more material than can be used within 30 minutes. Discard any mixed material that has been unused for 30 minutes or more.

B. Mixing ratio
   1. Approximately 4 to 5 parts dry material to 1 part water:
      This ratio is approximate. Adjustments to the amount of water must be made according to local weather conditions. Excessive water will lighten the final color. Pointing mortar should be drier than setting mortar to help control color.

C. Add water to dry ingredients and mix well. Adjust amount of water according to the weather and the porosity of the substrate.

3.4 APPLICATION

A. **Jahn M110 Pointing Mortar can be applied in a single lift regardless of the depth. Successive lifts with waiting periods between lifts are not necessary.**

B. Apply pointing mortar to a dampened surface, packing the mortar into the joint to ensure full depth compaction. The mortar should be brought flush with the face of the masonry unit, and left to set for final tooling.

3.5 FINISHING TECHNIQUES

A. After mortar joint has "set" (the time for this will vary depending on the depth of the application, dampness of the masonry, and local weather conditions). The joint should then be tooled to the desired finish. Do not allow mortar to harden before tooling, to prevent "burning" the joint.

B. Clean up should be done by brushing with a clean dry brush across the joint. If any mortar residue remains on the surface of the masonry unit, cleaning with clean water and a sponge is sufficient if done before the mortar dries. Cleaning with acids and/or power washers should be not necessary if good pointing practices are followed. If acid cleaning is required test samples should be applied prior to start of cleaning to ensure no damage will result. **Neutralization of all acids must be ensured.**

C. Do not allow pointing mortar beyond the face of the masonry unit. All edges of masonry shall remain visible. Pointing mortar should be applied to ensure this, or can be "raked" back slightly to expose edges of masonry, giving historic appearance.

3.6 CURING PROCEDURE

A. Dampening should begin as soon as the mortar has set sufficiently. Local weather conditions shall dictate the frequency, but hot weather requires this procedure to begin earlier (as soon as one hour) and to be done more frequently. Finished pointing should be dampened for 72 hours.

B. If mortar dries too rapidly, and does not bond, it shall be replaced at contractor's expense.

END OF SECTION 040531

Division 7 – THERMAL & MOISTURE PROTECTION
SECTION 071614

Acrylic Modified (Flexible) Cementitious Waterproofing

PART 1 - GENERAL

1.1 SUMMARY

A. Provide all labor, materials, equipment and supervision as necessary to install an Acrylic Modified Latex Cement Waterproofing over **(new and/or existing)** horizontal, interior or exterior structures, as shown on the project drawings and as outlined in this specification.

B. Following all applicable manufacturer's guidelines and application instructions shall be considered a requirement of this specification.

C. Related Sections:
1. Section 03 30 00 – Concrete

1.2 REFERENCES

A. ASTM C 109: Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.

B. ASTM C 348 - Standard Test Method for Flexural Strength of Hydraulic Cement Mortars.

C. ASTM C 321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars.

D. ASTM E 96 - Standard Test Method for Water Vapor Transmission of Materials.

E. ICRI Technical Guideline No.03732: Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.

1.3 SUBMITTALS

A. General: Submit 2 each of the following items in accordance with the requirements of the Conditions of Contract and in Division 1 Specification Sections.

B. Product Data: Submit manufacturer's technical data sheets, any applicable installation guidelines or recommendations, and material safety data sheets for each product included in this specification.

C. Samples: For **initial selection**, submit manufacturer's standard color charts for review by the specification authority and owner's representative. For

final selection, submit sample boardsof adequate size to exhibit pattern, texture, color and finish of the decorative stampable concrete overlay system.

D. Material certificates signed by the manufacturer certifying that the system complies with all requirements specified herein.

E. Warranty: Submit a sample of the manufacturer's standard material warranty.

F. Contractor Project Reference List: Contractor shall submit a minimum of 3 recently completed projects of a similar nature and include total contract value of completed work.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: The manufacturer of the products specified in this section shall have a minimum of 5 years' experience in the production of these types of products.

B. Contractor Qualifications: The contractor installing the products specified in this section shall have a minimum of 3 years' experience and have successfully completed no less than 5 projects similar in scope and complexity, and is acceptable to and has been trained by the manufacturer.

C. Substitutions: Requests for the approval of any product other than those specified in this section must be submitted to the specifying authority two weeks prior to the bid, and shall include complete application specifications and physical characteristics. Any request after this date will not be accepted. Failure of performance requires immediate removal and replacement of unapproved substituted material with those originally specified at no cost to the owner, Architect, construction manager, or general contractor.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels containing brand name, batch or lot numbers, and directions for storage and mixing with other components.

B. Store materials to comply with manufacturer's directions to prevent from damage and/or deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.6 PROJECT CONDITIONS

A. Environmental Conditions: Comply with all the manufacturer's directions for maintenance of ambient and substrate temperature, moisture, humidity, ventilation, and other conditions required to execute and protect completed work. In hot and cold weather conditions or when high evaporation rates or adverse conditions may be expected, the contractor will be responsible for the quality of the completed installation. Follow all recommendations and guidelines of the American Concrete Institute, as published in ACI Committee 305 for Hot-Weather Concreting and ACI Committee 306 for Cold-Weather Concreting.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Approved Manufacturer: Miracote Division of Crossfield Products Corp., 3000 E. Harcourt Street, Rancho Dominguez, CA 90221, (310) 886-9100; also 140 Valley Road, Roselle Park, NJ 07204, (908) 245-2800, www.miracote.com.

2.2 MATERIALS

A. Waterproofing Material - Acrylic Modified Cement Waterproofing: Cementitious, two-component, acrylic emulsion based, highly flexible, crack bridging waterproof membrane barrier against positive water pressure, with the following characteristics:

2.3 PROPERTIES

A. Physical Properties:

1. Product:	Miracote MiraFlex Membrane C
2. Color:	Gray, White or Pigmented
3. Dry Component-A:	Unique blend of cementitious material
4. Liquid Component-B: admixtures	White polymer emulsion and
5. Working Time:	Approximately 30 minutes
6. Shore A Hardness: (ASTM D-2240)	~ 85
7. VOC	0 g/L
9. Bond/Adhesion: (ASTM C-321)	215 psi (1.5 MPa) @ 28 days
10. Tensile Strength: (ASTM D-638)	750 psi
11. Elongation: (ASTM D-638)	65%
12. Crack Bridging: (ASTM E-836) Rupture)	1/8” opening @ 77°F……Pass (No
13. Vapor Permeability: (ASTM E-96)	.75 perm/inches
14. Waterproofing:(CRD C 48-92) = 140	Withstands 200 psi = 460 feet (14 bar m) hydrostatic pressure (positive side) at 3/32” (2.4 mm) thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine all construction substrates and conditions under which waterproofing materials are to be installed. Do not proceed with the waterproofing application until unsatisfactory conditions are corrected.

B. Do not proceed with the work until all such deficiencies have been corrected by the Contractor in an acceptable manner, and as approved by the Specifying Authority.

3.2 PREPARATION

A. Protect all surrounding areas, walls, window glass, landscaping and other adjacent surfaces from the execution of each item of work including, but not limited to, surface preparation and all application steps.

B. Substrate preparation:
   1. Remove oil, grease, dirt, loose particles, remains of form oils, water repellents, rust or other coatings by high-pressure water blasting (>3000 psi), wet or dry sand blasting, or other mechanical means to produce surfaces suitable for application of waterproofing.
   2. Follow manufacturer's instructions to clean and prepare surfaces and seal cracks and joints.
   3. Voids in concrete substrates: 1/4-inch (6 mm) diameter and larger, pre-treat with patching compound. Less than 1/4-inch (6 mm) diameter can be filled with a scratch coat of one-component waterproofing material.

C. Rinse surfaces to be waterproofed (excluding drywall or similar) with clean water to saturated surface dry (SSD) condition, with no standing water on horizontal surfaces.

D. Contractor shall perform tensile bond tests, as directed by the Specification Authority, in accordance with International Concrete Repair Institutes (ICRI) Technical Guideline 03739, Guide to Using In-Situ Tensile Pull-Off Tests to Evaluate Bond of Concrete Surface Materials.

3.3 APPLICATION

A. Mix two-component waterproofing material in proportions recommended by manufacturer.

B. Cavity fill, honeycombs & form-tie holes:
   a. Fill voids at cleaned and prepared faulty construction joints, cracks, form-tie holes, etc. with patching compound in mortar consistency flush to surface.
   b. Laminate patching compound in 2 to 3 layers as per manufacturer's instructions for larger, spalled or honeycombed areas.

C. Detailing horizontal and vertical construction joints and cracks (positive side waterproofing only):
   Install joint and crack sealing Fabric, embedded in waterproofing material as follows:
   1. Apply two-component waterproofing material by brush in a six to seven inch (15 – 18 cm) wide strip coat centered over all joints, cracks, penetrations and changes of plane to be fabric.
   2. While this coat is still wet, unroll joint sealing fabric into the coating and apply a coat of two-component waterproofing material over the fabric, smoothing out wrinkles and fish mouths.

D. Positive Side Waterproofing:

Apply two-component waterproofing material in quantities and number of coats as per manufacturer's specifications and recommendations:

1. Apply at 60 mils or 1/16" (1.5 mm) total thickness for all standard applications (i.e. foot traffic, balconies (non-tiled), etc.) and waterproofing up to 13 ft (4.0 m) water head.
2. Apply at 80 - 90 mils (2.0 - 2.4 mm) total thickness for applications exposed to hydrostatic pressure (>13 ft (>4.0 m) water head), under tiles, plaza decks, etc.

E. Alternative I: Negative Side Waterproofing:

Follow manufacturer's specifications and instructions for below grade structures (i.e. water and waste water tanks, swimming pools and gutters, basement and retaining walls) where infiltration from ground water is expected:

1. Apply first (base) coat one-component waterproofing material at 60 mils (1.6 mm)
2. After 24 hrs. waiting period, apply second (top) coat two-component waterproofing material at 60 mils (1.6 mils) as soon as base coat has reached initial set.

F. Alternative II: Horizontal surfaces with protective clear acrylic sealer:

a. 1 coat application: 200 – 300 sq.ft./gal (4.9 – 7.4 m^2/L.
b. 2 coat application: 350 – 450 sq.ft./gal (8.6 – 11.0 m^2/L.

H. Application considerations:

1. Apply, using stainless steel trowel, brush, short nap roller, or appropriate compressed-air spray equipment.

2. Apply only when surface and ambient temperatures are 40^{o}F (5^{o}C) and rising. At high temperatures (i.e. 86^{o}F (30^{o}C) and above) protect application from direct sun and wind to prevent premature surface drying and shrinkage cracks. Apply material in two coats minimum.

3. Application thickness should not exceed 1/8-inch (120 mils (3 mm)).

4. If needed, such as in zones posed to movement or cracking, plaza decks, etc., the waterproofing material can be additionally reinforced with a reinforcing fabric (supplied by waterproofing manufacturer), embedded between two waterproofing layers.

5. Do not bridge cracks greater than 1/16-inch (1.5 mm).

6. Bridge dynamic cracks or joints with elastomeric joint sealing fabric, as supplied by waterproofing manufacturer.

7. Do not overcoat waterproofing material with solvent-based materials.

8. Where a uniform color is desired (i.e. balconies, walkways, etc.), use of ColorPax LIP or MiraGard Colorbond XL is recommended.

9. Prime and protect alkali sensitive metals such as copper, aluminum, galvanized or zinc treated metal first with a primer, before over-coating with waterproofing material. Follow manufacturer's recommendations for primer material.

3.4 CLEANING

A. Clean work area and remove/discard all debris resulting from the application of the system to the acceptance of the specifying authority or the owner.

3.5 PROTECTION

A. Protect all completed work of the application during the specified cure time of the material from vehicular or pedestrian traffic, or any exposure to solid or liquid spillage or any other form of contamination.

END OF SECTION 071614

DIVISION 7 - THERMAL AND MOISTURE PROTECTION
Section 079200 - Joint Sealer Primers
for Elastomeric and non-Elastomeric Sealant

Part 1 - General

1.1 Summary

A. This specification describes the coating of joints with a one-component, adhesion promoting primer pior to application of a sealant.

1.2 Quality Assurance

A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001: 2008 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.

B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.

C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.3 Delivery, Storage, and Handling

A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

C. Condition the specified product as recommended by the manufacturer.

1.4 Job Conditions

A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 40ºF (5ºC) and rising.

B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified sealant.

1.5 Submittals

A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).

1.6 Warranty

A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

Part 2 - Products

2.1 Manufacturers

A. **Sikaflex Primer 429**, as manufactured by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ

07071 is considered to conform to the requirements of this specification.

2.2 Materials

A. Pimer:

1. The primer shall be a one-component, brush, dauber, spray-applied material. It shall be applicable in a horizontal, vertical, and overhead joints. The primer shall cure under the influence of atmospheric moisture.

2.3 Performance Criteria

A. Properties of the uncured primer:

1. Dry time prior to sealnt installation: >1 <8 hr.
2. Consistency: brush-, or spray-applied liquid
3. Color: clear

B. Properties of the cured primer:

1. Promotes adhesion to the following substrates:
   a) Concrete Block
   b) Placed Concrete
   c) Precast Concrete
   d) Mortar
   e) Grout
   f) Sikatops
   g) Granite
   h) Unfinished wood
   i) IEFS: Dryvit, Synergy, Sto, etc.
2. Service Range: -40F to 170F max.
3. The primer shall be capable of being re-applied if necessary.
4. The primer shall be acceptable for use in joints which will be subjected to total water immersion.

Note: Tests were performed with material and curing conditions at 71°-75°F and 45-55% relative humidity.

Part 3 - Execution

3.1 Surface Preparation

A. All substrates must be clean, dry, sound, free of surface contaminants, and free of frost. Remove all traces of the old sealant, dust, laitance, grease, oils, curing compounds, form release agents and foreign particles by mechanical means, i.e. – sandblasting, etc., as approved by the engineer. Blow joint free of dust using compressed air line equipped with an oil trap.

3.2 Mixing and Application

A. Primer:

1. Shake or stir primer well before using Apply with a brush, dauber, or spray onto the substrate covering the sides of the joint surfaces.

2. If the Sikaflex sealant cannot be installed within 8 hours of priming, reprime the area is necessary

3.3 Cleaning

A. The uncured primer can be cleaned from tools and equipment with an approved solvent. The cured primer can only be removed mechanically.

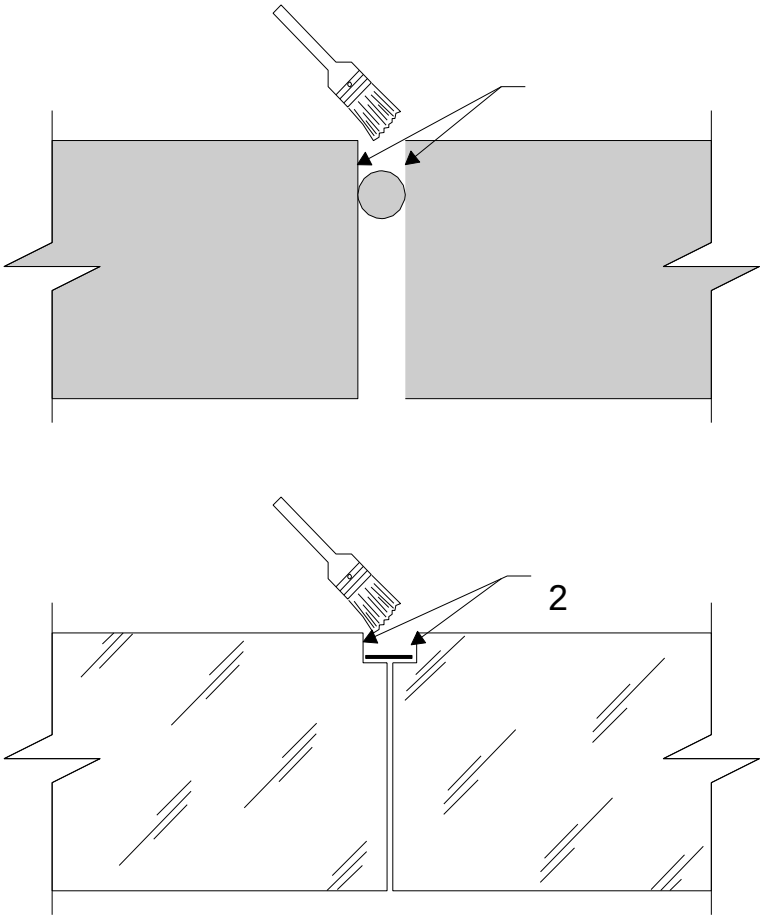
B. Leave work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

SC-097 Sikaflex® Primer 429 (for clean sound dry concrete, masonary, and wood)

1. Shake or stir primer well before using.

2. Brush or daub onto the substrate covering the entire joint surface.

3. Allow primer to dry from 1 to 8 hours prior to installation of sealant.



Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Material Safety Data Sheet which are available at www.sikaconstruction.com or by calling (201) 933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instructions for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.

END OF SECTION 079200

DIVISION 7 - THERMAL AND MOISTURE PROTECTION
Section 079210 - Joint Sealers
Elastomeric and non-Elastomeric sealant

Part 1 - General

1.1 Summary

A. This specification describes the sealing of joints and cracks with a one-component, gun-grade, elastomeric polyurethane sealant.

1.2 Quality Assurance

A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001:2008 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.

B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.

C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.3 Delivery, Storage, and Handling

A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

C. Condition the specified product as recommended by the manufacturer.

1.4 Job Conditions

A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 40ºF (5ºC) and rising.

B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified coating.

1.5 Submittals

A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).

1.6 Warranty

A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

Part 2 - Products

2.1 Manufacturers

A. **Sikaflex-1a**, as manufactured by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071 is considered to conform to the requirements of this specification.

2.2 Materials

A. Polyurethane sealant:

1. The joint sealant shall be a one-component, gun grade, polyurethane-base material. It shall be applicable in horizontal, vertical, and overhead joints. The sealant shall cure under the influence of atmospheric moisture to form an elastomeric substance.

B. Any primers, as required, recommended by the manufacturer of the specified product, approved by the engineer.

C. Backer rod or bond breaker tape, as approved by the engineer.

2.3 Performance Criteria

A. Properties of the uncured polyurethane sealant:

1. Initial Cure (Tack-Free Time): TT-S-00230C - 4 hours Final Cure 4 – 7 days
2. Consistency: non-sag
3. Color: 7 architectural standard colors

B. Properties of the cured polyurethane sealant:

1. Tensile Properties (ASTM D-412) at 21 days
   a. Tensile Stress: 175-psi min.(1.37 MPa)
   b. Elongation at Break: 550%
   c. Modulus of Elasticity 25% 35 psi (0.24 MPa)
      50% 60 psi (0.41 MPa)
      100% 85 psi (0.59 MPa)
2. Shore A Hardness (ASTM D-2240) at 21 days: 40+/- 5
3. Tear Strength (ASTM D-624) at 21 days: 55 lb./in.
4. Adhesion in Peel (TT-S-00230C, ASTM C 794)
   a. Concrete: 20-lb. min. - 0% Adhesion Loss
   b. Aluminum: 20-lb. min. – 0% Adhesion Loss
   c. Glass: 20-lb. min. – 0% Adhesion Loss
5. Service Range: -40^{o} to 170^{o}F (-40^{0} to 77 ^{0}C)
6. The sealant shall conform to Federal Specification TT-S-00230C, Type II, Class A.
7. The sealant shall conform to ASTM C-920, Type S, Grade NS, Class 35.
8. The sealant must comply with ANSI Standard 61(NSF Approval) for use in contact with potable water.
9. The sealant shall be non-staining.

Note: Tests were performed with material and curing conditions at 71^{o}-75^{o}F and 45-55% relative humidity.

Part 3 - Execution

3.1 Surface Preparation

A. The joint and adjacent substrate must be clean, dry, sound and free of surface contaminants. Remove all traces of the old sealant, dust, laitance, grease, oils, curing compounds, form release agents and foreign particles by mechanical means, i.e. – sandblasting, etc., as approved by the engineer. Blow joint free of dust using compressed air line equipped with an oil trap.

3.2 Mixing and Application

A. Joints:

1. Placement Procedure: Prime substrate as required based upon the recommendations of the manufacturer of the specified product, when field testing indicates need, and when the joints will be subject to immersion after cure, as approved by the Engineer.
2. Install approved backer rod or bond breaker tape in all joints subject to thermal movement to prevent three- sided bonding and to set the depth of the sealant at a maximum of 1/2 in., measured at the center point of the joint width. Approval of the backer rod or bond breaker tape shall be made by the engineer.
3. Joints shall be masked to prevent discoloration or application on unwanted areas, as directed by the engineer. If masking tape is used, it shall not be removed before tooling, yet must be removed before the initial cure of the sealant. Do not apply the masking tape until just prior to the sealant application.
4. Install sealant into the prepared joints when the joint is at the mid-point of its expansion and contraction cycle. Place the nozzle of the gun, either hand, air, or electric powered, into the bottom of the joint and fill entire joint. Keep the tip of the nozzle in the sealant; continue with a steady flow of sealant preceeding the nozzle to avoid air entrapment. Avoid overlapping the sealant to eliminate the entrapment of air. Tool as required to properly fill the joint.
5. Adhere to all limitations and cautions for the polyurethane sealant as stated in the manufacturer's printed literature.

B. Cracks:

1. For best performance sealant should be gunned into crack to a minimum of a 1/4" in depth. Place the nozzle of the gun, either hand, air or electric powered, into the bottom of the crack and fill entire crack. Keep the tip of the nozzle in the sealant. Continue with a steady flow of sealant preceeding the nozzle to avoid air entrapment. Avoid overlapping the sealant to eliminate the entrapment of air. Tool as required to properly fill the crack.
2. Adhere to all limitations and cautions for the polyurethane sealant as stated in the manufacturer's printed literature.

3.3 Cleaning

A. The uncured polyurethane sealant can be cleaned with an approved solvent. The cured polyurethane sealant can only be removed mechanically.

B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

SC-069

Sikaflex® -1a Crack Filler

Figure 1 - Surface Seal

1. Surface seal cracks up to a ¼" wide by gunning **Sikaflex-1a** into crack.

2. Tool as required to properly fill crack.

Note:
Prior to applying any coating, allow sealant to cure for 7 days.

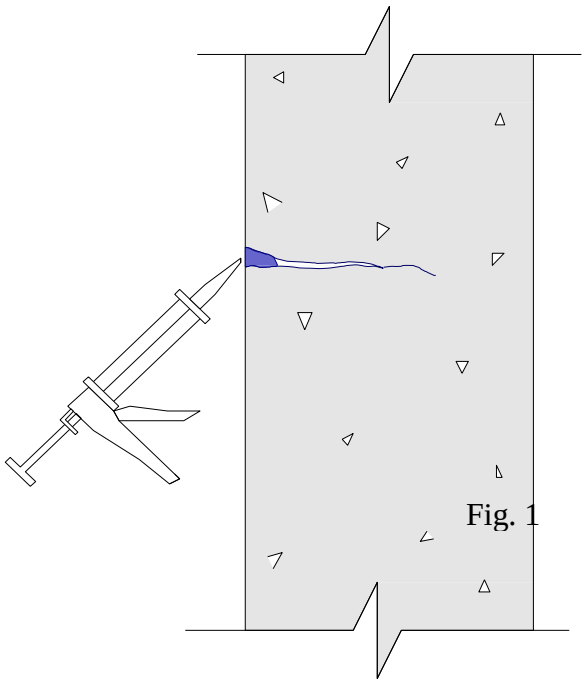


Fig. 1

Figure 2 - Notch & Seal

1. Gun **Sikaflex-1a** into prepared crack to a minimum depth of ¼".

2. Tool as required to properly fill crack.

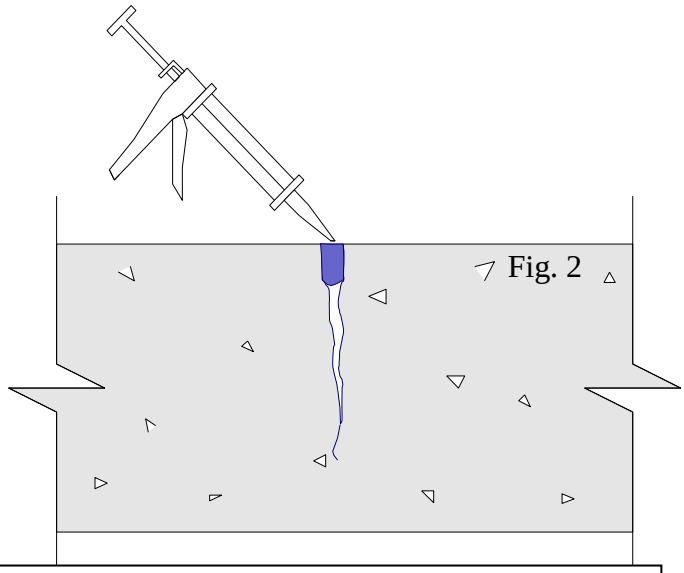
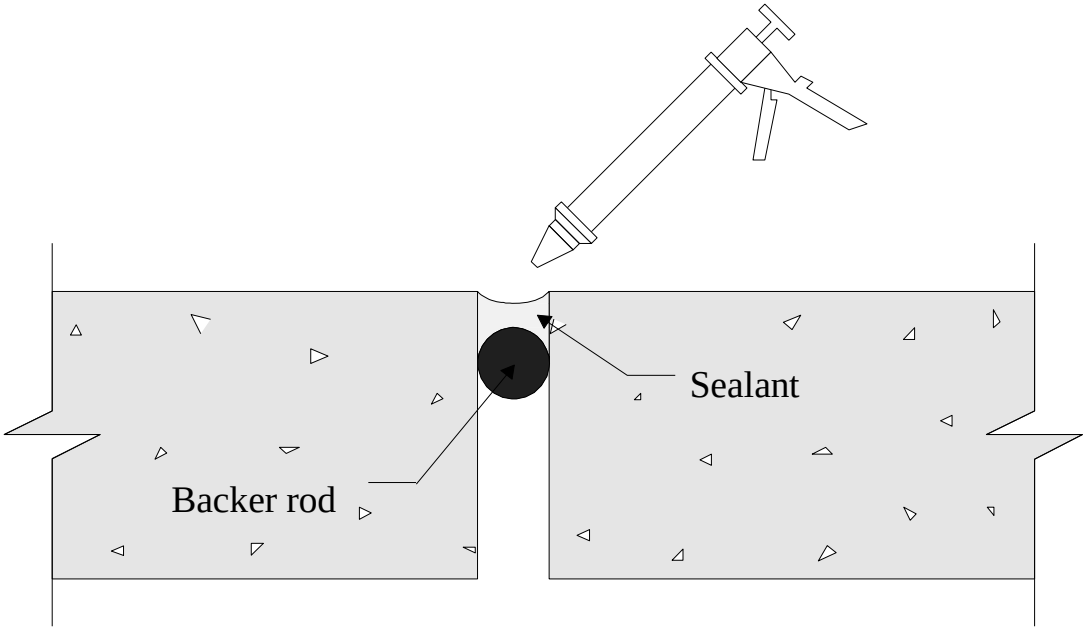


Fig. 2

SC-069

Sikaflex®-1a Expansion Joint Filler



1. Install appropriate backer material to prevent three-sided adhesion and to control sealant depth.
2. **Sikaflex-1a** should be gunned into joint at mid-point of designed expansion and contraction cycle.
3. Tool as required to properly fill joints.

Note: **Sikaflex-1a** is designed for all types of joints where sealant will not exceed ½" in depth. Proper joint design is 2:1 width to depth ratio.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Material Safety Data Sheet which are available at www.sikaconstruction.com or by calling (201) 933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instructions for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.

END OF SECTION 079210

DIVISION 9 - FINISHES
Section 099100 – Paint Strippers

Part 1 – GENERAL
1.1 RELATED DOCUMENTS

A. Work of this section shall be governed by the Contract Documents. Provide materials, labor, equipment, and services necessary to furnish, deliver, and install all work of this section as shown on the drawings, as specified herein, and/or as required by job conditions.

1.2 SUMMARY OF WORK

A. This section includes, but is not limited to the following:

a. Paint removal by chemicals from all historic surfaces including smooth and ornamental wood, metal, masonry, concrete, and brick. Mock-ups will determine the best appropriate method.

B. Protection of concrete mosaic, metals, stone, and other adjacent materials during all other work activities in related sections, below.

C. Visual Requirements:

a. Maintain aesthetic or historic qualities of Project by protecting Work designated to remain.

1.3 REFERENCE

A. Manufacturer's specifications and instructions.

1.4 SUBMITTAL

A. Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data: Submit manufacturer's specifications and installation instructions for products used including finishing materials and methods.

C. Submit manufacturer's technical data sheet for each product indicated including chemical analysis and recommendations for their application and use. Include test reports and certifications substantiating that products comply with requirements.

D. Submit a detailed plan for proposed paint removal methods for each type of paint removal Work, for review and approval by owner or owner's representative.

E. Submit a work plan describing chemicals used to strip paint, procedures used to provide inlets, and capture, store, sample and dispose of all waste generated

throughout this project.

F. Samples: Provide sample installation of paint removal. Locations per the owner or owner's representative's directions.

1.5 QUALITY ASSURANCE

A. Mock-ups: Prepare sample for each type of removal on the appropriate material indicated to be stripped. See 1.6 Test Panels.

B. Provide at least one person who shall be present at all times during the execution of the work of this section, who shall be thoroughly familiar with the specified requirements, and the materials and methods needed for their execution, and who shall direct all work performed under this section.

B. Provide adequate numbers of workers skilled in the necessary crafts and properly informed of the specialized methods and materials to be used in this work.

1.6 TEST PANELS

A. The Contractor shall arrange for preparing test panels to determine the appropriate thickness at which the product is applied to the surface and the time values for removing the product. Size of testing area shall be no smaller than 1' SF.

B. Contractor shall prepare a written report detailing results of testing including description of methods employed, materials, concentrations of chemicals, dwell times and other elements of test procedures.

C. Each test panel must be carefully labeled, charted, and photographed.

D. Approved test panels will become a part of the Work, and serve as the quality standard for similar type work on this project. Additional test panels, up to a maximum of 3 for each type of c stripping, shall be prepared if necessary to obtain satisfactory results.

E. Notify the owner's representative seven (7) days in advance of the dates and time when the test panels will be installed.

F. As the Work progresses along the building, the Contractor shall perform test panels to confirm which paint removal product will be best for that location being worked on. Designated areas should take into consideration that the paint removal product will react differently based on temperature, substrate and type of coating. Prior repairs, remaining paint layers, type of paint, and sun exposure may not be uniform on the building and will potentially need separate removal products, amounts of chemical removers, and dwell times. Size of testing area will be no larger than 5' SF.

1.7 PROJECT/SITE CONDITIONS

A. Contractor shall be responsible for protecting all existing adjacent materials such as doors, windows, flashings, roofing, and other existing material assembles.

B. Contractor shall be responsible for the repair of all damaged adjacent materials due to the execution of the cleaning work at no additional expense to the Owner. Repairs shall be made by qualified mechanics skilled in the type of repairs required, to the satisfaction of the owner's representative.

C. Protect adjacent areas and surfaces not being cleaned with barriers suitable for the chemical cleaners being used. Cover air intakes, air conditioning vents and similar openings that may come in contact with the chemical cleaners, residues, and their fumes. Leave covers in place throughout the cleaning process.

D. Protect trees, plants, foliage, storm sewers, and surrounding surfaces from paint removers, neutralizers, residue, and rinse waters.

E. Take appropriate precautions to avoid harm to building occupants, pedestrians and nearby property. Terminate work when wind drift may injure passerby or damage vehicles and adjacent property.

F. Safety: For any number of reasons it is essential to maintain a high degree of worker and occupant safety while working with hazardous materials. Most of the processes used to remove lead paint on this scale will require a full-time industrial hygienist to test air quality and lead levels in all persons entering the contaminated area.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Chemical Strippers

a. Environmentally safe, water-based paint strippers, free of flammable solvents and fumes, caustics and MUST NOT contain N Methyl Pyrrolidone (NMP). Products must work on epoxy paints, cementitious paints, exotic coatings, and oil-base coatings. Acceptable products available through Cathedral Stone Products; contact Technical Reps - Tel: 410-782-9150; fax: 410-782-9155; website: www.cathedralstone.com email: info@cathedralstone.com.

B. Specialty Materials For Delicate Items

a. Product(s) shall be chosen based upon test samples prepared by Contractor on- site.

C. Miscellaneous Equipment

a. Stiff natural bristle brushes
b. Soft clean rags
c. Clean, potable water
d. Rubber gloves
e. Eye and skin protection
f. Putty knives or paint scrapers, metal, and plastic.
g. Airless Spray equipment with adjustable pressure (between 100-600 psi.)

and a 0.19" or larger fan tip outfitted with chemical resistant packings. Titan 640i or larger pump or equal

h. Standard Pressure washers with tip pressures no greater than 3600 psi at the tip.
i. Wire Brush (for removing rust bloom only; for metal surfaces; NEVER ON MASONRY).

PART 3- EXECUTION

3.1 PREPRATION

A. Protect adjacent surfaces with paper, drop cloths, and other means. Special protection should be applied to window, concrete mosaic ceiling, and other historic material should be applied.
B. When removing paint from metallic surfaces make sure surface has been mechanically cleaned free of rust with wire brush. Prime rusted areas as soon as possible to prevent recurrence of rust bloom.
    a. Refer to Part B Specifications, Section 02064 for removal requirements involving lead-based paint.

3.2 GENERAL APPLICATION OF INITIAL CHEMICAL TREATMENT (For paint removal from concrete, excluding metal railings)

A. Follow manufacturers' instructions.

B. Plan to remove paint in sections that can easily be applied in one working shift.

C. Clearly mark or identify time of application and dwell time.

D. Remove paint stripper in the same sequence of sections in which it was applied.

E. The contractor shall have adequate staff available to monitor the process at the end of the dwell time cycle and who will be available to remove the paint stripper. Do not leave chemicals on the building past their designated dwell time.

F. General Instructions for Gel Based Paint Removal Products:

    a. Rely on information from test panels to determine which chemical product to use.
    b. Determine the dry film thickness of the coating to be removed.

    c. Cover adjacent areas during spray application. Typical masking is required for only the adjacent 3 feet.

    d. Cover ground directly beneath application to collect drips from application of stripper and to collect removed paint.

    e. Apply with airless spray equipment or brush approximately 30-50% thicker than the film thickness of the coating to be removed. (Test patches will make the determination of application thickness). Covering of the stripper application is only required for applications in direct sunlight, high wind, high heat (greater than 85□F), or if inclement weather is expected to prevent

stripper from drying or being washed off. Only if required, use 1 mil polyethylene plastic or other suitable material, otherwise leave uncovered. DO NOT rub or work plastic covering into surface of the stripper, merely hang plastic barrier covering over surface. Dwell time can be between 4-24 hours depending on the thickness and type of coating being removed. Remove plastic covering (if applied) and remove coating with suitable hand tools such as scrapers.

f. Leave on for up to 24 hours or longer according to test patch findings. Typical architectural coatings are removed by late afternoon application of stripper and removal the next morning. Typical architectural applications require two (2) applications.

g. Remove as much residue as possible with tools before clean-up procedure.

h. Collect paint and remaining residue, put into plastic bags and dispose of in compliance with Federal, State and local regulations. Never dispose of stripper or stripper residue in steel drums unless completely dry.

i. Rinse surface with pressure washer and surfactant cleaner, **working from the bottom up.** Collect water if required by environmental guidelines. If location does not allow pressure washing, clean all surfaces with clean rags saturated in denatured alcohol, cycling rags often, to remove any stripper residue. Dispose of rags in accordance with Federal, State and Local regulations.

3.4 GEL PAINT REMOVAL PRODUCT CONTAINMENT & REMOVAL (IF REQUIRED)

A. Use the following outline to develop a containment area:

a. First Layer: Canvas painter's drop cloth. These are used to cushion the polyethylene that will be installed on top.

b. Second layer: clear polyethylene at least 6 mil. X 20' x 100' to be installed above the canvas.

c. Third layer: Black 6-mil. X 20' x 100', construction grade to be installed on top of both the canvas and clear polyethylene.

d. Install as follows:

1. At base of building, take spray adhesive and spray underside 4 to 6" on all horizontal surfaces. Spray vertical surfaces if horizontal surfaces are rough or have loose material.

2. Once dry, take duct tape and apply it smoothly from the point where the vertical and horizontal surfaces converge for a distance of approximately 6".

3. Let tape dry to surface sprayed with adhesive. Bond between tape and spray adhesive should be firm and without voids.

4. Lay out a layer of canvas from the edge where both vertical and

horizontal surfaces meet. Do this for a distance of at least 10' away from all vertical surfaces.

5. Lay out a layer of polyethylene plastic. Using a roll of 4" duct tape, apply 2" of the roll along the edge of the clear polyethylene and attach the remaining 2" width of tape to the previously applied duct tape (see direction 2) that has been attached to the base of the building.

6. Apply the final layer of black 6 mil. Polyethylene plastic over the layer of clear plastic and the layer of canvas (using the technique described in direction 4).

7. Outside of the containment area, take 4" plastic in 10' sections and roll the clear black polyethylene over tubes and under so that when you have finished it will be possible to contain all liquids used in the stripping procedure.

B. Up to two applications of the chemical removal product may be made on the building with no additional charge to the Owner.

3.5 PAINT REMOVALL AND SURFACE PREP

A. No work shall commence until methods and materials for each type of cleaning are approved by the owner's representative as determined by test panels. Repeat test panels as required to demonstrate means and methods to acceptable levels as determined by the owner's representative.

B. **Pressure washing shall be at a pressure, which will not damage the surface, yet provide effective removal.**

C. Personnel performing cleaning operations shall at adhere to the Personnel Protective Equipment (PPE) stipulated on the SDS for products being used.

D. Exercise caution during cleaning operations to avoid wind drift of materials to adjacent properties. Persons, or cars below. Schedule cleaning operations for times or days when risk to pedestrians or vehicles is at a minimum.

E. Generally, treat surfaces by directing low pressure water washing over the surface as determined by test panels.

F. Use only methods and materials determined during testing phase and approved by owner's representative. Clean surface to degree accepted by owner's representative. Do not permit cleaning to continue if methods and materials employed results in any permanent damage to surfaces.

G. Do not proceed with surface preparation until proper protection has been installed for adjacent materials.

H. Contractor shall reclaim, characterize and dispose of all removed paint and stripper residue used in conjunction with this project in accordance with applicable laws.

Disposal sites shall be approved by the owner's representative.

3.6 CLEAN UP

A. During the work, remove from the site discarded cleaning and coating materials, rubbish, cans and rags at the end of each workday.

B. Upon completion of work, remove all protective coverings and coatings, and clean window glass and other spattered surfaces. Remove spattered coatings by proper methods as recommended by manufacturer, using care not to damage adjacent surfaces.

PART 4 – CONTRACTOR QUALITY CONTROL

4.1 QUALITY CONTROL

A. The implementation of a Contractor Quality Control Program does not relieve the Contractor from the responsibility to provide work in accordance with the Contract Documents, applicable codes, regulations, and governing authorities. The Contractor Quality Control Program shall include, but not be limited to, the elements herein. These elements are provided only as a minimum starting point for the Contractor to use to generate the complete Contractor's Quality Control Program. Conform to all applicable provisions of Section 01400 CONTRACTOR QUALITY CONTROL.

END OF SECTION 099100

SECTION 099110 - PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Related Documents:
1. Drawings and general provisions of the Subcontract apply to this Section.
2. Review these documents for coordination with additional requirements and information that apply to work under this Section.
3. Refer to other Sections for references to painting work included under this Section.

B. Section Includes:
1. Field application of paints and coatings.
2. Unless otherwise specified or shown, paint all surfaces and items required by Repair Procedures which are exposed to view.
3. Surface preparation.

C. Related Sections:
1. Division 01 Section "General Requirements."
2. Division 01 Section "Special Procedures."
3. Division 01 Section "Alternates."
4. Division 01 Section "Construction Waste Management.
5. Division 07 Section "Joint Sealers".

1.2 REFERENCES

A. General:
1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.
3. Refer to Division 01 Section "General Requirements" for the list of applicable regulatory requirements.

1.3 SUBMITTALS

A. Submit under provisions of Division 01 Section "General Requirements."

B. Product Data:
1. Materials List: Complete list of proposed manufacturers and products.
2. Manufacturer's Specifications: Manufacturer’s technical information for each product, including paint analysis and application instructions.
3. Material safety data sheets for each product.

C. Samples:
1. Preliminary Samples: 8-1/2" x 11" samples of each color, texture and sheen on glossy card stock.
2. Field Samples: After preliminary samples have been approved, apply field samples at locations designated by Project Manager for final approval.
   a. Allow for applying field samples two additional times in order to achieve desired colors, without additional cost to owner or delay in schedule.

D. Certificates: Provide certificate from each manufacturer stating material is premium quality and suitable for intended use on this Project.

E. Closeout Submittals:
1. Two copies of manufacturer's color and sheen formula, and 4" x 6" color chips, for each final color used in the Project.
2. Product Usage Records: Three copies of product usage records for each paint, coating and solvent product used in the project. Include product name, amount used, description of use and use location, and period of time over which the product was used.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the work of this section with minimum 3 years successful experience in work of similar scope.

B. Regulatory Requirements:
1. Products containing chromates, cadmium, lead, or mercury or are not permitted.

C. Manufacturer's Instructions: Perform painting work in accordance with manufacturer's written instructions and recommendations.

D. Pre-Installation Meeting: Before painting begins, meet with Project Manager, Architect and Subcontractor to discuss painting work, color schedule, product compliance, and hazardous material remediation.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the Project in original, new, unbroken packages and containers bearing manufacturer's name and label, with:
1. Name of material, color and sheen.
2. Manufacturer’s name, product number and date of manufacture.
3. Contents by volume of major pigments, vehicle constituents and volatile organic compound (VOC) content.
4. Thinning and application instructions.

1.6 PROJECT CONDITIONS

A. Comply with paint manufacturer's instructions on temperature and humidity conditions under which materials can be applied.

B. Environmental Requirements:

1. Silica Dust: Incorporate controls to eliminate visible emissions from any activity , which may generate silica dust, such as abrasive blasting.
   a. Do not use silica sand or other substances containing more than 1 per cent crystalline silica as abrasive blasting materials.
   b. Prevent exposure of workers and others to dust using methods such as removing dust with water, high efficiency particulate air (HEPA) filters, and wet sweeping. Do not use compressed air or dry sweeping to remove dust.
2. Contain and dispose of materials resulting from cleaning, including lead-containing materials, in accordance with LBNL procedures and applicable regulations.
3. Disposal down sanitary drains or storm drains of solvents, etching materials, or water contaminated with solvents or etching materials, is not permitted. Contain and dispose of such materials at legal disposal sites approved for this purpose.

1.7 MAINTENANCE STOCK

A. Provide 1 full gallon of each type and color of finish coats used on the Project. Label with paint manufacturer, paint type, product number, color, sheen and its representative use on the Project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Benjamin Moore.

2.2 MATERIALS

A. Material Quality:
1. Provide premium quality materials. Materials not bearing manufacturer's identification as a premium- grade product are not acceptable.
2. Should manufacturer's specifications or product numbers change, provide its current equal or better product.
3. Primer and undercoats are to be of same manufacturer as final coat.
4. Materials left from previous jobs are not acceptable.
5. Use only thinners approved by paint manufacturer and use only within recommended limits.
6. Etching Solutions: As recommended by paint manufacturer for the use intended.
7. Solvents: Non-petroleum based, as recommended by paint manufacturer for the use intended.
8. Crack Filler: Elastomeric, approved by paint manufacturer for the particular use intended.

B. Finish Coat Coordination: Provide finish coats which are compatible with prime paints used.
1. Review other Sections in which prime paints are provided. Ensure compatibility of total coating systems.
2. Upon request from other trades, furnish information on characteristics of finish materials proposed for use.
3. Provide barrier coats over incompatible primers or remove and reprime.
4. Notify owner in writing of any problems anticipated in use of specified coating systems with substrates primed by others.

2.3 COLORS

A. General:
1. The proposal and acceptance of any paint manufacturer shall not restrict owner to selection of standard colors of that manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions under which painting work is to be applied.

B. Do not paint over dirt, rust, scale, grease, oil, dust, moisture, scuffed or damaged surfaces, or conditions detrimental to a durable paint life.

C. Starting work indicates acceptance of conditions of surfaces and within any particular area.

3.2 PREPARATION

A. Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as specified for substrate condition.

B. Remove hardware, accessories, and items in place and not to be painted, or provide protection prior to surface preparation and painting. Reinstall removed items after painting.

C. Clean surfaces before applying paint. Remove oil and grease prior to mechanical cleaning. Schedule cleaning so contaminants from cleaning process do not fall onto wet, newly painted surfaces.

D. Moisture Content: Do not paint over surfaces where moisture content exceeds manufacturer's instructions.

E. Cementitious Materials:
1. Apply paint 30 days minimum after stripping forms or completion of plastering.
2. Remove efflorescence, oils, grease, acids, chalk and stains. Etch glazed surfaces with etching solution, and rinse with water to neutralize.
3. Clean and fill cracks 1 /16 inch (3 mm) wide and larger.
4. Test for alkali. Where it exceeds paint manufacturer's recommended levels, neutralize before application of paint.

F. Mix painting materials in accordance with manufacturer's instructions.

G. Store materials in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
1. Cover containers of coatings or solvents when not in use.

H. Stir materials before application to produce mixture of uniform density, and stir as required during application. Do not stir surface film into material, strain material before using if necessary.

3.3 APPLICATION

A. Apply paint in accordance with manufacturer's instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Apply additional coats when stains or blemishes show through final coat, until paint is a uniform finish, color and appearance.
2. Ensure dry film thickness at corners and crevices is equivalent to that of flat surfaces.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated or otherwise prepared for paint as soon as practicable after preparation.
1. Do not apply materials in areas where dust is being generated, or will be generated, before coatings are thoroughly dry.
2. Do not commence painting work in an area or space until all firestopping work in that area or space has been completed and inspected.
3. Allow time between successive coats to permit proper drying.
4. Do not recoat until paint feels firm and does not deform or feel sticky under moderate thumb pressure.

C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to achieve a total dry film thickness (DFT) as recommended by coating manufacturer.
1. Dry film thicknesses specified in Articles [3.07] [or] [3.08] are those recommended by ICI for their particular products. Where products of other manufacturers are approved, apply materials at the spreading rate recommended by those manufacturers to achieve their recommended DFT.

D. Prime Coats: Apply to items not previously primed. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat.

E. Finish Coats: Provide even texture. Leave no laps, irregularity in texture, skid marks, or other surface imperfections.
   1. Opaque Finishes: Provide opaque, uniform finish, color and coverage. Cloudiness, spotting, holidays, brush marks, runs, sags, ropiness or other surface imperfections are not acceptable.
      a. Concrete Floors: Evenly apply abrasive material recommended by paint manufacturer at density in approved sample.
   2. Transparent Finishes: Provide glass smooth surface film of even luster. Cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections are not acceptable.

F. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not accepted.

3.4 FIELD QUALITY CONTROL

A. Owner may require materials testing procedures at any time during field painting.

B. If test results show material being used does not comply with requirements, Subcontractor may be directed to remove non-complying work, pay for testing, and repaint surfaces at no additional cost to owner.

3.5 CLEANING

A. Remove discarded paint materials, rubbish, cans and rags from site at end of each workday.
   1. Keep flammable materials in approved labeled containers in a well-ventilated area.
   2. Cover containers of coatings or solvent products when not in use.

B. Protection: Protect work of other trades, whether to be painted or not. Correct damage by cleaning, repairing, replacing, or repainting, as acceptable to Project Manager.
   1. Clean paint-spattered surfaces immediately by proper methods of washing and scraping. Do not damage or scratch finished surfaces.
   2. Provide “Wet Paint” signs to protect new painted finishes.
   3. Remove temporary protective wrappings, provided by others for protection of their work, after completion of painting operations.
   4. Do not cover operating mechanical or electrical equipment.

C. Repair: At completion of work by other trades, touch up and restore damaged surfaces or defaced painted surfaces.

3.6 WASTE MANAGEMENT

A. Deliver unused paint in original containers to recycler in accordance with requirements of Division 01 Section "Construction Waste Management."

END OF SECTION 099110

Boulder County Courthouse Lions Club Fountain
Repair Procedures

September 17, 2019

Note: The following steps should be divided/grouped as needed to eliminate or minimize damage to new work, i.e. sandblast concrete prior to terra cotta work, apply Membrane C last, etc. This repair work should be performed during spring or fall season.

Photo Reference	
	A. Preliminary Work:
A1-1,2,3	1. Where blowout damage occurred on south side of inner portion of fountain, remove all displaced/loose terra cotta blocks, pea gravel, etc. to expose concrete base in this area.
A2-1, 2	2. Inspect and repair any damage to internal plumbing if discovered in this area. Further investigation may be required to determine potential damage to internal plumbing. This could include removal of additional terra cotta blocks and select demolition of center concrete base.
A3-1, 2	3. In main basin, adjust float mechanism as allowed to lower water level a few inches (±) to keep it below the terra cotta/concrete joint.
A4-1, 2	4. In the upper center basin, lower the water level to decrease the amount of membrane and sealer needed on the terracotta. This will necessitate new LED light fixtures (i.e. not water-cooled) and cutting down the height of the drain standpipe in that upper basin.
A5-1, 2	5. Remove all existing pea gravel as allowed inside and behind terra cotta blocks in center of fountain.
A6-1, 2	6. Replace any severely damaged terra cotta block(s) with new blocks from BCBS shop inventory, if they are available and if exactly the correct size and finish.
	B. Concrete Basin Repair/Refinish:
B1-1	1. Sandblast existing white basin coating(s) down to bare concrete using "dustless" blaster. There is also an existing white coating in the upper basin (four sections). For this coating, only sandblast the bottom concrete surface. For the terra cotta surfaces, see step #4 below.
B2-1, 2	2. Cut and thoroughly clean bottom joint between concrete basin and terra cotta. Remove existing pea gravel inside and behind terra cotta. Replace existing weep tubes with new non-clogging masonry weeps.
B3-1	3. Patch concrete basin as required, including center concrete base at top edge where blowout damage occurred at terra cotta joint. For patches less than 1/2-inch depth, prime these areas first with **P-100 Primer** by Lyons Manufacturing Inc., then use **Lyons Patchcrete** two component acrylic polymer. For concrete patches over 1/2-inch depth use **BASF MasterEmaco N 425** non-sag repair mortar. *[Alternate for concrete patching*: Use **Miracote Mortar Bed 2000** for patches of any depth. (For large conc. repair in the blowout damage area, **Miracote MiraPatch WP** repair mortar may be used instead.)] For any cracks in the concrete, caulk with **Sikaflex-1a** sealant, first using **Sikaflex Primer 429** and backer rod as required, and do not bridge joint with any patch materials listed above. Apply sand as in step #6.
	4. Apply **Miracote MiraPrime Aqua-Blok XL** waterproofing sealer on all concrete upper and lower basin surfaces as per instructions. Also use this product on submerged mortar joints in upper basin.
B5-1	5. Caulk bottom terra cotta/concrete joint from step #2 with **Sikaflex-1a** sealant. Select sealant color to best match final terra cotta grout color or final MiraFlex Membrane color, whichever is closer.
B6-1	6. Using **Sikaflex-1a** sealant, caulk all tight corners in basin to create a smoother, rounded transition for new MiraFlex Membrane. Apply some sand to top of wet caulk to help Miracote stick, cleaning off any sand residue when sealant is dry.
B7-1	7. Apply two coats (60 mils total) of **Miracote MiraFlex Membrane C** flexible waterproofing to lower and upper basin to cover all exposed concrete surfaces. Choose Miracote pigment that best matches final (cleaned) color of the terra cotta, i.e. not bright white. For any terra cotta surfaces that will be submerged in the upper basin, apply **Miracote MiraGard Drylook Sealer**.
	8. Apply **Miracote MiraTop UCS** sealer (pigmented as required) to all cured MiraFlex Membrane C surfaces.
	9. For any questions re: basin coating, contact Jim Rowe, Miracote Sales Manager, at 720-837-0059, jimr@cpcmail.net.

C. Terra Cotta Block Repair/Rehabilitation:

C1-1 1. Manually remove all loose, flaking terra cotta using a thin putty knife or similar tool.

C2-1 2. Cut and thoroughly clean all masonry joints to a minimum 1/2-inch depth. Grinding is the preferred method to reduce damage of terra cotta blocks.

C3-1 3. Clean terra cotta surfaces with **Cathedral Stone Products (CSP) Bio-Cleaner** (a.k.a. masonRE B+) to remove mold (i.e. dark blue/black stains) where required. Product can be applied to entire terra cotta area and pressure-washed after five minutes.

C4-1, 2 4. For existing white coating in upper center basin sections, on the terra cotta surfaces including the insides of the connecting "tunnels," remove this coating using **Cathedral Stone Products Light Duty Paint Remover or Heavy Duty Paint Remover** (S-305 or S-301) or **Blue Bear 600GL Coatings Remover** (a.k.a. Soy-Gel). First test product(s) in a small inconspicuous area! For the concrete bottom surface, see sandblasting instructions above (step #1).

C5-1 5. Clean exposed surfaces of terra cotta with diluted **Cathedral Stone Products Heavy Duty Cleaner** (a.k.a. masonRE G) for yellow stains. Start with 1:4 water dilution in a few test areas and increase concentration as required to safely remove stains. Product can be applied to entire terra cotta area if well-diluted, then pressure-washed after five minutes.

C6-1,2,3 6. Patch terra cotta deep patches (1/2 inch or more) using **Cathedral Stone Products Jahn M100 Terra Cotta Repair**. Do not use M100 on shallow or feathered patching! Square off edges as required by manufacturer. Test color match first using a 50/50 mixture of Jahn M100 **S2-TC** and **S3-TC** colors. Use a different ratio if needed for a closer match to the surrounding cleaned terra cotta.

C7-1, 2 7. For shallow and feathered patching areas, use **Bonstone Historic Restoration Mortar** (HRM). Test color match using standard or blended color mix to best match the surrounding cleaned terra cotta.

C8-1 8. Repoint all terra cotta masonry joints with **Cathedral Stone Jahn M110 Historic Pointing Mortar**. The M110 is available in different colors and should be pigmented if necessary to better match final, clean terra cotta color. For all Pointing Mortar and Patching materials, mix semi-dry to minimize shrinkage, and do not use on hot days!

C9-1, 2 9. Cover terra cotta patches with **Insl-X Stix Primer**, tinting the primer to best match surrounding terra cotta color. On primed patch areas, apply **Benjamin Moore Aura** paint, using multiple colors as needed to blend best with surrounding cleaned terra cotta finish. Test paint finish for best match to terra cotta finish. Suggested finish is **Low Lustre Finish 634**.

10. See step #7 in first section above for sealing of any submerged terra cotta in upper basin.

IMPORTANT

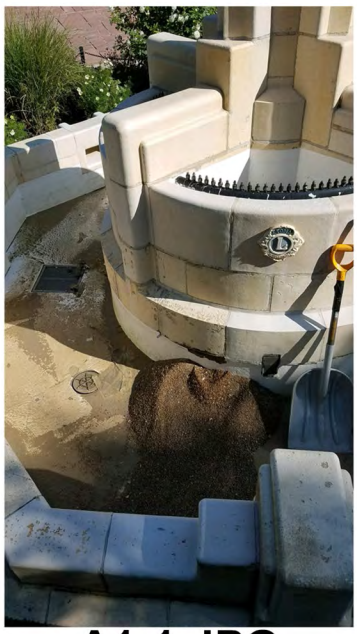
Winterize fountain every year. Drain all lines, and tent around entire fountain. Use heater(s) inside tent to make sure interior of terra cotta dries completely. This will help to keep fountain from spalling in the future. Perform this drying procedure twice per winter if necessitated by weather conditions.

Created by:
Brian Tewey, Boulder County Building Services, 303-441-1375, btewey@bouldercounty.org

Repair procedures specified by:
Gary Keshner
Creative Sculpture & Restoration, Inc.
705 SE 11th Street
Lee's Summit, MO 64081
816-554-1825
816-519-7807 cell
garykeshner1952@gmail.com

A0-1.jpg

A0-2.JPG



A1-1.JPG

A1-2.JPG

A1-3.JPG

A2-1.jpg

A2-2.jpg

A3-1.JPG

A3-2.JPG

A4-1.JPG

A4-2.JPG

A5-1.jpg

A5-2.jpg

A6-1.JPG

A6-2.JPG

B1-1.jpg

B2-1.JPG

B2-2.JPG

B3-1.JPG

B5-1.jpg

B6-1.jpg

B7-1.JPG

C1-1.JPG

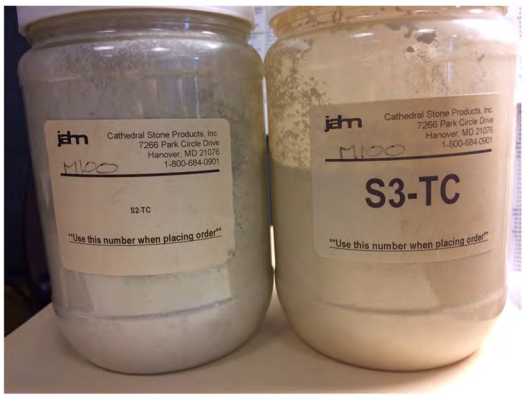
C2-1.jpg

C3-1.JPG

C4-1.JPG

C4-2.JPG

C5-1.JPG



C6-1.JPG

C6-2.JPG

C6-3.JPG

C7-1.JPG

C7-2.JPG

C8-1.jpg

C9-1.JPG

C9-2.JPG

PRIMER AND SURFACE BONDING
BONDING ADMIXTURE
VOC COMPLIANT

P-100

BOND NEW CONCRETE TO OLD
REEMULSIFIABLE, ONE TIME ONLY
PRIMER FOR **SUPER FLOWCRETE, PATCHCRETE**
POWER-CRETE & **CAST-PATCH**

PRODUCT DESCRIPTION

P-100 is a ready to use, film forming, one-time reemulsifiable liquid bonding agent and polymer modifier for concrete. (VOC Compliant) This material, based on a new technology, gives outstanding surface and integral bonding without moisture sensitivity. It may be used inside or outside. **P-100** was developed for use as a primer for our **SUPER FLOWCRETE** self-leveling material and is also used to prime surfaces before applications of **PATCHCRETE**, **POWER-CRETE** and **CAST-PATCH**. In addition to these Lyons products, it may be used to bond other materials to various surfaces. **P-100** is an aqueous resin emulsion. It is a film forming copolymer emulsion.

PRODUCT APPLICATIONS

Use **P-100** as a primer for **SUPER FLOWCRETE, PATCHCRETE** and **POWER-CRETE**. It is used as a surface bonder to bond fresh cementitious materials such as concrete, stucco, gypsum, plaster, etc. to various surfaces including concrete, masonry, stone, brick, plaster or wood. **P-100** may be used inside or outside. It may be used as an integral polymer modifier for cementitious materials. **P-100** increases the bond strength and water resistance of cementitious mortars. Use **P-100** in the repair of concrete, plastered ceilings and walls and stucco surfaces.

PRODUCT FEATURES

- VOC Compliant
- High Solids Copolymer Emulsion
- Not Moisture Sensitive After Use
- Inside or Outside Use
- Reemulsifiable, One Time Only
- Use as a Surface Bonder
- Use as Integral Polymer Modifier for Cement Mortars
- Use as Primer For **SUPER FLOWCRETE, PATCHCRETE, POWER-CRETE** and **CAST-PATCH**
- Improved Strength as a Polymer Modifier
- Not a PVA

TECHNICAL DATA

P-100 meets requirements of ASTM C-1059.

COVERAGE

One Gallon undiluted will cover approximately 200 sq. ft., exact coverage will vary with surface porosity, profile and application technique.

PACKAGING

Case of 4 - 1 gallon containers, 80 gallons per pallet. 5 gallon pails, 36 per pallet. Protect from freezing.

SURFACE PREPARATION

All surfaces must be clean and structurally sound; free of curing compounds, sealers, form release agents, oil, grease, paint, etc. Pores of the surface must be open to permit penetration and proper bonding. Remove oil, grease or asphalt residue with trisodium phosphate or detergent. Necessary surface preparation may be done by abrasive blasting, scarifying or acid etching. If acid etch is used, surface must be neutralized and brushed thoroughly. Rinse and clean thoroughly with clean water.

APPLICATION-BONDING AGENT

Stir **P-100** thoroughly before using. Apply to surface with broom or brush for best results. Dampen brush or broom before using and shake out water. If roller or sprayer is used, the **P-100 Primer** must still be worked into the surface with a brush or broom. Allow **P-100** to dry. **P-100** goes down milky and dries clear. Do not apply material until **P-100** has dried. Material should be applied within 24 hours.

P-100 can provide a bond over cutback. Remove as much of cutback as possible, leaving only a thin residue firmly bonded to concrete. Remember, your bond will only be as good as the bond of the cutback to the concrete. Coat the surface with a thin uniform amount of **ACRYLIC BOND** Emulsion. Let this coat dry completely, then prime with **P-100** without dilution with water. Let the **P-100** dry and install topping.

P-100 may be diluted with clean water at a rate of 1 part water to 2 parts **P-100** for use on porous surfaces. On wood surfaces, do not dilute **P-100. NEVER DILUTE P-100 PRIMER WHEN USED AS SURFACE BONDER FOR WEARING SURFACE TOPPING.**

P-100 will re-wet one time and one time only when wet material is placed over **P-100**. It is designed to provide a tenacious, permanent bond. Compatibility of **P-100** with other manufacturer products is not known and any application should follow both manufacturer instructions. Always do a test section before proceeding with the job.

For non-porous surfaces or those with concerns on bonding, consider using **EP 200 EPOXY PRIMER**.

APPLICATION-INTEGRAL CEMENT MODIFIER

When using **P-100** as an integral polymer modifier with cement and sand to make concrete repairs, add 1 gallon of **P-100** per 30 lbs. of cement or 3 gallons per bag of cement. Results obtained will depend on mix design and application. Normally, you should use 2-1/2 parts sand to 1 part cement. Seal and cure to prevent rapid drying. Always do a test section before proceeding. Will not re-wet when used as an integral modifier.

INSTRUCTIONS FOR CLEAN-UP

Clean tools with detergent and warm water immediately after use. Remove all drips or spray immediately. Clean up any mortar modified with **P-100** immediately. If **P-100** or mortar modified with **P-100** is permitted to dry, mechanical abrasion will probably be needed to remove it.

PRECAUTIONS

DO NOT LET FREEZE.
DO NOT apply if temperature is below 50°F.
DO NOT overwork mortars modified with **P-100**.
As a surface bonder, DO NOT apply material until **P-100** has dried.
Always make a trial installation first.
Use only water based sealers or cures.

LIMITED WARRANTY

Lyons Manufacturing, Inc. warrants the high quality of its products. However, because of many factors beyond our control in its use, such as job conditions, workmanship, etc., the liability of all parties making and selling this product is expressly limited to the refund of the purchase price or replacement of this material used. Lyons Manufacturing, Inc. will replace any product proven to have a manufacturing defect, FOB Factory, provided Lyons Manufacturing, Inc. is notified of such defect within one (1) year from the date of shipment from the factory. This warranty is in lieu of all other warranties, expressed or implied. Lyons Manufacturing, Inc. makes no warranty of suitability of its products for any particular application and sells its proucts upon the condition that customer shall conduct their own test to determine the suitability of the product for their purposes. Under no circumstances will Lyons Manufacturing, Inc. be liable for economic, special, incidental or consequential damages or losses of any kind.

Scan Here For More Information

LYONS MANUFACTURING, INC.
8900 Forney Road
Dallas, TX 75227
214-381-8100
www.lyonsmanufacturing.com

TWO COMPONENT
ACRYLIC POLYMER MODIFIED
TOPPING AND UNDERLAYMENT
OVERHEAD AND WALL REPAIRS

PATCHCRETE®

***Bonds to Virtually Any Concrete Surface**
***Light Gray to Blend with Existing Concrete**
***Improved Bond and Compressive Strength**

PRODUCT DESCRIPTION

PATCHCRETE is a two component polymer modified concrete repair, topping, and underlayment material. The **PATCHCRETE** liquid is a high solids content Acrylic Polymer. The **PATCHCRETE Powder #1005** is a portland cement based mix with graded silica and special chemical additives. Polymer modified concrete gives improved bonding, improved chemical resistance, improved water resistance and improved tensile, compressive and flexural strengths.

This high strength portland cement/acrylic polymer combination provides a smooth durable semi-resilient surface which can be used as a finished floor in most applications. **PATCHCRETE** is easy to mix and apply, requiring no special tools. It is suitable for use as a screedable topping and underlayment, or as a floor, wall or overhead repair material when mixed to a stiffer trowelable consistency. **PATCHCRETE** has been approved by the USDA for use in most processing plants and may be used where there is exposure to potable water. Use of **PATCHCRETE** can help your project earn LEED Credits. Contact factory for details.

PRODUCT APPLICATIONS

PATCHCRETE is designed to be used both as a topping or underlayment and as a wall, floor, and overhead patching and repair material when mixed to a stiffer consistency. For use as an underlayment, mix to the consistency of a thick pancake batter. Use **PATCHCRETE** to level and smooth rough or rained on concrete. **PATCHCRETE** may be used to level low areas inside or outside. It will bond to and may be used to level virtually any concrete surface.

Mixed as a repair material, **PATCHCRETE** may be used to repair walls, floors, tilt panels, driveways, sidewalks, precast members, etc. **PATCHCRETE** may be applied from featheredge to 2-1/2 inches. Suitable for interior or exterior applications. Suitable for application where there is rubber tired forklift and vehicle traffic.

PRODUCT FEATURES

- Outstanding Bonding
- Improved Water Resistance
- Interior or Exterior Use
- From Featheredge to 2-1/2 inches
- May Be Used as Screedable Underlayment
- May Be Used as a Trowelable Repair Material
- Improved Compressive Strength
- No Moist Curing Required
- High Solids Acrylic Polymer
- May Be Stained or Used With Integral Color
- May Be Used for Stenciled and Decorative Concrete
- LEED Credits Applicable

PRODUCT TEST RESULTS

WORKING TIME: Approximately 25 minutes
COLOR: Light Gray, also available in White
INITIAL SET: 4 Hours

SCREEDABLE CONSISTENCY: (1 bag to 1 gallon)
Compressive Strength (ASTM C-109, Air Cured)
7 Days - 4120 PSI 28 Days - 5500 PSI

Flexural Strength (ASTM C-348, Air Cured)
7 Days - 1260 PSI 28 Days - 1535 PSI

Slant Shear Bond (ASTM C-1042, Air Cured)
28 Days - 1250 PSI

TROWELABLE CONSISTENCY: (1 bag to .8 gallon)
Compressive Strength (ASTM C-109, Air Cured)
7 Days - 4550 PSI 28 Days - 6000 PSI

Flexural Strength (ASTM C-348, Air Cured)
7 Days - 1360 PSI 28 Days - 1720 PSI

Slant Shear Bond (ASTM C-1042, Air Cured)
28 Days - 1550 PSI

SURFACE PREPARATION - All surfaces must be clean and structurally sound; free of dust, grease, oil, paint, sealers, etc. Pores of the concrete surface must be open to permit proper bonding, especialy on fresh "green" concrete. Any necessary surface preparation may be done by shotblasting, scarifying, sandblasting or acid etching. If acid etch is used, be sure to neutralize surface, clean and brush thoroughly. For heavy traffic applications, mechanical abrasion of the surface is recommended. Concrete surfaces should be surface saturated but dry to touch (SSD).

Do not bridge cracks with **PATCHCRETE**. They will "telegraph" through. Fill cracks prior to placement of **PATCHCRETE**. Expansion joints should be extended through the **PATCHCRETE**. For surfaces with low porosity, **EP-200 EPOXY PRIMER** can be used per installation instructions on the **EP-200** Literature.

MIXING - PATCHCRETE may be mixed in a mortar mixer, with a heavy duty low-to-medium speed drill or by hand. Always use a clean mixing container. Place **PATCHCRETE Acrylic Polymer #1003** in container and add **PATCHCRETE Powder #1005**, mixing while adding powder. DO NOT ADD WATER. Added water will reduce strength and bonding. Mix for 2 to 3 minutes until a smooth, lump-free mixture is obtained. Mixing time should not exceed 3 minutes. DO NOT OVERMIX and DO NOT entrap air while mixing.

USE OF AGGREGATE - For areas with a thickness over 1/2", aggregate should be added to **PATCHCRETE**. Add 1 part by volume of 3/8" pea gravel to 2 parts by volume of **PATCHCRETE**. DO NOT ADD WATER.

USE AS UNDERLAYMENT OR TOPPING - For use as an underlayment, mix to desired screedable consistency, no more liquid than 1 bag to 1 gallon of polymer. As an underlayment, apply from featheredge to 2-1/2". Material may be screeded for low places or spread into place with a squeegee. When using as a wearing surface topping, install at least 3/8" thick. DO NOT FEATHEREDGE as a wearing surface topping. For areas over 1/2" in depth aggregate is required.

USE AS A TROWELABLE NON-SAG REPAIR MATERIAL- For floor, wall and overhead repairs, mix about 3/4 to 7/8 of liquid polymer to a bag of powder to get a stiffer, trowelable non-sag consistency. Make a trial batch to get desired consistency. Lubricate trowel with polymer to prevent dragging. For wall applications such as coating or filling concrete block, **PATCHCRETE** may be applied with a hopper gun and then floated smooth.

INSTALLATION - To insure proper bonding, use **P-100 PRIMER** or apply a bond slurry coat scrubbed into the surface. The **P-100 PRIMER** will give more reliable and consistent results. Allow the **P-100 PRIMER** to dry (30-45 minutes) and install **PATCHCRETE** material. Material may be applied up to 24 hours after the **P-100 PRIMER**. **The P-100 PRIMER** will re-emulsify one time and may be used for inside and outside applications.

The bond slurry coat is a syrup-like consistency mix of **PATCHCRETE** Powder and **PATCHCRETE** Acrylic Polymer. Scrub the slurry coat into the SSD surface. Place **PATCHCRETE** and smooth and spread while slurry coat is still damp. **DO NOT LET SLURRY COAT DRY.** Screed off to get a smooth flat surface. Use a trowel for touch-up and featheredging. DO NOT OVERTROWEL. Lubricate trowel with polymer to prevent dragging. The **#1003 Polymer** makes the materials darker. Less polymer will give a lighter finished surface. For best results, smooth and spread into place and touch-up as needed. A latex film will form when **PATCHCRETE** begins to set. This is normal and will disappear.

Normally floor coverings may be applied the next day. With thick applications or cold or damp weather, another day may be required. No heavy traffic should be permitted for 4 to 5 days. When used as an underlayment, always follow the directions of floor covering manufacturers concerning maximum moisture content and perform required tests. Over interior plywood floors, use two coats of **P-100 PRIMER** applied at right angles. Allow **P-100 PRIMER** to dry between coats. Floor must be rigid and sound. Anchor metal lathe into wood. This will help hold the **PATCHCRETE** in place.

PATCHCRETE is more resistant to moisture penetration than regular concrete. Breathable water based sealers may be applied over **PATCHCRETE** as soon as 24 hours. Paints and coatings may be applied over **PATCHCRETE** as you would over concrete. For solvent based sealers and coatings, wait 3-4 days for the **PATCHCRETE** to harden. For non-breathable coatings, ensure moisture has left **PATCHCRETE**. A simple poly test can be performed over the deepest areas. Always follow manufacturer recommendations and testing for applying over fresh concrete.

PRECAUTIONS - Do not use below 40°F. The best temperature to use is 60°-90°F. **DO NOT LET PATCHCRETE ACRYLIC POLYMER #1003 FREEZE**. Always make a trial installation first under actual job conditions to be sure you get the desired results before using on larger areas.

CONTAINS SILICA SAND AND FREE SILICA. Do not breathe dust. Avoid inhalation by wearing respirator. Continuous exposure and inhalation may cause silicosis and crystalline silica is classified as a known human carcinogen.

CURING - In general, **PATCHCRETE** will air cure without any need for curing products. However, care should be taken in areas where **PATCHCRETE** is exposed to wind or direct sunlight, sometimes these can cause cracking as the top dries before the bottom has cured. For these fast drying situations, the **PATCHCRETE** should be covered with damp burlap or plastic for 48 hours.

COVERAGE - PATCHCRETE Powder #1005 is packaged in 45 lb. moisture resistant bags. **PATCHCRETE Acrylic Polymer #1003** is packaged in 1 gallon jugs, 4 to a carton. One 45 lb. bag of **PATCHCRETE Powder #1005** and one gallon of **PATCHCRETE Acrylic Polymer #1003** will cover 45 sq. ft. at 1/8" thickness.

CONTAINS PORTLAND CEMENT. Avoid eye contact or prolonged contact with skin. Wash thoroughly after handling. In case of eye contact, flush with plenty of water for at least 15 minutes. Consult a physician immediately. Keep out of the reach of children.

LIMITED WARRANTY

Lyons Manufacturing, Inc. warrants the high quality of its products. However, because of many factors beyond our control in their use, such as job conditions, workmanship, etc., the liability of all parties making and selling this product is expressly limited to the refund of the purchase price or replacement of the Lyons material used. Lyons Manufacturing, Inc. will replace any product proven to have a manufacturing defect, FOB Factory, provided Lyons Manufacturing, Inc. is notified of such defect within one (1) year from the date of shipment from the factory. This warranty is in lieu of all other warranties, express or implied. Lyons Manufacturing, Inc. makes no warranty of suitability of its products for any particular application and sells its products upon the condition that customer shall conduct their own test to determine the suitability of the products for their purposes. Under no circumstances will Lyons Manufacturing, Inc. be liable for economic, special, incidental or consequential damages or losses of any kind.

Scan Here For More Information

LYONS MANUFACTURING, INC.
8900 Forney Road ◆ Dallas, TX 75227-4505 ◆ 214/381-8100
www.lyonsmanufacturing.com

BASF

We create chemistry

Technical Data Guide

3 | 03 01 00
Maintenance of Concrete

MasterEmaco® N 425

Non-sag concrete repair mortar with integral corrosion inhibitor for vertical and overhead applications

FORMERLY GEL PATCH

PACKAGING
43 lb (19.5 kg) polyethylene-lined bags

YIELD
0.43 ft^3 per 43 lb bag
(0.012 m^3/19.5 kg)

STORAGE
Store in unopened containers in a cool, clean, dry area

SHELF LIFE
12 months when properly stored

VOC CONTENT
0 g/L less water and exempt solvents

DESCRIPTION
MasterEmaco N 425 is a trowel-grade, lightweight, polymer-modified, silica fume-enhanced repair mortar with an integral corrosion inhibitor.

PRODUCT HIGHLIGHTS
- Non-sag consistency able to be placed in 2" (51 mm) thick lifts
- Readily sculpted, shaved, and finished to match existing substrate
- Very low chloride permeability and an integral corrosion inhibitor protects reinforcing steel
- Only requires the addition of potable water
- Low shrinkage produces stable, durable bond
- Lightweight microscopic beads improve vertical and overhead workability
- Polymer modification improves adhesion and provides increased freeze/thaw stability

APPLICATIONS
- Interior and exterior
- Vertical and overhead
- Above and below grade
- Spalls or holes in concrete
- Deteriorated edges

SUBSTRATES
- Concrete
- Masonry
- Structural Concrete

HOW TO APPLY

SURFACE PREPARATION

1. Substrate must be structurally sound and fully cured (28 days).
2. Saw cut the perimeter of the area being repaired into a square with a minimum depth of ¼" (6 mm).
3. The surface to be repaired must be clean, free of laitance and saturated surface-dry (SSD) following ICRI Guideline no. 310.2 to permit proper bond.

REINFORCING STEEL

1. Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 310.1R.
2. For additional protection from future corrosion, coat the prepared reinforcing steel with MasterProtect P 8100 AP.

Technical Data

Composition

MasterEmaco N 425 is composed of crystalline (quartz) silica and Portland cement.

Typical Properties

PROPERTY	VALUE
Working time, min at 70° F (21° C)	20–30

Test Data

PROPERTY	RESULTS	TEST METHODS
Compressive strength, psi (MPa)		ASTM C 109, modified*
1 day	2,150 (14.8)	
7 days	5,600 (38.6)	
28 days	6,750 (46.5)	
Modulus of elasticity, psi (MPa)	5.6 x 10^5 (3,861)	ASTM C 215
Splitting tensile strength, psi (MPa)		ASTM C 496, modified* (wet cure)
1 day	310 (2.1)	
7 days	560 (3.9)	
28 days	610 (4.2)	
Flexural strength, psi (MPa)		ASTM C 348, modified*
1 day	500 (3.4)	
7 days	800 (5.5)	
28 days	1,110 (7.7)	
Bond strength, psi (MPa)		ASTM C 882, modified*
1 day	900 (6.2)	(mortar scrubbed into substrate)
7 days	1,900 (13.1)	
28 days	2,450 (16.9)	
Water absorption, %, 28 days	4	ASTM C 642
Chloride permeability, coulombs	Very low range	AASHTO T-277 (According to ASTM C 1202, table 1)
Length change, %, in/in, wet cure		ASTM C 157
1 day	+0.019	
7 days	+0.028	
28 day	+0.034	
Length change, %, in/in, dry cure*		ASTM C 157
1 day	–0.026	
7 days	–0.11	
28 days	–0.15	
Linear coefficient of thermal expansion, in/in/° F	5.3×10^{-6}	ASTM C 531
Freeze / Thaw Resistance, % RDM	98.8%	ASTM C 666 A
Scaling Resistance, lbs/ft² (kg/m²) 50 Cycles	0.0 (0.0) No Scaling	ASTM C 672

*At 50% relative humidity
Test results are averages obtained under laboratory conditions. Reasonable variations can be expected.

MIXING

1. Precondition material to 70° F ±5° (21° C ±3°) before mixing.
2. Mechanically mix at slow speed with a ¾" drill and mixing paddle.
3. Add approximately 2¾ quarts (2.6 L) of potable water into a clean mixing container. Gradually sift in powder ⅓ at a time while mixing continuously at slow speed (high speeds may entrain air). Mix for a minimum of 3 minutes to ensure a uniform, lump-free consistency. Do not exceed a total of 3 quarts (2.8 L) of mixing water per 43 lb (19.8 kg) bag.

APPLICATION

1. Dampen the surface with potable water; it must be saturated surface-dry (SSD) with no standing water.
2. With a gloved hand, scrub a small quantity of mixed material into the SSD substrate. Thoroughly key in and work the material throughout the cavity to promote bond. Do not apply more of the bond coat than can be covered with mortar before the bond coat dries.
3. Apply material in lifts of ¼–2" (6–51 mm). Avoid featheredging. For optimum mechanical bond on successive lifts, thoroughly score each lift and allow to reach initial set before the next layer is applied. Placement time is 20–30 minutes at 70° F (21° C) and 50% relative humidity.
4. Trowel, shave or shape material to the desired finish after initial set.
5. The recommended application range of MasterEmaco N 425 is from 40 to 90° F (4 to 32° C). Follow ACI 305 and 306 for hot or cold weather guidelines.

CURING

Cure with an approved water based curing compound compliant with ASTM C 309 or preferably ASTM C 1315. If the repair area will receive a coating, wet curing is recommended.

CLEAN UP

Clean tools and equipment with clean water immediately after use. Cured material must be removed mechanically.

FOR BEST PERFORMANCE

- Do not bridge moving cracks or joints.
- Do not overwork material
- Do not add plasticizers, accelerators, retarders, or other additives.
- Do not extend with aggregate.
- Bonding agents are recommended for large areas as well as permanently damp areas.
- Protect from freezing for 24 hours after application.
- For professional use only; not for sale to or use by the general public.
- Make certain the most current versions of product data sheet and SDS are being used; visit www.master-builders-solutions.BASF.us to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

HEALTH, SAFETY AND ENVIRONMENTAL

Read, understand and follow all Safety Data Sheets and product label information for this product prior to use. The SDS can be obtained by visiting www.master-builders-solutions.basf.us, e-mailing your request to basfbscst@basf.com or calling 1(800)433-9517. Use only as directed. **For medical emergencies only, call ChemTrec® 1(800)424-9300.**

LIMITED WARRANTY NOTICE

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is the replacement of product or refund of the purchase price, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

BASF Corporation
Construction Systems

889 Valley Park Drive, Shakopee, MN 55379
www.master-builders-solutions.basf.us

Customer Service 1(800)433.9517
Technical Service 1(800)243.6739

BASF Construction Chemicals, LLC
Registered to ISO 9001:2000
Certificate No. 414263

© 2014 BASF Corporation Form No.1017889 rev 04/14

Mortar Bed 2000

Product Technical Data Sheet

Mortar Bed 2000 is a single component, polymer-modified, pre-blended cementitious mortar bed fortified with micro-fiber reinforcement and shrinkage-compensating additives to achieve exceptional physical properties with very low drying shrinkage. Designed for horizontal and vertical applications, **Mortar Bed 2000** can be hand-troweled to create a thin-to-thick mortar bed from 1/8" up to 1". Does not require the use of a separate latex admixture for mixing. You only need to add 3 quarts of potable water to produce a superior, one-step mortar bed that does not require the application of a slurry coat to the concrete substrate.

WHERE TO USE

- Interior and exterior, in wet or dry applications.
- For thin or thick mortar bed – bonded or unbonded.
- Concrete surface repairs and flooring underlayment.
- Wall rendering and floor sloping mortar.
- Rapid return to service requirements – high early strength.

ADVANTAGES

- Polymer modified powder – no need liquid latex admixture.
- Factory premixed blend – no batching on site, lime free.
- High early strength – 2,000 psi in 4 hours.
- Rapid return to service for fast track installations.
- Very low water absorption and drying shrinkage.
- Excellent compressive, flexural and tensile strengths.
- Tenacious adhesion to prepared substrates.
- Meets requirements of ANSI A108.1

COVERAGE RATES

Theoretical coverage rate per 50 lb. bag:
46.6 sq. ft. @ 1/8"
23.3 sq. ft. @ 1/4"
17.4 sq. ft. @ 3/8"
11.6 sq. ft. @ 1/2"
4.8 sq. ft. @ 1"

Approximate Yield/Bag - .48 cu. ft.

Actual consumption rates are dependent on many factors including, but not limited to, substrate texture and porosity, variations in applied thickness and normal allowance for waste.

PACKAGING and COLORS

Powder (50-pound bag) - Available in gray.

MIX RATIO

3 Quarts Potable Water to (1) 50 lb. bag of powder.

SHELF LIFE AND STORAGE

One year from the date of manufacture provided packaging remains unopened and material is stored in a protected environment free from moisture, excessive heat, freezing temperatures, and direct sunlight.

TYPICAL PHYSICAL PROPERTIES @ 75°F (24°C)

Water Demand.....Approximately 3 quarts/bag

Working Time..... 20 minutes (with cool mix water)

Compressive Strength (ASTM C109):
4 Hour.....2,225 psi
1 Day.....3,175 psi
7 Day.....5,575 psi
28 Day.....6,125 psi

Tensile Strength (ASTM C190):
7 Day..... 435 psi
28 Day..... 585 psi

Flexural Strength (ASTM C348):
7 Day.....845 psi
28 Day..... 1,400 psi

Adhesion (ACI 503.R).....> 290 psi

Water Absorption (ANSI A118.7) ..... < 4.0%

Shrinkage (ASTM C157).....<.04 %

Initial Set (ASTM C191).....31 min.

Final Set (ASTM C191).....39 min.

OVERVIEW OF INSTALLATION STEPS

- **Surface Preparation –** All surfaces must be clean, sound, and free from bond inhibiting substances including, but not limited to, grease, oil and any other contaminants or loosely bonded materials. Follow ICRI Technical Guideline #310.2-1997 for detailed surface preparation requirements. A minimum surface profile of a CSP-4 or higher is required depending on overall substrate conditions and concrete repair requirements. Concrete and other porous or absorptive substrates must be **(SSD) saturated surface dry** with no standing water at the time of application.

- **Mixing Mortar Bed 2000 –** ***Mortar Bed 2000*** must be mixed mechanically to a uniform consistency in a clean mixing vessel using a low-speed drill (300-450 rpm) with a "Jiffy-type" or similar Miracote-approved mixing paddle. Pour approximately 2 ½ quarts of potable water into the mixing vessel. When mixing always add the powder component gradually to the mix water. Thoroughly blend the complete unit for a minimum of two minutes. For desired consistency, add the additional ½ quart of potable water and continue mixing one more minute or until a uniform homogeneous consistency is achieved.

Mortar Bed 2000

Product Technical Data Sheet

OVERVIEW OF INSTALLATION STEPS (continued).

Application & Finish – As with all trowel-grade repair mortars, ***Mortar Bed 2000*** must be applied to a saturated surface dry (SSD) substrate with no standing water. To ensure intimate contact with the concrete substrate, apply a scrub coat to fill all pores and voids and place repair mortar immediately while scrub coat is still wet. Trowel the mortar against the perimeter of the repair and work the material toward the center. To complete the repair, finish surface with appropriate trowel or float as required depending on desired surface texture. Do not re-temper the material when it is no longer workable.

FOR BEST RESULTS

- Always install a minimum 4' by 4' test area or job site mock up for owner approval of acceptable color, texture, finish adhesion and any other critical requirements prior to proceeding with the installation.
- Verify that the most current versions of product technical data sheets (PTDS), color charts, material safety data sheets (MSDS), and installation guidelines (IG) are being utilized for project submittals and application reference.
- Protect materials always from excessive heat and cold, and pre-condition material as required in adverse conditions.
- As per ACI recommendations for Portland cement concrete, curing is required to meet published physical properties. Moist curing with burlap/polyethylene or burlene is the preferred method. A compatible water-based curing compound is also acceptable, but may require removal prior to the application of subsequent coatings or other materials.
- The proper application of this product is the sole responsibility of the end user. The intent of job site visits by Miracote representatives is for observation of the work and offering technical recommendations only. Supervision and quality control are the sole responsibility of the user.
- Measure surface and ambient temperatures to ensure that material is only applied when surface temperatures range between 40°F (7°C) and 90°F (32.2°C) during mixing, placement and time of application.

LIMITATIONS

- Concrete surface repair dimensions including overall length, width, depth and shape need careful consideration, and should be in conformance with ACI recommended standards of practice.
- Mechanical surface preparation methods may require additional testing to verify substrate tensile strength in accordance with ICRI Guideline No. 210.3R-2013 (Guide for Using In-Situ Tensile Pull-off Tests to Evaluate Bond of Concrete Surface Materials).
- Extension with coarse aggregates may alter the physical properties of ***Miracote Mortar Bed 2000*** as published.
- Do not use solvent based curing compounds.
- As with all cement based materials, avoid direct contact with aluminum to prevent an adverse chemical reaction. Refer to MiraPrime AL for an appropriate primer.

LIMITED WARRANTY

NO WARRANTY SHALL BE EFFECTIVE UNTIL THE TERMS AND CONDITIONS OF SALE SET FORTH IN CROSSFIELD PRODUCTS CORP. INVOICES ARE MET.

Crossfield Products Corp. warrants to the purchaser of its products that such products are free from manufacturing defect. Crossfield does not warrant or guarantee the workmanship performed by any person or firm installing its products. Crossfield's obligation under this warranty is limited solely to the original purchaser and solely to the remedy of replacement in kind of any product which Crossfield sold which may prove defective in manufacture within one year from date of installation, provided said product was stored correctly and installed within the product's shelf life, by the original purchaser and which Crossfield 's examination shall disclose to Crossfield's satisfaction to be thus defective.

IN NO EVENT, SHALL CROSSFIELD PRODUCTS CORP. BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY IS EXPRESSLY GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND ALL OTHER OBLIGATIONS OR LIABILITIES ON CROSSFIELD'S PART, AND WE NEITHER ASSUME NOR AUTHORIZE ANY PERSON OR PERSONS TO ASSUME FOR US ANY OTHER LIABILITY IN CONJUNCTION WITH SALE OF A CROSSFIELD PRODUCT. THIS WARRANTY SHALL NOT APPLY TO ANY OF CROSSFIELD'S PRODUCTS, WHICH HAVE BEEN SUBJECT TO ADULTERATION, ALTERATION ABUSE OR MISUSE. CROSSFIELD PRODUCTS CORP. MAKES NO WARRANTY WHATSOVER IN RESPECT TO ACCESSORIES, PARTS OR MATERIAL NOT SUPPLIED BY CROSSFIELD PRODUCTS CORP., WHICH ARE USED IN CONJUNCTION WITH ITS PRODUCTS. THE TERM "ORIGINAL PURCHASER" IN THIS WARRANTY MEANS THAT PERSON, CORPORATION OR ENTITY TO WHOM CROSSFIELD PRODUCTS CORP. SOLD ITS PRODUCTS. ANY ACTION TO ENFORCE ANY WARRANTY OR FOR BREACH OF CONTRACT OR ARISING OUT OF ANY CLAIM AGAINST CROSSFIELD PRODUCTS CORP. SHALL BE COMMENCED AND MAINTAINED ONLY IN A COURT OF COMPETENT JURISDICTION IN THE CONTINENTAL UNITED STATES OF AMERICA. THE PURCHASER ACCEPTS THESE TERMS AND CONDITIONS, AND HEREBY EXPRESSLY WAIVES ANY CLAIM TO ADDITIONAL DAMAGES.

CAUTION: ALWAYS KEEP OUT OF THE REACH OF CHILDREN.

Miracote Product Line
Crossfield Products Corp

www.miracote.com

East Coast Office
140 Valley Road
Roselle Park, NJ 07204
P: (908) 245-2808
F: (908) 245-0659

West Coast Office
3000 E. Harcourt Street
Rancho Dominguez, CA 90221
P: (310) 631-6594
F: (310) 886-9119

MIR.033
MORTAR BED 2000
01-12-2018

MiraPatch *WP*

Product Technical Data Sheet

MiraPatch *WP* is a single component, fast setting, Portland cement-based, hydraulic repair mortar and water plug for stopping mild seepage and active leaks under pressure through cracks and holes in concrete and masonry. Shrinkage compensated for controlled expansion and dimensional stability.

WHERE TO USE

- Stop water seepage and active leaks.
- Grout for anchors and other mechanical connections.
- Quick repair for minor defects and voids in concrete.
- Precast concrete pipe repairs.
- Interior and exterior in full immersion service conditions.
- Horizontal, vertical and overhead surfaces.
- Water & wastewater plants and sewers.
- Foundations, basements, tunnels and sumps.
- Pools, fountains and other water features.

ADVANTAGES

- Fast-setting, rapid strength gain.
- Shrinkage-compensated for controlled expansion.
- Single component formulation – just mix with water.
- Does not contain chloride, gypsum or metallic materials.
- Excellent adhesion to concrete and masonry.
- Easily molded and applied into leaking cracks and voids.
- Apply subsequent coatings in 20 to 30 minutes.

THEORETICAL COVERAGE RATES

Crack Dimension	Coverage
.75” x .75” x 12”	118.5 LF
1.0” x 1.0” x 12”	66.6 LF

Theoretical yield per 50 lb. pail: .46 cu. ft. (800 cu. in.)

Actual consumption rates are dependent on many factors including, but not limited to, substrate texture and porosity, variations in applied thickness, and allowance for waste.

PACKAGING and COLORS

50-pound pail - Available in gray only.

MIX RATIO

Potable Water (1 Qt.) to MiraPatch WP powder (8 lbs.)
(Mix ratio may vary slightly to achieve desired consistency)

SHELF LIFE AND STORAGE

One year from the date of manufacture as long as packaging remains unopened and material is stored in a protected environment free from moisture, excessive heat, freezing temperatures, and direct sunlight.

TYPICAL PHYSICAL PROPERTIES @ 75°F (24°C)

Compressive Strength ASTM C109
1 Hour……...1,320 psi
1 Day……2,025 psi
7 Days……4,120 psi

Tensile Strength ASTM C307
7 Days……320 psi
28 Days……380 psi

Initial Set ASTM C266……90-120 seconds

OVERVIEW OF INSTALLATION STEPS

- **Surface Preparation –** All surfaces must be clean, sound and free from bond inhibiting substances including, but not limited to, grease, oil and any other contaminants or loosely bonded materials that may interfere with adhesion. For proper surface profile, follow ICRI Technical Guideline No. 310.2R-2013 for detailed surface profile requirements. A minimum width and depth of ¾” is required. Do not prepare cracks or voids in a way that will form a V-shaped repair edge. Whenever possible, undercut perimeter edges to create an ideal “dovetail” shaped repair. If that cannot be achieved, saw-cut repair perimeter to form a squared edge. Surface profile of a CSP-3 or higher is required depending on overall substrate conditions and concrete repair requirements. In the presence of inactive seepage or leaks, concrete and other porous or absorptive substrates require a thorough **saturation** condition at the time of application.

- **Mixing - MiraPatch *WP*** must be mixed with potable water to a homogenous and uniform consistency in a clean mixing vessel typically using a margin or similar type trowel. Only mix an amount of material that can be reasonably applied within 1 to 2 minutes. When mixing always add the powder component gradually into clean potable water. Do not attempt to modify **MiraPatch *WP*** powder with aggregates or additives of any kind. At a ratio 8 pounds of powder to 1 quart of water, rapidly and thoroughly mix the material for a maximum of 30 seconds. When properly mixed, **MiraPatch *WP*** can be hand-molded into any shape. Do not re-temper mixed material under any circumstances. Once mixed, place into the repair site within 2 minutes maximum. When leaks are active place and hold material in compression until initial set is reached.

- **Application – *General Repairs:*** Once mixed and material begins to stiffen, apply **MiraPatch *WP*** quickly at a minimum depth of ¾” with a margin trowel or gloved hand. Apply only when the substrate is in a thoroughly **saturated** condition. After placement, immediately dampen or mist freshly placed material with water, and maintain this damp condition until reaching final set.

OVERVIEW OF INSTALLATION STEPS (continued)

- **Application – *Active Leaks:*** Always start at the top, along edges and points furthest away from where water pressure is greatest. Slowly apply **MiraPatch *WP*** and work towards the source of the leak. When material is pressed into place, keep it under compression until it has firmly reached initial set. Once the main source of water pressure is encountered, mix fresh material and hold in hand until it begins to warm. Immediately force **MiraPatch *WP*** into the void and maintain constant hand pressure until material reaches firm set (about 3 to 5 minutes), and the leak has stopped. Do not turn or twist the material when pressing or holding into place. After several minutes, carefully shave the material with a trowel edge so the new patch is flush and level with the surrounding concrete surface.

FOR BEST RESULTS

- Always install a test area or mock up for owner approval prior to proceeding with the installation.
- Verify that the most current versions of product technical data sheets (PTDS), material safety data sheets (MSDS), and installation guidelines (IG) are being utilized for project submittals and application reference.
- Protect materials at all times from excessive heat and cold, and pre-condition packaged material and mixing water, as required in adverse weather conditions.
- The proper application of this product is the sole responsibility of the end user. Job site visits by Miracote representatives are only for the purpose of making recommendations. Supervision and quality control are the sole responsibility of the user.
- Measure surface and ambient temperatures to ensure that material is only applied when temperatures are 45° F (7° C) and rising during placement and time of application.
- Never apply to frozen or frost-laden surfaces.

LIMITATIONS

- Minimum depth of application is ¾".
- Mechanical surface preparation methods may require additional testing to verify substrate tensile strength in accordance with ICRI Guideline No. 210.3R-2013 (Guide for Using In-Situ Tensile Pull-off Tests to Evaluate Bond of Concrete Surface Materials).
- Extension with coarse aggregates or other additives may alter the physical properties and performance of **MiraPatch *WP*** as published.
- Not intended for use in dynamic (moving) cracks, control joints or expansion joints.
- **MiraPatch *WP*** is not designed for use as a rendering mortar or surface-applied coating.
- As with all cement based materials, avoid direct contact with aluminum to prevent an adverse chemical reaction. Refer to MiraPrime AL for an appropriate primer.

LIMITED WARRANTY

NO WARRANTY SHALL BE EFFECTIVE UNTIL THE TERMS AND CONDITIONS OF SALE SET FORTH IN CROSSFIELD PRODUCTS CORP. INVOICES ARE MET.

Crossfield Products Corp. warrants to the purchaser of its products that such products are free from manufacturing defect. Crossfield does not warrant or guarantee the workmanship performed by any person or firm installing its products. Crossfield's obligation under this warranty is limited solely to the original purchaser and solely to the remedy of replacement in kind of any product which Crossfield sold which may prove defective in manufacture within one year from date of installation, provided said product was stored correctly and installed within the product's shelf life, by the original purchaser and which Crossfield's examination shall disclose to Crossfield's satisfaction to be thus defective.

IN NO EVENT SHALL CROSSFIELD PRODUCTS CORP. BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY IS EXPRESSLY GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND ALL OTHER OBLIGATIONS OR LIABILITIES ON CROSSFIELD'S PART, AND WE NEITHER ASSUME NOR AUTHORIZE ANY PERSON OR PERSONS TO ASSUME FOR US ANY OTHER LIABILITY IN CONNECTION WITH SALE OF A CROSSFIELD PRODUCT. THIS WARRANTY SHALL NOT APPLY TO ANY OF CROSSFIELD'S PRODUCTS, WHICH HAVE BEEN SUBJECT TO ADULTERATION, ALTERATION ABUSE OR MISUSE. CROSSFIELD PRODUCTS CORP. MAKES NO WARRANTY WHATSOVER IN RESPECT TO ACCESSORIES, PARTS OR MATERIAL NOT SUPPLIED BY CROSSFIELD PRODUCTS CORP., WHICH ARE USED IN CONNECTION WITH ITS PRODUCTS. THE TERM "ORIGINAL PURCHASER" IN THIS WARRANTY MEANS THAT PERSON, CORPORATION OR ENTITY TO WHOM CROSSFIELD PRODUCTS CORP. SOLD ITS PRODUCTS. ANY ACTION TO ENFORCE ANY WARRANTY OR FOR BREACH OF CONTRACT OR ARISING OUT OF ANY CLAIM AGAINST CROSSFIELD PRODUCTS CORP. SHALL BE COMMENCED AND MAINTAINED ONLY IN A COURT OF COMPETENT JURISDICTION IN THE CONTINENTAL UNITED STATES OF AMERICA. THE PURCHASER ACCEPTS THESE TERMS AND CONDITIONS, AND HEREBY EXPRESSLY WAIVES ANY CLAIM TO ADDITIONAL DAMAGES.

CAUTION: ALWAYS KEEP OUT OF THE REACH OF CHILDREN.

Miracote Product Line
Crossfield Products Corp

www.miracote.com

East Coast Office
140 Valley Road
Roselle Park, NJ 07204
P: (908) 245-2808
F: (908) 245-0659

West Coast Office
3000 E. Harcourt Street
Rancho Dominguez, CA 90221
P: (310) 631-6594
F: (310) 886-9119

BUILDING TRUST

PRODUCT DATA SHEET

Sikaflex® Primer-429

SIKAFLEX PRIMERS ARE SPECIAL MATERIALS FORMULATED TO IMPROVE THE BOND OF SIKAFLEX URETHANE SEALANTS WHEN APPLIED TO SPECIFIC SUBSTRATES.

PRODUCT DESCRIPTION

Sikaflex® Primer-429 promotes adhesion to clean, sound, and dry concrete, masonry, Exterior Insulation Finish Systems (EIFS), and wood — including teak and mahogany.

USES

Most substrates require a primer only if testing shows need for it or where the sealant will be underwater after cure. Certain substrates do require a primer under all conditions.

CHARACTERISTICS / ADVANTAGES

- Single-component, ready to use.
- Easily applied by brush, dauber, or spray.

PRODUCT INFORMATION

Packaging	Sikaflex 429 primer is available in pints (6/carton); and gallons (2/carton).
Color	Clear
Shelf Life	6 months in original, unopened containers.
Storage Conditions	Sikaflex® Primer-429 shall be stored in dry conditions, where it is protected from direct sunlight and at temperatures between +40°F and +95°F (+4°C and +35°C).

APPLICATION INFORMATION

Coverage	Following are average coverages, depending on porosity of substrate: **Sikaflex Primer 429 Coverage per pint (Liner ft. 1/2” x 1/2” joint): 300 Linear ft.**

APPLICATION INSTRUCTIONS

Substrate	Primer Required	Recommended Primer
Concrete Block	No	429
Placed Concrete	No	429
Precast Concrete	No	429
Mortar	No	429
Grout	No	429
SikaTops	No	429
Granite	No	429
Unfinished Woods	No	429
EIFS - Dryvit, Sto, Synergy**	Yes	429

**Note: Product will bond without primer, however primer is recommended by EIFS manufacturers to properly seal substrate. Follow EIFS manufacturer's primer recommendations.

SUBSTRATE PREPARATION

The key to good bonding with Sikaflex sealants/primers is surface preparation. Specifically, all surfaces must be dry and free of dirt, grease, mold release agents, loose mortar, laitance, and any foreign matter. If the joint contains old sealant, it and all extraneous material must be removed and the substrate cleaned by mechanical means. Apply primers at substrate temperatures of 40°F and rising. Surface must be frost free.

APPLICATION METHOD / TOOLS

Shake or stir primer well before using. Apply to dry, clean, oil free surface with a brush, dauber or spray.

Dry time before installing sealant:
> 1 hr. <8 hrs.*

CLEANING OF TOOLS

In case of spill or leaks, wear suitable protective equipment, contain spill, collect with absorbent material, and transfer to suitable container. Ventilate area. Avoid contact. Dispose of in accordance with current, applicable, local, state and federal regulations.

LIMITATIONS

- Primer should not be used if it starts to gel in container.
- Protect Sikaflex primers from moisture. Once container has been opened, use contents immediately.
- Do not attempt to use partial containers.
- Do not reseal or reuse. Resealing may cause moisture contamination and gelling.

Caution:
Flammable; Irritant; Sensitizer - Contains aromatic polyisocyanate, xylene, PGMEA, TDI. May cause skin/eye/respiratory irritation. May cause skin and/or respiratory sensitization after prolonged or repeated contact. Avoid contact. May cause headaches, dizziness or other CNS effects. TDI is a suspect carcinogen (IARC, NTP). Use only with adequate ventilation. Use of safety goggles and chemical resistant gloves is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH approved respirator. Remove contaminated clothing. Keep away from heat, sparks, and open flames.

First-Aid:
In case of skin contact, wash immediately and thoroughly with soap and water. If symptoms persist, consult physician. For eye contact, flush immediately with plenty of water for at least 15 minutes; contact a physician. For respiratory problems, remove person to fresh air; if symptoms
persist, consult physician. In case of ingestion, consult a physician immediately - methanol is a poison. Remove contaminated clothing.

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

LOCAL RESTRICTIONS

See Legal Disclaimer.

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

LEGAL DISCLAIMER

KEEP CONTAINER TIGHTLY CLOSED •KEEP OUT OF REACH OF CHILDREN •NOT FOR INTERNAL CONSUMPTION •FOR INDUSTRIAL USE ONLY •FOR PROFESSIONAL USE ONLY

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates ("SIKA"), the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA's Technical Service Department at 800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product's shelf life. User determines suitability of product for intended use and assumes all risks. User's and/or buyer's sole remedy shall be limited to the purchase price or replacement of this product exclusive of any labor costs. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.** Sale of SIKA products are subject to the Terms and Conditions of Sale which are available at https://usa.sika.com/en/group/SikaCorp/termsandconditions.html or by calling 201-933-8300.

Sika Corporation
201 Polito Avenue
Lyndhurst, NJ 07071
Phone: 800-933-7452
Fax: 201-933-6225

Sika Mexicana S.A. de C.V.
Carretera Libre Celaya Km. 8.5
Fracc. Industrial Balvanera
Corregidora, Queretaro
C.P. 76920
Phone: 52 442 2385800
Fax: 52 442 2250537

Sika Canada Inc.
601 Delmar Avenue
Pointe Claire
Quebec H9R 4A9
Phone: 514-697-2610
Fax: 514-694-2792

Product Data Sheet
Edition 8.20.2018
Sikaflex®-1a

Sikaflex®-1a

Construction

Description	Sikaflex-1a is a premium-grade, high-performance, moisture-cured, 1-component, polyurethane-based, non-sag elastomeric sealant. Sikaflex-1a can be used in green and damp concrete applications. Meets Federal Specification TT-S-00230C, Type II, Class A. Meets ASTM C-920, Type S, Grade NS, Class 35, use T, NT, O, M, G, I, A. Canadian standard CAN/CGSB 19.13-M87.
Where to Use	■ Designed for all types of joints where maximum depth of sealant will not exceed 1/2 in. ■ Excellent for small joints and fillets, windows, door frames, reglets, flashing, common roofing detail applictions, and many construction adhesive applications. ■ Suitable for vertical and horizontal joints; readily placeable at 40°F ■ Has many applications as an elastic adhesive between materials with dissimilar coefficients of expansion. ■ Submerged conditions, such as canal and reservoir joints.
Advantages	■ Eliminates time, effort, and equipment for mixing, filling cartridges, pre-heating or thawing, and cleaning of equipment. ■ Fast tack-free and final cure times. ■ High elasticity - cures to a tough, durable, flexible consistency with exceptional cut and tear -resistance. ■ Stress relaxation. ■ Excellent adhesion - bonds to most construction materials without a primer. ■ Excellent resistance to aging, weathering. ■ Proven in tough climates around the world. ■ Can be applied to green concrete 24 hours after pour ■ Can be applied to damp concrete 1 hour after getting wet ■ Odorless, non-staining. ■ Jet fuel resistant. ■ Certified to the NSF/ANSI Standard 61 for potable water. ■ Urethane-based; suggested by EPA for radon reduction. ■ Paintable with water-, oil- and rubber-based paints. ■ Capable of ±35% joint movement.
Chemical Resistance	Good resistance to water, diluted acids, and diluted alkalines. Consult Technical Service for specific data.
Packaging	10.1 fl. oz. (300 mL) Cartridge, 20 fl. oz. uni-pac Sausages, 4.5 gal (17 L) in a 5 gal pail, 52 gal (197 L) in a 55 gal drum

Typical Data *(Material and curing conditions @ 75°F (24°C) and 50% RH)*

RESULTS MAY DIFFER BASED UPON STATISTICAL VARIATIONS DEPENDING UPON MIXING METHODS AND EQUIPMENT, TEMPERATURE, APPLICATION METHODS, TEST METHODS, ACTUAL SITE CONDITIONS AND CURING CONDITIONS.

Shelf Life:	**Cartridge and Sausage:** 12 months in original, unopened packaging. **Pail and Drum:** 6 months in original, unopened packaging.
Storage:	Store at 40°-95°F (4°-35°C).
Product Conditioning:	Condition material to 65°-75°F before using.
Colors:	White, colonial white, aluminum gray, limestone, black, dark bronze, capitol tan, stone and medium bronze. Special architectural colors on request.
Application Temperature:	40° to 100°F. Sealant should be installed when joint is at mid-range of its anticipated movement.
Service Range:	-40° to 170°F
Curing Rate:	Tack-free time 3 to 6 hours Tack-free to touch 3 hours
Final cure:	4 to 7 days
Tear Strength (ASTM D-624):	55 lb./in.
Shore A Hardness (ASTM C-661):	21 day 45±5
Movement Capability (ASTM C-719):	+/- 35%
Tensile Properties (ASTM D-412):	
21 day Tensile Stress	175 psi (1.21 MPa)
Elongation @ Break	550%
Stress @ 100%	85 psi (0.59 MPa)
Adhesion in Peel (TT-S-00230C, ASTM C 794):	
Substrate Peel Strength Adhesion Loss	Concrete 20 lb. 0% Aluminum 20 lb. 0% Glass 20 lb. 0%
Weathering Resistance	Excellent

PRIOR TO EACH USE OF ANY SIKA PRODUCT, THE USER MUST ALWAYS READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS ON THE PRODUCT'S MOST CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET WHICH ARE AVAILABLE ONLINE AT HTTP://USA.SIKA.COM/ OR BY CALLING SIKA'S TECHNICAL SERVICE DEPARTMENT AT 800.933.7452 NOTHING CONTAINED IN ANY SIKA MATERIALS RELIEVES THE USER OF THE OBLIGATION TO READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS FOR EACH SIKA PRODUCT AS SET FORTH IN THE CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET PRIOR TO PRODUCT USE.

Construction

Coverage

10.1 oz Cartridge: Yield in Linear feet

Width \ Depth	1/4"	3/8"	1/2"
1/4"	24.3		
3/8"	16.2	10.8	
1/2"	12.1	8.1	6.1
3/4"	8.1	5.4	4.0
1"			3.0
1.25"			2.4
1.5"			2.0

20 oz Sausage: Yield in Linear feet

Width \ Depth	1/4"	3/8"	1/2"
1/4"	48.1		
3/8"	32.1	21.4	
1/2"	24.1	16.0	12.0
3/4"	16.0	10.7	8.0
1"			6.0
1.25"			4.8
1.5"			4.0

1 gallon: Yield in Linear feet

Width \ Depth	1/4"	3/8"	1/2"
1/4"	307.9		
3/8"	205.3	136.8	
1/2"	153.9	102.6	77.0
3/4"	102.6	68.4	51.3
1"			38.5
1.25"			30.8
1.5"			25.7

How to Use

Surface Preparation

Clean all surfaces. Joint walls must be sound, clean, frost-free, and free of oil and grease. Curing compound residues and any other foreign matter must be thoroughly removed. A roughened surface will also enhance bond. Install bond breaker tape or backer rod to prevent bond at base of joint. Priming is not usually necessary. Most substrates only require priming if testing indicates a need or where sealant will be subjected to water immersion after cure.

For green concrete applications control joints must be cut 8 hours prior to sealant installation and in expansion joint forms must be removed 4 hours prior to sealant installation. For wet concrete applications all excess or standing water must be displaced and concrete must then dry for a minimum of 60 min prior to sealant installation.
Consult Sikaflex Primer Technical Data Sheet or Technical Service for additional information on priming.

Application

Recommended application temperatures: 40°-100°F. For cold weather application, condition units at approximately 70°F; remove prior to using. For best performance, Sikaflex-1a should be gunned into joint when joint slot is at mid-point of its designed expansion and contraction. Place nozzle of gun into bottom of the joint and fill entire joint. Keep the nozzle in the sealant, continue on with a steady flow of sealant preceding the nozzle to avoid air entrapment. Avoid overlapping of sealant to eliminate entrapment of air.

Sikaflex-1a can be applied on green concrete after the concrete has cured for a minimum of 24 hours at 75°F.Control joints must be cut and open for min of 8 hours prior to application. Expansion joints must have forms removed a minimum of 4 hours prior to application. For damp concrete applications Sikaflex-1a can be applied 60 minutes after any and all water has been displaced.

Tooling and Finishing

Tool sealant to ensure full contact with joint walls and remove air entrapment. Joint dimension should allow for 1/4 inch minimum and 1/2 inch maximum thickness for sealant. Proper design is 2:1 width to depth ratio, For use in horizontal joints in traffic areas, the absolute minimum depth of the sealant is 1/2 in. and closed cell backer rod is recommended.

Removal

Use personal protective equipment (chemical resistant gloves/goggles/clothing). Without direct contact, remove spilled or excess product and placed in suitable sealed container. Dispose of excess product and container in accordance with applicable environmental regulations.

Over Painting

Allow 1-week cure at standard conditions when using Sikaflex-1a in total water immersion situations and prior to painting.

PRIOR TO EACH USE OF ANY SIKA PRODUCT, THE USER MUST ALWAYS READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS ON THE PRODUCT'S MOST CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET WHICH ARE AVAILABLE ONLINE AT HTTP://USA.SIKA.COM/ OR BY CALLING SIKA'S TECHNICAL SERVICE DEPARTMENT AT 800.933.7452 NOTHING CONTAINED IN ANY SIKA MATERIALS RELIEVES THE USER OF THE OBLIGATION TO READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS FOR EACH SIKA PRODUCT AS SET FORTH IN THE CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET PRIOR TO PRODUCT USE.

Construction

Limitations

- Allow 1 week cure at standard conditions when using Sikaflex-1a in total water immersion situations.
- When overcoating with water, oil and rubber based paints, compatibility and adhesion testing is essential.
- Sealant should be allowed to cure for 7 days prior to overcoating
- Avoid exposure to high levels of chlorine. (Maximum continuous level is 5 ppm of chlorine.)
- Maximum depth of sealant must not exceed 1/2 in.; minimum depth is 1/4 in.
- Maximum expansion and contraction should not exceed 35% of average joint width.
- Do not cure in the presence of curing silicone sealants.
- Avoid contact with alcohol and other solvent cleaners during cure.
- Do not apply when moisture-vapor-transmission condition exists from the substrate as this can cause bubbling within the sealant.
- Use opened cartridges and uni-pac sausages the same day.
- When applying sealant, avoid air-entrapment.
- Since system is moisture-cured, permit sufficient exposure to air.
- White color tends to yellow slightly when exposed to ultraviolet rays.
- Light colors can yellow if exposed to direct gas fired heating element.
- The ultimate performance of Sikaflex-1a depends on good joint design and proper application with joint surfaces properly prepared.
- The depth of sealant in horizontal joints subject to traffic is 1/2 in.
- Do not tool with detergent or soap solutions.
- Do not use in contact with bituminous/asphaltic materials.
- In green concrete applications sealing joints in poor or low strength concrete 24 hours after pour may impact ability of sealant to gain proper adhesion.
- In damp concrete applications all standing water and excess water must be eliminated prior to the 60 minute waiting time.

PRIOR TO EACH USE OF ANY SIKA PRODUCT, THE USER MUST ALWAYS READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS ON THE PRODUCT'S MOST CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET WHICH ARE AVAILABLE ONLINE AT HTTP://USA.SIKA.COM/ OR BY CALLING SIKA'S TECHNICAL SERVICE DEPARTMENT AT 800.933.7452 NOTHING CONTAINED IN ANY SIKA MATERIALS RELIEVES THE USER OF THE OBLIGATION TO READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS FOR EACH SIKA PRODUCT AS SET FORTH IN THE CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET PRIOR TO PRODUCT USE.

KEEP CONTAINER TIGHTLY CLOSED. KEEP OUT OF REACH OF CHILDREN. NOT FOR INTERNAL CONSUMPTION. FOR INDUSTRIAL USE ONLY. FOR PROFESSIONAL USE ONLY.

For further information and advice regarding transportation, handling, storage and disposal of chemical products, users should refer to the actual Safety Data Sheets containing physical, ecological, toxicological and other safety related data. Read the current actual Safety Data Sheet before using the product. In case of emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Product Data Sheet, product label and Safety Data Sheet which are available online at http://usa.sika.com/ or by calling Sika's Technical Service Department at 800-933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Product Data Sheet, product label and Safety Data Sheet prior to product use.

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.
SALE OF SIKA PRODUCTS ARE SUBJECT SIKA'S TERMS AND CONDITIONS OF SALE AVAILABLE AT HTTP://USA.SIKA.COM/ OR BY CALLING 201-933-8800.

Visit our website at usa.sika.com **1-800-933-SIKA NATIONWIDE**

Regional Information and Sales Centers. For the location of your nearest Sika sales office, contact your regional center.

Sika Corporation
201 Polito Avenue
Lyndhurst, NJ 07071
Phone: 800-933-7452
Fax: 201-933-6225

Sika Canada Inc.
601 Delmar Avenue
Pointe Claire
Quebec H9R 4A9
Phone: 514-697-2610
Fax: 514-694-2792

Sika Mexicana S.A. de C.V.
Carretera Libre Celaya Km. 8.5
Fracc. Industrial Balvanera
Corregidora, Queretaro
C.P. 76920
Phone: 52 442 2385800
Fax: 52 442 2250537

MiraPrime *Aqua-Blok XL*

Product Technical Data Sheet

MiraPrime ***Aqua-Blok XL*** is a clear, single component, odorless, water-based, penetrating colloidal silicate liquid primer that integrally waterproofs concrete, mortar and other cementitious materials. Based on scientifically superior inorganic mineral waterproofing technology, ***Aqua-Blok XL*** penetrates deep into the capillary structure of concrete and mortar to permanently enhance physical properties and the dynamics of waterproofing performance. Exhibiting highly reactive and hydrophilic properties, ***Aqua-Blok XL*** quickly migrates through waterways and capillary tracts to chemically convert free water-soluble calcium hydroxide into a dense crystalline network of insoluble calcium silicate hydrate gel within the concrete pore structure. This conversion process has been found to purge unwanted chlorides and other contaminants from the concrete matrix. As determined by the U.S. Bureau of Reclamation M-82 Standard Protocol to Evaluate the Mitigation of Corrosion Technologies in Concrete Repair, ***MiraPrime Aqua-Blok XL*** substantially reduced corrosion at a 95% Confidence Limit.

WHERE TO USE

- Concrete pool shells and water features.
- Water and wastewater treatment structures.
- Water reservoirs and containment pits.
- Concrete slabs, walls and foundations.
- Underground vaults and elevator pits.
- Dams, spillways and tunnels.
- Retaining walls and basements.
- Parking structure slabs, columns and walls.
- Concrete bridge decks and sub-structures.
- Sidewalks, balconies and breezeways.
- Commercial and industrial flooring.
- Masonry and stone structures.

ADVANTAGES

- Deep penetration into concrete substrates 2" – 4".
- Water thin micro-crystalline technology – penetrates fast.
- Purges/expels embedded chlorides and blocks re-entry.
- Enhances concrete physical properties – maintains breathability.
- Significantly reduces migration of efflorescence.
- Application from positive or negative side.
- Significantly reduces moisture vapor emissivity.
- Hydrophilic moisture barrier – resists hydrostatic pressures.
- Permanent and self-healing integral waterproofing.
- Enhanced protection of reinforcing steel to corrosion
- Meets USDA standards for non-incidental food contact.
- Will not sustain mold, mildew or fungal growth.
- Non-toxic, low odor and environmentally safe.
- Cures, seals, densifies and hardens new/existing concrete.

THEORETICAL COVERAGE RATES**

Fresh Concrete:

First Application	150-200 sq. ft. per gallon
Second Application	150-200 sq. ft. per gallon

Cured Profiled Concrete:

First Application	50-250 sq. ft. per gallon
Second Application	50-250 sq. ft. per gallon

**A minimum of two applications is required for maximum function/protection. Consumption rates are dependent on many factors including substrate profile, porosity, and water cement ratio. Above rates of application represent typical values.

PACKAGING and COLORS

1-gallon can Color: Clear
5-gallon pail

MIX RATIO

Single component – ready to use.

SHELF LIFE AND STORAGE

Two years from the date of manufacture when unopened and material is stored in a protected environment free from moisture, excessive heat, freezing temperatures, and direct sunlight.

TYPICAL PHYSICAL PROPERTIES @ 75°F (24°C)

Vehicle Type	Water-based solution
Color	Clear
Flash Point	None
Flammability	None
Odor	None
pH	11 - 12
Weight per gallon	9.2 lbs./4.17 kg
Specific Gravity	1.10
VOC (grams/liter)	0.0
Drying Time	2-3 hours

OVERVIEW OF INSTALLATION STEPS

- **Surface Preparation – Fresh Concrete:** Upon removal of concrete formwork or thorough evaporation of all bleed water, concrete surfaces require no specific surface preparation procedures other than rinsing with water at low pressure to remove any form release compounds or other pore blocking substances that may have been applied to concrete surfaces or formwork.
- **Surface Preparation – Cured Concrete:** Take a pH reading of the concrete substrate first by mechanically abrading off a layer of cement paste to remove what has likely become carbonated due to exposure from moisture and carbon dioxide. Ideal range of pH below abraded surface should be a minimum of 10 or higher. For anything under a pH of 10, MiraPrime Concrete Conditioner must be used in conjunction with ***Aqua-Blok XL***. All surfaces to be treated must be clean with an open-pore structure to provide access to the capillary network within the concrete matrix. Concrete substrates need to be free from any substances that may inhibit penetration including, but not limited to, grease, oil, sealers, paint, curing compounds, form release agents, adhesives, mildew, algae, fungus, and other foreign matter. If subsequent surface coatings will be applied, a minimum surface profile of CSP-3 or higher is required as per ICRI surface preparation guidelines.
- **Mixing –** A single component ready to use liquid, ***Aqua-Blok XL*** should be thoroughly agitated and shaken well before use. Do not alter or dilute in any way, and use strictly as supplied in original containers. Mechanical mixing is acceptable but not required. Immediately rinse thoroughly with water, and clean up any spillage on surfaces not intended to be treated.
- **Application –** Depending on the type of application, MiraPrime ***Aqua-Blok XL*** can be applied in a variety of methods including brush, roller or spray apparatus.

Cure and Seal Fresh Concrete Applications – Apply ***Aqua-Blok XL*** when surfaces have achieved sufficient set to resist foot traffic.

Apply uniformly at a rate of 300 to 400 square feet per gallon, and avoid ponding of material in slab depressions and low lying areas. When applying to vertical surfaces use low pressure sprayers (40 psi) with a fan tip nozzle or a minimum 3/8" nap roller and begin applying from the bottom and work up the vertical face with north/south and east/west spray patterns. Saturate the host surface thoroughly until excess material forms a rundown pattern of 6 to 8 inches below the spray contact point. On horizontal substrates, apply a flood coat with enough material to maintain a wet condition for 3 to 5 minutes. If material ponds in shallow depressions use a broom or roller to evenly distribute material to surrounding areas. For maximum function and performance on both vertical and horizontal surfaces, a second wet-on-wet application within 20 to 40 minutes in required. Apply the second application at right angles from the first in a crisscross pattern. During hot weather conditions, pre-wet the substrate to saturated surface dry (SSD) state to cool the surface down prior to application.

Cured Concrete Applications - When applying ***Aqua-Blok XL*** to vertical surfaces use low pressure sprayers (40 psi) with a fan tip nozzle or a minimum 3/8" nap roller and begin applying from the bottom and work up the vertical face with north/south and east/west spray patterns. Saturate the concrete surface thoroughly until refusal and excess material forms a rundown pattern of 6 to 8 inches below the spray contact point. Once the first application has been absorbed immediately apply the second, and apply only as much as the surface will readily absorb. Watch for areas that dry out at a faster rate, and re-apply as necessary. On horizontal substrates, apply a flood coat with enough material to maintain a wet condition for 3 to 5 minutes. If material ponds in shallow depressions use a broom or roller to evenly distribute material to surrounding areas. For maximum function and performance on both vertical and horizontal surfaces, a second wet-on-wet application within 20 to 40 minutes in required. During hot weather conditions, pre-wet the substrate to saturated surface dry (SSD) state to cool the surface down prior to application. As a final step and approximately 30-40 minutes after the last application of ***Aqua-Blok XL***, apply two light mist-coats of potable water to the entire treated surface 30-40 minutes apart. This helps transport any uncured inorganic potassium minerals near the surface and drive them down into the concrete capillaries. This also leaves the near surface concrete pores open for the uninhibited application of subsequent coatings, stains and sealers.

FOR BEST RESULTS

- Always install a minimum 4' x 4' on-site mock up to verify actual coverage rates, and for approval of acceptable color, texture, finish, adhesion, and any other critical requirement acceptable to the owner prior to proceeding with the installation.
- Verify and download current versions of product technical data sheets (PTDS), material safety data sheets (MSDS), and installation guides (IG) at www.miracote.com.
- Protect materials from excessive heat and cold, and pre-condition to room temperature as necessary.
- Measure surface and ambient temperatures to ensure the material is only applied when temperatures are 40°F (4.5°C) and rising during placement and cure time.
- When applying ***Aqua-Blok XL*** to concrete exhibiting excessive hydrostatic activity, as evidenced by saturated and weeping surfaces, vacuum and dry surfaces and immediately follow up the first application with a second and third application, as required.
- Depending on climatic conditions, density of the treated concrete, and potential for purging of chlorides and other entrapped contaminants, ***Aqua-Blok XL*** is required to cure for 1-7 days prior to the application of surface applied materials.
- Prior to applying subsequent surface coatings any contaminants purged from the concrete must be removed by vacuum and cleaning.
- The proper application of this product is the sole responsibility of the end user. Job site visits by Miracote representatives are only for observation and making recommendations, and does not assume any liability for supervision or quality control.

LIMITATIONS

- Protect MiraPrime ***Aqua-Blok XL*** treated surface from rain for a minimum of two hours after final application.
- Protect glass, plant life, aluminum, ceramics, glazed tile, wood vehicles from contact by overspray. Remove with water immediately.
- **Can etch glass,** avoid contact and rinse glass immediately.
- Do not apply if minimum/maximum ambient and substrate temperatures are 40°F (4.5°C) and above 100°F (37.8°C) 24 hours prior to and following application.
- Concrete surface sealers and polymer-modified mixes will inhibit penetration and function of MiraPrime ***Aqua-Blok XL***.
- Rebound-laden shotcrete and gunite structures will be deficient in cementitious content to form a proper chemical reaction and full waterproofing potential.

LIMITED WARRANTY

NO WARRANTY SHALL BE EFFECTIVE UNTIL THE TERMS AND CONDITIONS OF SALE SET FORTH IN CROSSFIELD PRODUCTS CORP. INVOICES ARE MET.

Crossfield Products Corp. warrants to the purchaser of its products that such products are free from manufacturing defect. Crossfield does not warrant or guarantee the workmanship performed by any person or firm installing its products. Crossfield's obligation under this warranty is limited solely to the original purchaser and solely to the remedy of replacement in kind of any product which Crossfield sold which may prove defective in manufacture within one year from date of installation, provided said product was stored correctly and installed within the product's shelf life, by the original purchaser and which Crossfield Products examination shall disclose to Crossfield's satisfaction to be thus defective.

IN NO EVENT, SHALL CROSSFIELD PRODUCTS CORP. BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY IS EXPRESSLY GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND ALL OTHER OBLIGATIONS OR LIABILITIES ON CROSSFIELD'S PART, AND WE NEITHER ASSUME NOR AUTHORIZE ANY PERSON OR PERSONS TO ASSUME FOR US ANY OTHER LIABILITY IN CONJUNCTION WITH SALE OF A CROSSFIELD PRODUCT. THIS WARRANTY SHALL NOT APPLY TO ANY OF CROSSFIELD'S PRODUCTS, WHICH HAVE BEEN SUBJECT TO ADULTERATION, ALTERATION ABUSE OR MISUSE. CROSSFIELD PRODUCTS CORP. MAKES NO WARRANTY WHATSOVER IN RESPECT TO ACCESSORIES, PARTS OR MATERIAL NOT SUPPLIED BY CROSSFIELD PRODUCTS CORP., WHICH ARE USED IN CONJUNCTION WITH ITS PRODUCTS. THE TERM "ORIGINAL PURCHASER" IN THIS WARRANTY MEANS THAT PERSON, CORPORATION OR ENTITY TO WHOM CROSSFIELD PRODUCTS CORP. SOLD ITS PRODUCTS. ANY ACTION TO ENFORCE ANY WARRANTY OR FOR BREACH OF CONTRACT OR ARISING OUT OF ANY CLAIM AGAINST CROSSFIELD PRODUCTS CORP. SHALL BE COMMENCED AND MAINTAINED ONLY IN A COURT OF COMPETENT JURISDICTION IN THE CONTINENTAL UNITED STATES OF AMERICA. THE PURCHASER ACCEPTS THESE TERMS AND CONDITIONS, AND HEREBY EXPRESSLY WAIVES ANY CLAIM TO ADDITIONAL DAMAGES.

CAUTION: ALWAYS KEEP OUT OF THE REACH OF CHILDREN.

Miracote Product Line
Crossfield Products Corp

www.miracote.com

East Coast Office
140 Valley Road
Roselle Park, CA 07204
P: (908) 245-2800
F: (908) 245-0659

West Coast Office
3000 E. Harcourt Street
Rancho Dominguez, CA 90221
P: (310) 631-6594
F: (310) 886-9119

MiraFlex Membrane C

Product Technical Data Sheet

MiraFlex Membrane C is a state-of-the-art, two-component, polymer-modified, highly flexible, cementitious membrane for the waterproofing and protection of concrete, masonry and many other types of construction materials and substrates. Designed for exterior or interior applications, above or below grade, ***MiraFlex Membrane C*** can be used and applied to horizontal, vertical and overhead surfaces.

Applied by roller, trowel, spray apparatus or squeegee, ***MiraFlex Membrane C*** is ideal for use in waterproofing applications under tile and other composite flooring systems. It is also capable of stand-alone applications, and can remain exposed to mechanical wear and abrasion, impact, immersion in water, UV and normal climatic and environmental elements. For detailing and treatment of cracks and construction joints, it can be embedded with Miracote Poly Fabric or Poly Fabric Ultra for reinforcement and enhanced dimensional stability. With its cementitious backbone, ***MiraFlex Membrane C*** is compatible with other cementitious materials, thin-set mortars and most coatings and sealers.

WHERE TO USE

- Interior and exterior – above and below grade.
- Below-grade positive side waterproofing.
- Planter box and foundation waterproofing.
- Plaza decks, balconies, pedestrian bridges, roof decks.
- Stadiums, arenas and entertainment parks.
- Mechanical equipment and utility rooms.
- Fountains, pools, spillways, storage and aquatic tanks.
- Secondary containment, elevator pits.
- Water and wastewater facility structures
- Crack isolation/waterproofing under Miracote flooring systems.
- Waterproofing under tile and other composition flooring.

ADVANTAGES

- NFS-61Certified for use in potable water.
- Permanent high flexibility – does not age harden.
- Carbon dioxide barrier – prevents concrete carbonation.
- Protects against de-icing salts, chlorides, sulfates.
- Vapor permeable membrane - breathable.
- Ideal for interior and exterior stand-alone exposure.
- Suitable for application on moist or damp substrates.
- Crack isolation membrane – reduces reflective cracking.
- Compatible with cementitious thin-set mortars.
- Wide range of available colors when using white powder.
- Green technology – environment friendly, LEED-compliant.
- Smooth powder blend available for a finer finish.

THEORETICAL COVERAGE RATES

One Coat Application	160 sq. ft. @ 1/32" (31.25 mils)
Two Coat Application	80 sq. ft. @ 1/16" (62.50 mils)
Three Coat Application	53 sq. ft. @ 3/32" (93.75 mils)

Actual consumption rates are dependent on many factors including, but not limited to, substrate texture and porosity, variations in applied thickness and normal allowance for waste.

PACKAGING and COLORS

Membrane C Liquid	(2-gallon pail)
Membrane C Powder – Natural	(43 lb. bag)
Membrane C Powder – Natural Smooth	(34 lb. bag)
Membrane C Powder – White*	(43 lb. bag)
Membrane C Powder – White Smooth*	(34 lb. bag)

* Miracote Standard Colors – Requires white powder & ColorPax-W Dosage Rate: (1) unit of ColorPax-W to (4) units of Membrane C Factory pigmented liquid available subject to a minimum order.

MIX RATIO

2-Gal Membrane C Liquid to 1 Bag - Membrane C Powder

SHELF LIFE AND STORAGE

One year from the date of manufacture provided containers remain unopened and material is stored in a protected environment free from moisture, excessive heat, freezing temperatures, and direct sunlight.

TYPICAL PHYSICAL PROPERTIES @ 75F (24C)

Working Life.....15-45 minutes (rate of evaporation dependent)

Recoat Time.....2-4 hours or when dry

Open to Traffic..... 12 – 24 hours

Waterproofness ASTM D4068 modified ..... No passage of water
Resistance to passage when subjected to 27.7" head of water (hydrostatic pressure of 1 lb./ft.) for one month.

Elongation ASTM D638 .....65%

Tensile Strength ASTM D638.....750 psi
7 days dry / 21 days wet

Bacteria & Fungus Resistance ASTM G22 .....No growth

Adhesion in Peel to Concrete .....8.3 lbs./in width

Moisture Vapor Transmission ASTM E96 ..... 2.5g (Grams/sq. meter/24 hrs.)

Crack –Bridging ASTM E836
1/8" opening @ 77°F.....Pass (No rupture)

Hydrostatic Resistance ASTM D751
Procedure B ..... Pass

Permeability ASTM E96 .....0.75 perm/inches

Cold Temperature Flexibility
May be folded double, maintains stretch-ability when immediatel remove from freezer.

NSF-61 CERTIFICATION PARAMETERS @ 70F (21C)

Number of coats .....1 to 3

Dry Film Thickness (DFT) .....78 mils maximum

Recoat Time.....2 hours minimum

OVERVIEW OF INSTALLATION STEPS

- **Surface Preparation –** All surfaces must be clean, sound, and free from bug holes, pop outs, voids, discontinuities, mortar fins, and any bond inhibiting substances including, but not limited to, grease, oil and any other contaminants or loosely adhered materials. For concrete substrates, a minimum surface profile of a CSP-3 or higher is required depending on overall substrate conditions and coating requirements. Repair any existing concrete surface defects previously noted with the appropriate MiraPatch repair mortar. Concrete and other porous or absorptive substrates should be **(SSD) saturated surface dry** with no standing water at the time of application.
- **Mixing –** Membrane C must be mixed mechanically to a uniform consistency in a clean mixing vessel using a low-speed drill (300-450 rpm) with a "Jiffy-type" or similar Miracote-approved mixing paddle. Pre-mix Membrane C liquid to re-disperse any polymer solids that may have settled on the bottom of the pail. When mixing Membrane C always pour the liquid component into the mixing pail first and gradually add the powder component while mixing. Thoroughly mix the complete unit for a minimum of three minutes or until a uniform consistency is achieved that is free of lumps and pockets of dry powder.

MiraFlex Membrane C

Product Technical Data Sheet

OVERVIEW OF INSTALLATION STEPS (continued)

Application – Membrane C can be applied using a roller, brush, broom, trowel, magic trowel, squeegee or spray equipment. Apply only on properly prepared substrates, and be sure that all bug holes, pop outs, and other surface discontinuities have been rendered with appropriate MiraPatch mortar. Apply Membrane C at a rate of 160 sq. ft. per unit or approximately 31 mils per coat which presumes a relatively smooth surface profile. For waterproofing applications, a minimum of two coats is required. A third coat may be required where high water infiltration can be anticipated.

For Reinforcement with Poly Fabric – Apply the first coat of Membrane C at the rate of 160 sq. ft. per unit, and turn up 6" at all vertical transitions. Immediately embed Miracote Poly Fabric while Membrane C remains in a wet condition ensuring that the fabric thoroughly settles into and is saturated by the wet Membrane C. Smooth out any wrinkles in the fabric carefully with a stainless-steel trowel or other suitable tool. Within 1 to 2 hours, apply a second coat of Membrane C at a rate of 160 sq. ft. per unit over the Miracote Poly Fabric to encapsulate and weld all three layers together.

FOR BEST RESULTS

- Always install a minimum 4' by 4' test area site mock up for approval of acceptable color, texture, finish, adhesion, and any other critical requirement acceptable to the owner prior to proceeding with the installation.
- Verify and download current versions of product technical data sheets (PTDS), material safety data sheets (MSDS), and installation guides (IG) at www.miracote.com.
- Always protect materials from excessive heat and cold, and pre-condition to room temperature as necessary.
- Regularly check wet film thickness with mil gauge and monitor consumption to ensure correct application rates are obtained.
- The proper application of this product is the sole responsibility of the end user. Job site visits by Miracote representatives are only for observing and making recommendations, and do not assume any liability for supervision, application or quality control.
- Measure surface and ambient temperatures to ensure the material is only applied when surface temperatures range between 40°F (7°C) and rising, not to exceed 90°F (32.2°C) during mixing and time of application.
- Natural gray and pigmented cementitious coatings may exhibit color variegation due to fluctuating evaporation rates during cure.
- Allow to cure for three days prior to full water immersion service.
- For required NSF-61 Certification Use: Allow to cure for seven days prior to full water immersion service.
- For enhanced color stability and performance under UV exposure service conditions, apply one or two finish coats of ***Miracote MPC*** or ***MiraTop UCS***. Consult local sales representative or technical service.

LIMITATIONS

- Not an aesthetic coating. ***MiraFlex Membrane C*** will not remain colorfast when subjected to UV exposure.
- Avoid application when rain is anticipated, or immediately after long periods of heavy rain. Allow concrete to dry thoroughly. Perform plastic sheet test to verify, if necessary.
- Do not apply on exterior, on-grade concrete substrates subject to potential osmotic pressures without the prior use of ***MiraPrime Aqua-Blok XL*** or ***MiraPrime Aqua-Blok XLi***.
- As with all cementitious products and materials, do not allow contact with aluminum to avoid adverse chemical reaction.
- Always maintain balanced and safe water chemistry, and conduct water testing on a regular basis. Chemically aggressive water may attack, and compromise the stability and performance of ***MiraFlex Membrane C***. For enhanced chemical resistance apply one or two finish coats of ***MiraTop UCS.***

LIMITED WARRANTY

NO WARRANTY SHALL BE EFFECTIVE UNTIL THE TERMS AND CONDITIONS OF SALE SET FORTH IN CROSSFIELD PRODUCTS CORP. INVOICES ARE MET.

Crossfield Products Corp. warrants to the purchaser of its products that such products are free from manufacturing defect. Crossfield does not warrant or guarantee the workmanship performed by any person or firm installing its products. Crossfield's obligation under this warranty is limited solely to the original purchaser and solely to the remedy of replacement in kind of any product which Crossfield sold which may prove defective in manufacture within one year from date of installation, provided said product was stored correctly and installed within the product's shelf life, by the original purchaser and which by Crossfield 's examination shall disclose to Crossfield's satisfaction to be thus defective.

IN NO EVENT SHALL CROSSFIELD PRODUCTS CORP. BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY IS EXPRESSLY GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND ALL OTHER OBLIGATIONS OR LIABILITIES ON CROSSFIELD'S PART, AND WE NEITHER ASSUME NOR AUTHORIZE ANY PERSON OR PERSONS TO ASSUME FOR US ANY OTHER LIABILITY IN CONJUNCTION WITH SALE OF A CROSSFIELD PRODUCT. THIS WARRANTY SHALL NOT APPLY TO ANY OF CROSSFIELD'S PRODUCTS, WHICH HAVE BEEN SUBJECT TO ADULTERATION, ALTERATION ABUSE OR MISUSE. CROSSFIELD PRODUCTS CORP. MAKES NO WARRANTY WHATSOVER IN RESPECT TO ACCESSORIES, PARTS OR MATERIAL NOT SUPPLIED BY CROSSFIELD PRODUCTS CORP., WHICH ARE USED IN CONJUNECTION WITH ITS PRODUCTS. THE TERM "ORIGINAL PURCHASER" IN THIS WARRANTY MEANS THAT PERSON, CORPORATION OR ENTITY TO WHOM CROSSFIELD PRODUCTS CORP. SOLD ITS PRODUCTS. ANY ACTION TO ENFORCE ANY WARRANTY OR FOR BREACH OF CONTRACT OR ARISING OUT OF ANY CLAIM AGAINST CROSSFIELD PRODUCTS CORP. SHALL BE COMMENCED AND MAINTAINED ONLY IN A COURT OF COMPETENT JURISDICTION IN THE CONTINENTAL UNITED STATES OF AMERICA. THE PURCHASER ACCEPTS THESE TERMS AND CONDITIONS, AND HEREBY EXPRESSLY WAIVES ANY CLAIM TO ADDITIONAL DAMAGES.

CAUTION: ALWAYS KEEP OUT OF THE REACH OF CHILDREN.

Miracote Product Line
Crossfield Products Corp

www.miracote.com

East Coast Office
140 Valley Road
Roselle Park, CA 07204
P: (908) 245-2800
F: (908) 245-0659

West Coast Office
3000 E. Harcourt Street
Rancho Dominguez, CA 90221
P: (310) 631-6594
F: (310) 886-9119

MIR.373
MIRAFLEX MEMBRANE C
12-28-2017

MiraGard Drylook Sealer

Product Technical Data Sheet

Miracote MiraGard Drylook Sealer is a nano scale, moisture-curing premium, non-aqueous, VOC-compliant sealer formulated to provide maximum stain protection. Complies with VOC regulations.

ADVANTAGES

- Miracote MiraGard Drylook Sealer allows moisture vapor transmission and possesses very good stain resistance. It is stable under UV exposure and it has low VOC of less than 100 grams per liter. MiraGard Drylook Sealer is compliant with Industrial Maintenance Coating Guidelines and the South Coast Air Quality Management District (SCAQMD) Rule 1113.
- Transparent, natural look that is easy to maintain clean appearance and is highly resistant to deterioration when exposed to routine mild cleaning materials such as citrus, light TSP and surfactant cleaners.
- Excellent water repellency.
- Resists wide range of in-service chemicals and is very stain-resistant to a wide variety of household foods and chemicals. Staining resistance and cleaning capability improves after 30 days.
- Significantly reduces chloride ion penetration.
- Improved corrosion resistance on steel-reinforced structures.
- Excellent resistance to efflorescence.
- Resists microbial attack.
- ADA Compliant: for in-situ, validate ADA Compliance with a Variable Incident Tribometer Machine.
- LEED (Leadership in Energy and Environmental Design) Credit Points may be available under several different Classifications.
- Does not contain chemicals targeted by Green Seal Standard GS-11 and LEED-CS as unacceptable.
- Available through Miracote distributors.

en

TYPICAL PHYSICAL PROPERTIES @ 75°F (24°C)

Weight per gallon.....8.00 lbs./gal./net
Active Material.....6.3%
Inactive ingredients.....93.7%
VOC.....97.5 g/L
Coefficient of Friction-Rubber Shoe Surface
(ASTM D2047, Tribometer, Bench Tested, recommend field verification at time of application)
Level.....0.8 (wet and dry)
Incline.....0.8 (wet and dry)
Stain Resistance (4 hour spot test)
Water.....Excellent
White Vinegar.....Excellent
Vegetable Oil.....Good
Olive Oil.....Good
Cola.....Excellent
Hot Coffee.....Good
Red Gatorade.....Good
Red Wine.....Good
Mustard.....Very Good
Ketchup.....Very Good
409 Cleaner™.....Good
Lime-Away™.....Good
Brake Fluid.....Excellent
Skydrol D-4.....Good
Betadine.....Fair
Microbial Resistance ASTM G21.....PassesTesting 1

COVERAGE RATES

800 sq. ft. per coat/gallon.
(Actual coverage rate varies depending on porosity of the substrate).

PACKAGING

1-gallon can
5-gallon pail

MIX RATIO

Single component. Use as supplied.

SHELF LIFE AND STORAGE

Shelf life will be one year from the date of manufacture as long as containers remain unopened and when material is store in a protected environment that is free from moisture, excessive heat and freezing temperatures, and direct sunlight.

WHERE TO USE

- Designed for use as an easy-to-apply sealer for faux concrete, stone, and tile applications. MiraGard Drylook Sealer can also be used on ceramic, porcelain, or natural stone tile, as well as a grout sealer.
- MiraGard Drylook Sealer is designed for use on concrete, CMU, all faux masonry surfaces, polymer modified cementitious treatments, as well as on all types of tile where a natural, dry-look appearance is desired. When cured, it will not change the color or appearance of the substrate that it is sealing.
- MiraGard Drylook Sealer can be used in both interior and exterior service. It possesses excellent resistance to ultraviolet light including freedom from color change or degradation.

FOR BEST RESULTS

Install a minimum 4‟ by 4‟ test area site mock up for approval of acceptable color, texture, finish, adhesion, and any other critical requirement acceptable to the owner prior to proceeding with the installation.
Verify current versions of product technical data sheets (PTDS), material safety data sheets (MSDS), and installation guides (IG) at www.miracote.com.
Protect materials from excessive heat and cold and regularly check wet film thickness with mil gauge and monitor consumption to ensure correct application thicknesses and rate are obtained.

OVERVIEW OF INSTALLATION

- Surface Preparation – dry, clean and free of contaminants.
- Finish – Nano-structure penetrating film, minimal to no surface profile and build.
- Read entire label and MSDS before using.
- Apply 48 hours or longer, after concrete, faux concrete, grout, or tile has been placed. Apply using a sponge, brush, paint pad, cotton towel, or sprayer.
- *After five minutes, remove puddles or excessive sealer, using an absorbent paper towel or cotton cloth to avoid irregular penetration. After 30 minutes, re-apply a 2nd coat, following steps described above. Ready for use: 2-4 hours after last coat, if kept dry. Allow 12-24 hours before regular use. For full anti-stain properties to develop, allow up to 30 days. Clean applicator tools with isopropanol, followed by lukewarm water and soap (apply within a moderate temperature range of 40°F and above, best if surface temperature is less than 90°F).

MiraGard Drylook Sealer

Product Technical Data Sheet

LIMITATIONS

- Substrate must be above 40° F (4.4° C) dry and free of excessive water vapor transmission with a relative humidity below 85% at time of installation. Miracote Drylook Sealer is not a film-forming sealer. Harsh cleaning methods, combined with high alkaline, acidic, or solvent-based cleaners will affect product longevity. Use of strong cleaners such as a high pH strippers that contain a high level of sodium hydroxide or potassium hydroxide are used, recommend re-application of MiraGard Drylook Sealer routinely, depending on the frequency of cleaning operation, but usually within every two to three years.
- Do not apply over moving cracks, joints, or unsupported gaps. If sub-surface cracks after the coating is applied, the cracks can reflect through. Do not apply over working joints, expansion joints, or construction joints.
- The proper application of this product is the sole responsibility of the end user. *Job site visits by Miracote representatives are a support service only and are not participatory in the quality or performance of the contractor.* Supervision and quality control of work and contract are the sole responsibility of the contractor and user.

Measure surface and ambient temperatures to assure application is within the acceptable range.

PRODUCT AVAILABILITY

Crossfield Products Corp. Miracote maintains offices and factories at addresses listed below. Miracote products are available for purchase through reputable distribution in the building trades.

MAINTENANCE

For maximum sheen and cleanability, floor should be routinely treated with conventional maintenance finish followed by ordinary buffing.

SPECIFICATION ASSISTANCE

Consult Crossfield Products Corp. for specification assistance, detailing, etc. This consultation is highly recommended prior to specification.

TESTING

The technical data contained herein is the result of tests made in Crossfield¨s laboratories or in independent laboratories using small scale equipment, following generally accepted trade practices. Although this information is believed to be true and accurate, the use of different equipment for testing under dissimilar conditions or the testing of samples produced under dissimilar conditions may develop substantially different results.

LIMITED WARRANTY

NO WARRANTY SHALL BE EFFECTIVE UNTIL THE TERMS AND CONDITIONS OF SALE SET FORTH IN CROSSFIELD PRODUCTS CORP. INVOICES ARE MET.

Crossfield Products Corp. warrants to the purchaser of its products that such products are free from manufacturing defect. Crossfield does not warrant or guarantee the workmanship performed by any person or firm installing its products. Crossfield"s obligation under this warranty is limited solely to the original purchaser and solely to the remedy of replacement in kind of any product which Crossfield sold which may prove defective in manufacture within one year from date of installation, provided said product was stored correctly and installed within the product"s shelf life, by the original purchaser and which Crossfield„s examination shall disclose to Crossfield"s satisfaction to be thus defective.

IN NO EVENT SHALL CROSSFIELD PRODUCTS CORP. BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY IS EXPRESSLY GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND ALL OTHER OBLIGATIONS OR LIABILITIES ON CROSSFIELD"S PART, AND WE NEITHER ASSUME NOR AUTHORIZE ANY PERSON OR PERSONS TO ASSUME FOR US ANY OTHER LIABILITY IN CONNECTION WITH SALE OF A CROSSFIELD PRODUCT. THIS WARRANTY SHALL NOT APPLY TO ANY OF CROSSFIELD"S PRODUCTS, WHICH HAVE BEEN SUBJECT TO ADULTERATION, ALTERATION ABUSE OR MISUSE. CROSSFIELD PRODUCTS CORP. MAKES NO WARRANTY WHATSOVER IN RESPECT TO ACCESSORIES, PARTS OR MATERIAL NOT SUPPLIED BY CROSSFIELD PRODUCTS CORP., WHICH ARE USED IN CONNECTION WITH ITS PRODUCTS. THE TERM "ORIGINAL PURCHASER" IN THIS WARRANTY MEANS THAT PERSON, CORPORATION OR ENTITY TO WHOM CROSSFIELD PRODUCTS CORP. SOLD ITS PRODUCTS. ANY ACTION TO ENFORCE ANY WARRANTY OR FOR BREACH OF CONTRACT OR ARISING OUT OF ANY CLAIM AGAINST CROSSFIELD PRODUCTS CORP. SHALL BE COMMENCED AND MAINTAINED ONLY IN A COURT OF COMPETENT JURISDICTION IN THE CONTINENTAL UNITED STATES OF AMERICA. THE PURCHASER ACCEPTS THESE TERMS AND CONDITIONS, AND HEREBY EXPRESSLY WAIVES ANY CLAIM TO ADDITIONAL DAMAGES.

CAUTION: ALWAYS KEEP OUT OF THE REACH OF CHILDREN.

Miracote Product Line
Crossfield Products Corp

www.miracote.com

East Coast Office
140 Valley Road
Roselle Park, NJ 07204
P: (908) 245-2808
F: (908) 245-0659

West Coast Office
3000 E. Harcourt Street
Rancho Dominguez, CA 90221
P: (310) 631-6594
F: (310) 886-9119

MiraTop UCS

Product Technical Data Sheet

MiraTop UCS is a state-of-the-art, three-component, aliphatic urethane-modified cementitious concrete sealer designed for use as a top coat over MiraTop Flooring Systems. Due to excellent UV stability and color retention it is also ideal for use as a finish coat over Miracote MPC and MiraFlex Membrane C in fountains, water features and other aquatic environments. ***MiraTop UCS*** exhibits outstanding chemical and abrasion resistance, and offers superior performance in conditions where thermal shock, high heat, wet environments and existing elevated levels of moisture vapor transmission rates may lead to failure of vapor impermeable flooring systems.

MiraTop UCS is ideal for use on both new and existing concrete surfaces where restrictions on down time demand a rapid return to service upon completion of the work. ***MiraTop UCS*** is a fully reacted urethane cementitious coating technology that is non-flammable and nearly odorless during placement and cure. It complies with all Federal, State and Regional VOC requirements.

WHERE TO USE

- Production facilities.
- Food processing plants.
- Chemical processing areas.
- Pharmaceutical plants and warehouses.
- Commercial kitchens.
- Cleaning and sanitation areas.
- Water and wastewater treatment facilities.
- Fountains, water features and aquatic environments.

ADVANTAGES

- Tenacious adhesion to concrete and most substrates.
- Excellent chemical and abrasion resistance.
- Outstanding color retention and UV stability.
- LEED-compliant, low odor and fast cure time.
- Meets USDA, FDA, OSHA requirements.
- Does not support microbial growth.
- Very rapid cure and minimal down time.
- Withstands MVER exceeding 22 lbs./99% RH.

THEORETICAL COVERAGE RATES

Topcoat for Miracote MPC and MiraFlex Membrane C:
One Coat @ 310 – 370 sq. ft. per kit (10 – 12 mils)

Topcoat for MiraTop SL and TG:
One Coat @ 370 – 460 sq. ft. per kit (8 – 10 mils)

Protective Coating over Concrete:
Two Coats each @ 370 – 460 sq. ft. per kit (8 – 10 mils)

Actual consumption rates are dependent on many factors including, but not limited to, substrate profile and porosity, variations in applied thickness and typical allowance for waste.

PACKAGING and COLORS

Kit Size:
Component A: 1-gal unit
Component B: 1-gal unit
Component C: 10 lb. bag powder
Available in Gray, Red, and Neutral powder
Neutral powder may be pigmented with ColorPax W (4 oz./unit)

MIX RATIO

Designed and packaged for mixing full kits only.

SHELF LIFE AND STORAGE

One year from the date of manufacture provided containers remain unopened and material is stored in a protected environment free from moisture, excessive heat, freezing temperatures, and direct sunlight.

TYPICAL PHYSICAL PROPERTIES @ 75°F (24°C)

Pot Life.....20 minutes
Recoat Time.....4 to 8 hours
Compressive Strength ASTM C579, minimum.....7,800 psi
Tensile Strength ASTM C307, minimum.....980 psi
Flexural Strength ASTM C790, minimum.....1,965 psi
Hardness ASTM D2240, Shore D.....80-85
Thermal Coefficient of Linear Expansion.....$1.4x10^5$ ASTM C531 9in/in/°F
Density ASTM C905, lbs./ft^3.....120
Water Absorption, MIL-D-3134.....0.58%
Flammability ASTM E648.....>1.07 watts/cm^2
Adhesion ASTM D4541.....>400 psi (100% percent failure in concrete)
Temperature Distortion.....Crossfield Lab Passes (dry, wet and oil at 350°F)
Microbial Resistance ASTM G21.....Passes Rating 1
Chemical Resistance.....See Chemical Resistant Chart

OVERVIEW OF INSTALLATION STEPS

- **Surface Preparation –** All surfaces must be clean, sound, dry and free from any bond inhibiting substances including, but not limited to, grease, oil and any other contaminants or loosely adhered materials. For concrete substrates, a minimum surface profile of a CSP-3 or higher is required depending on overall substrate conditions and coating requirements.
- **Mixing –** ***MiraTop UCS*** components must be mixed mechanically using a low-speed drill (300-450 rpm) with a "Jiffy-type" or similar Miracote-approved mixing paddle until fully blended. It is important to pre-condition all components to a moderate or room temperature to facilitate adequate working time. Empty entire contents of the pre-mixed component A into a clean mixing vessel while scraping the sides and bottom to capture entire contents. Then add Component C powder and thoroughly mix into a smooth, lump-free consistency being careful not to entrap air into the mix. Next empty entire contents of pre-mixed Component B capturing entire contents by scraping the side and bottom, and continue mixing for an additional 60 seconds. ***Mixing MiraTop UCS and ColorPax W*** - When using ColorPax W to pigment Neutral powder to produce the Miracote Standard Colors, first blend the ColorPax W into Component A and mix thoroughly into uniform consistency before adding Neutral Component C powder and follow remaining instructions as above. Once all components are properly mixed ***MiraTop UCS*** is ready to be applied to the receiving substrate.

OVERVIEW OF INSTALLATION STEPS (continued)

- **Application –** Once mixed immediately pour out ***MiraTop UCS*** onto the substrate in long ribbons across the surface being top-coated. Spread evenly with a squeegee, and pull material out at the required coverage rate and immediately back-roll with a high quality, phenolic core, industrial grade 3/16" to ¼" maximum nap roller to achieve mil consistency. When applying newly mixed batches always work into and maintain a wet edge exercising care to place and back-roll at fresh material before previous materials begins to form a film. For enhanced slip resistance and traction lightly broadcast fine aggregate when back-rolling to increase surface coefficient of friction.

FOR BEST RESULTS

- Always install a minimum 4' by 4' test area site mock up for approval of acceptable color, texture, finish, adhesion, and any other critical requirement acceptable to the owner prior to proceeding with the installation.
- Verify and download current versions of product technical data sheets (PTDS), material safety data sheets (MSDS), and installation guides (IG) at www.miracote.com.
- Protect materials from excessive heat and cold, and pre-condition to room temperature as prior to use.
- Regularly check wet film thickness with mil gauge and monitor consumption to ensure correct application rates are obtained.
- The proper application of this product is the sole responsibility of the end user. Job site visits by Miracote representatives are making recommendations, and do not assume any liability for supervision or quality control.
- Measure surface and ambient temperatures to ensure the material is only applied when temperatures are 45 F and rising during placement and cure time.
- ***MiraTop UCS*** being a aliphatic urethane cementitious technology is a fast-setting material which requires quick work during mixing and placement with strict attention to detail. This will require well trained personnel and properly manned crew size.

LIMITATIONS

- Extremely porous substrates may require a primer to reduce outgassing and pin-holing.
- Allow to cure a minimum of 48 hours cure before exposure to chemicals, and 72 hours prior to full immersion service.
- Not intended for use over flexible substrates.
- Minimum ambient/substrate temperature of 45F.

LIMITED WARRANTY

NO WARRANTY SHALL BE EFFECTIVE UNTIL THE TERMS AND CONDITIONS OF SALE SET FORTH IN CROSSFIELD PRODUCTS CORP. INVOICES ARE MET.

Crossfield Products Corp. warrants to the purchaser of its products that such products are free from manufacturing defect. Crossfield does not warrant or guarantee the workmanship performed by any person or firm installing its products. Crossfield's obligation under this warranty is limited solely to the original purchaser and solely to the remedy of replacement in kind of any product which Crossfield sold which may prove defective in manufacture within one year from date of installation, provided said product was stored correctly and installed within the product's shelf life, by the original purchaser and which by Crossfield examination shall disclose to Crossfield's satisfaction to be thus defective.

IN NO EVENT, SHALL CROSSFIELD PRODUCTS CORP. BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY IS EXPRESSLY GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND ALL OTHER OBLIGATIONS OR LIABILITIES ON CROSSFIELD'S PART, AND WE NEITHER ASSUME NOR AUTHORIZE ANY PERSON OR PERSONS TO ASSUME FOR US ANY OTHER LIABILITY IN CONJUNCTION WITH SALE OF A CROSSFIELD PRODUCT. THIS WARRANTY SHALL NOT APPLY TO ANY OF CROSSFIELD'S PRODUCTS, WHICH HAVE BEEN SUBJECT TO ADULTERATION, ALTERATION ABUSE OR MISUSE. CROSSFIELD PRODUCTS CORP. MAKES NO WARRANTY WHATSOVER IN RESPECT TO ACCESSORIES, PARTS OR MATERIAL NOT SUPPLIED BY CROSSFIELD PRODUCTS CORP., WHICH ARE USED IN CONJUNCTION WITH ITS PRODUCTS. THE TERM "ORIGINAL PURCHASER" IN THIS WARRANTY MEANS THAT PERSON, CORPORATION OR ENTITY TO WHOM CROSSFIELD PRODUCTS CORP. SOLD ITS PRODUCTS. ANY ACTION TO ENFORCE ANY WARRANTY OR FOR BREACH OF CONTRACT OR ARISING OUT OF ANY CLAIM AGAINST CROSSFIELD PRODUCTS CORP. SHALL BE COMMENCED AND MAINTAINED ONLY IN A COURT OF COMPETENT JURISDICTION IN THE CONTINENTAL UNITED STATES OF AMERICA. THE PURCHASER ACCEPTS THESE TERMS AND CONDITIONS, AND HEREBY EXPRESSLY WAIVES ANY CLAIM TO ADDITIONAL DAMAGES.

CAUTION: ALWAYS KEEP OUT OF THE REACH OF CHILDREN.

Miracote Product Line
Crossfield Products Corp

www.miracote.com

East Coast Office
140 Valley Road
Roselle Park, CA 07204
P: (908) 245-2800
F: (908) 245-0659

West Coast Office
3000 E. Harcourt Street
Rancho Dominguez, CA 90221
P: (310) 886-9100
F: (310) 886-9119

Cathedral Stone® Products, Inc.
The leader in scientific masonry restoration

CSP Bio-Cleaner

CSP Bio-Cleaner is an easy to use liquid that removes a broad spectrum of grime, dirt and stains left behind by biological growth and environmental pollutants. CSP Bio-Cleaner can be utilized on any surface.

Features and Benefits

- **Helps Keep Surfaces Free From Future Staining.**
- **Safe for Landscaping, Plants, and Grass**
- **No Detrimental Effects on Masonry**
- **Safe on Glass, Metals, Wood, Stone, Vinyl, and Painted Surfaces.**

Application Procedures

Test Area

Always prepare a test area prior to full application. This will indicate the time required for project completion and suitability of product for effective cleaning of the substrate. Additionally, specific jobsite consumption rates can be calculated after the test area is completed.

Equipment and Tools

This product is engineered for airless spray application. Use only airless equipment with chemical resistant packing. Even the smallest airless sprayer is capable of spraying this product. Equip the sprayer with a tip size of 0.013 inches or 0.015 inches. (Example: a 413 or 515 tip). Other equipment required: brushes, masking tape, plastic (polyethylene) sheet, can be used for protecting surfaces not to be treated with CSP Bio-Cleaner.

APPLICATION

Apply to a dry or damp surface. Allow product to remain on the surface for a minimum of 10 minutes. Repeat application a second time and scrub while wet. Rinse with clean water.

Removal and Cleanup

After allowing the product to dwell, thoroughly rinse the surface with water (pressure washer). Thoroughly clean and lubricate spray equipment per manufacturers instructions. This process should be done soon after the spraying has been completed.

Safety Requirements

Proper safety procedures should be followed at all times while handling this product. Refer to the Safety Data Sheet for important health/safety information before use.

Limitations

Surface temperatures should be 40° to 95°F (5° to 32°C). The product performs effectively at lower temperatures (even at 40°F, 5°C), but the dwell time increases.

Packaging and Coverage

CSP Bio-Cleaner is available in 1-gallon, 5-gallon containers and 55-gallon drums. Store materials in a cool dry place away from direct sunlight. Average shelf life is five years in original, unopened container.

Typical coverage to remove medium dirt and grime will vary from 250 to 350 square feet per gallon.

Technical Data

Appearance	Almost Colorless
Specific Gravity	1.1
Flash Point	No applicable
pH	7
Odor	Mild

DO NOT ALLOW PRODUCT TO FREEZE!

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

9/2016

Cathedral Stone® Products, Inc. 7266 Park Circle Drive, Hanover Maryland 21076
(800) 684-0901 FAX: (410) 782-9155 WEBSITE: www.cathedralstone.com

Cathedral Stone® Products, Inc.
The leader in scientific masonry restoration

Light Duty Paint Remover

Fast Acting Paint Stripper

This water based paint remover is biodegradable, non-toxic, user friendly and environmentally safe. It is extremely effective in removing the tough, high performance coatings. This remover will effectively lift highly cross-linked urethane and epoxy top coats and primers, alkyds, non-skid coatings (100% solid content) and the toughest of industrial coatings. It is also capable of lifting fuel resistant primers, inorganic zinc primers and coal tar epoxies.

Features and Benefits

- **Water Based**
- **Fully Biodegradable**
- **Non Flammable**
- **Contains no TAPs or HAPs (Toxic/Hazardous Air Pollutants)**
- **Non-carcinogenic, non-toxic**
- **Easy clean up with running water**
- **Low VOCs**
- **Non-ozone-depleting**
- **Not regulated by authorities for transportation / storage**
- **Not regulated by authorities for worker health and safety**
- **Low and inoffensive odor**
- **Cost Effective:**
    - Requires much less chemical to achieve desired results
    - Reduces man-hours
    - Reduces cost of waste disposal
    - Reduces down time since other work at site can continue while stripper does its job
    - Lowers insurance costs for worker safety and storage hazards

Application Procedures

Test Area

Always prepare a test area prior to full application. This will indicate the time required for project completion and suitability of product for the paint and the substrate.

Equipment and Tools

This product is engineered for airless spray application. Use only airless equipment with chemical resistant packing. Equip the sprayer with a tip size of 0.019 inches or larger. (Example: a 519 or 425 tip). Other equipment: brushes, rollers, scraper, masking tape, plastic (polyethylene) sheet, pressure washer, electric drill with mixer, empty pails for clean-up, water. Roller application should be used ONLY for horizontal surfaces.

Preparation

MASKING: Cover / protect areas where stripping is not desired, including adjoining surfaces where over spray may travel. Plastic (polyethylene) sheets make a very effective barrier. If using masking tape, apply two layers of tape and remove the top layer immediately after application as the remover may soak through the tape, damaging paint under it. Plants should be covered or washed thoroughly before and during application.

MIXING: If on visual examination, water appears to have separated out of the product, thoroughly mix the stripper with a drill until it becomes homogeneous once again. DO NOT SHAKE. DO NOT DILUTE.

EQUIPMENT: Ensure application equipment is free of any previously applied products or chemicals or solvents (especially mineral spirits).

Application

Apply a thick, even layer of stripper onto the coating being removed. An airless sprayer is the most effective means of application. Always start the sprayer pump at the lowest pressure setting and slowly build up the pressure until an adequate fan pattern has been generated. The minimum wet film thickness should be 15 mils (300 microns). The stripper must be applied 30%-50% thicker than the coating to be removed, i.e., 10 mils of coating requires 13-15 mils of stripper to be removed effectively. High pressure is neither required nor desired. High pressure and narrow tip sizes will break the stripper's emulsion and will reduce its effectiveness. When trying to build up films thicker than 30 mils (600 microns), it is advisable to build

the stripper film in two separate applications. First apply a light coat of approximately 10 mils (250 microns), allow it to dwell for about 30 minutes and then build the rest of the stripper film thickness in the second application. Once applied, leave the stripper alone, as agitation slows down penetration. Brushing and rolling should be avoided because these methods produce a lower film build and inconsistent thickness of stripper.

Dwell Time

The time required for penetration varies according to the type of paint, and the temperature. Most paint systems require 1 to 6 hours. Leave the stripper overnight for best results.

Re-Application

When there are multiple layers of paint, it is quite likely that there is poor intercoat adhesion between some layers. Premature lifting may occur at this interface. If this happens, remove the lifted layers and reapply the stripper. Do not allow the stripper to dry out. The stripper is designed to remain wet and effective over extended periods of time (up to 48 hours), but excessive sunshine, windy conditions or insufficient stripper thickness can cause early drying. If the stripper starts to dry, reapply a light coating and allow extra time for completion

Removal and Cleanup

Removal of lifted paint can be completed by scraper, squeegee, wet/dry vacuum suction system or by pressure wash. The stripped surface must be rinsed with water or denatured alcohol to remove all chemical residues before repainting. When rinsing, always work from the bottom to the top. Any water that runs down the substrate will deactivate the stripper and allow the paint to re-adhere, therefore never work from the top to the bottom. Collect lifted paint and dispose of in accordance with local government regulations. Do not collect and/or store removed paint and stripper waste residue in metal containers. Clean up spray equipment by running water or denatured alcohol through the equipment soon after the spraying has been completed.

Safety Requirements

Proper safety procedures should be followed at all times while handling this product. Refer to the Material Safety Data Sheet for important health/safety information before use.

Limitations

Surface temperatures should be 65° to 95°F (20° to 32°C). The product performs effectively at lower temperatures (even at 32°F, O°C), but the dwell time increases.

Packaging and Coverage

Packaging: 5-gallon pails

The product is engineered for thick film build up on vertical and overhead surfaces. The desirable wet film thickness of stripper is approximately one and a half times the dry film thickness of the paint. Minimum wet film thickness should be 15 mils (300 microns). The stripper must be applied 30%-50% thicker than the coating to be removed, i.e., 10 mils of coating requires 13-15 mils of stripper to be removed effectively. Typically, coverage is approximately 40 to 90 sq. ft./ US gallon (1 to 2.2 sq. m/L)

Technical Data

Appearance	White foamed emulsion
Specific Gravity	1
Boiling Point	92.8°C
pH (direct reading)	4.4

DO NOT ALLOW STRIPPER TO FREEZE!

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

08/2016

Cathedral Stone® Products, Inc.
The leader in scientific masonry restoration

CSP Heavy Duty Paint Remover

Industrial & Architectural Paint Stripper

This water based paint remover is biodegradable, non-toxic, user friendly and environmentally safe. It is extremely effective in removing the toughest industrial coatings like epoxies and urethanes from metal and concrete. This remover will effectively lift urethanes, latex, alkyd paints, lead based paints and varnish as well as most two-component epoxy coatings and fusion bonded epoxies from all types of substrates, including steel, aluminum, metal alloys, concrete, and masonry.

Features and Benefits

- **Water Based**
- **Fully Biodegradable**
- **Non Flammable**
- **Contains no TAPs or HAPs (Toxic/Hazardous Air Pollutants)**
- **Non-carcinogenic, non-toxic**
- **Easy clean up with running water**
- **Low VOCs**
- **Non-ozone-depleting**
- **Low and inoffensive odor**
- **Will not burn skin**
- **Cost Effective:**
    - Requires much less chemical to achieve desired results
    - Reduces man-hours
    - Reduces cost of waste disposal
    - Reduces down time since other work at site can continue while stripper does its job
    - Lowers insurance costs for worker safety and storage hazards

Application Procedures

Test Area

Always prepare a test area prior to full application. This will indicate the time required for project completion and suitability of product for the paint and the substrate.

Equipment and Tools

This product is engineered for airless spray application. Use only airless equipment with chemical resistant packing. Equip the sprayer with a tip size of 0.019 inches or larger. (Example: a 519 or 425 tip). Other equipment: brushes, rollers, scraper, masking tape, plastic (polyethylene) sheet, pressure washer, electric drill with mixer, empty pails for clean-up, water. Roller application should be used ONLY for horizontal surfaces.

Preparation

MASKING: Cover / protect areas where stripping is not desired, including adjoining surfaces where over spray may travel. Plastic (polyethylene) sheets make a very effective barrier. If using masking tape, apply two layers of tape and remove the top layer immediately after application as the remover may soak through the tape, damaging paint under it. Plants should be covered or washed thoroughly before and during application.

MIXING: If on visual examination, water appears to have separated out of the product, thoroughly mix the stripper with a drill until it becomes homogeneous once again. DO NOT SHAKE. DO NOT DILUTE.

EQUIPMENT: Ensure application equipment is free of any previously applied products or chemicals or solvents (especially mineral spirits).

Application

Apply a thick, even layer of stripper onto the coating being removed. An airless sprayer is the most effective means of application. Always start the sprayer pump at the lowest pressure setting and slowly build up the pressure until an adequate fan pattern has been generated. The minimum wet film thickness should be 15 mils (300 microns). The stripper must be applied 30%-50% thicker than the coating to be removed, i.e., 10 mils of coating requires 13-15 mils of stripper to be removed effectively. High pressure is neither required nor desired. High pressure and narrow tip sizes will break the stripper's emulsion and will reduce its effectiveness. When trying to build up films thicker than 30 mils (600 microns), it is advisable to build the stripper film in two separate applications. First

apply a light coat of approximately 10 mils (250 microns), allow it to dwell for about 30 minutes and then build the rest of the stripper film thickness in the second application. Once applied, leave the stripper alone, as agitation slows down penetration. Brushing and rolling should be avoided because these methods produce a lower film build and inconsistent thickness of stripper.

Dwell Time

The time required for penetration varies according to the type of paint, and the temperature. Most paint systems require 1 to 6 hours. Leave the stripper overnight for best results.

Re-Application

When there are multiple layers of paint, it is quite likely that there is poor intercoat adhesion between some layers. Premature lifting may occur at this interface. If this happens, remove the lifted layers and reapply the stripper. Do not allow the stripper to dry out. The stripper is designed to remain wet and effective over extended periods of time (up to 48 hours), but excessive sunshine, windy conditions or insufficient stripper thickness can cause early drying. If the stripper starts to dry, reapply a light coating and allow extra time for completion

Removal and Cleanup

Removal of lifted paint can be completed by scraper, squeegee, wet/dry vacuum suction system or by pressure wash. The stripped surface must be rinsed with water or denatured alcohol to remove all chemical residues before repainting. When rinsing, always work from the bottom to the top. Any water that runs down the substrate will deactivate the stripper and allow the paint to re-adhere, therefore never work from the top to the bottom. Collect lifted paint and dispose of in accordance with local government regulations. Do not collect and/or store removed paint and stripper waste residue in metal containers. Clean up spray equipment by running water or denatured alcohol through the equipment soon after the spraying has been completed.

Safety Requirements

Proper safety procedures should be followed at all times while handling this product. Refer to the Safety Data Sheet for important health/safety information before use.

Limitations

Surface temperatures should be 65° to 95°F (20° to 32°C). The product performs effectively at lower temperatures (even at 32°F, O°C), but the dwell time increases.

Packaging and Coverage

Packaging: 5-gallon pails

The product is engineered for thick film build up on vertical and overhead surfaces. The desirable wet film thickness of stripper is approximately one and a half times the dry film thickness of the paint. Minimum wet film thickness should be 15 mils (300 microns). The stripper must be applied 30%-50% thicker than the coating to be removed, i.e., 10 mils of coating requires 13-15 mils of stripper to be removed effectively. Typically, coverage is approximately 40 to 90 sq. ft./ US gallon (1 to 2.2 sq. m/L)

Technical Data

Appearance	White foamed emulsion
Specific Gravity	1
Boiling Point	99.3°C
Freezing Point	N/A
pH (direct reading)	2.6

DO NOT ALLOW STRIPPER TO FREEZE!

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

08/2016

600GL Coatings Remover

Formerly SOY•Gel™ Paint and Urethane Remover

BLUE BEAR®

EASILY REMOVE MULTIPLE LAYERS

- Removes Paints, Urethanes, Enamels, Sealers, Some Epoxies, Lead Paint, and Many Other Coatings
- Gel Formula for Easy Application
- SAFE! No Methylene Chloride
- Non-Caustic and Biodegradable
- Made with 100% American-Grown Soybeans

Horizontal Coverage: 125 sq ft per gallon
Vertical Coverage: 75 sq ft per gallon

Find Out More About 600GL Coatings Remover
Visit: www.franmar.com or
Call: 800.538.5069

Franmar®

PRODUCT DATA

600GL Coatings Remover (Formerly SOY•Gel™ Paint and Urethane Remover)

Franmar's most-asked-for product, **600GL**, continues to impress contractors with its ease of use and powerful removal properties. With three times the coverage rate of traditional petroleum removers, **600GL** effectively removes multiple layers of topical sealers, acrylics, enamels, urethanes, latex, some epoxies, other single-component coatings, and lead-based paint*. Made with soybeans, **600GL** is a safe, low-odor, non-caustic, green coating remover.

As a leading innovator in green cleaning products, Franmar Chemical, Inc. introduced **600GL** as a soy based paint remover, and changed the industry. **600GL** is 100% biodegradable, practically odorless, and is safe for your hands, your work, and your customers.

**Ideal for lead-based paint removal. The lead becomes encapsulated in the gel, preventing airborne particles and allowing for safe removal. Dispose of in accordance with all existing local, state, and federal ordinances.*

Coverage: Coverage per square foot varies depending on type and age of coating, number of layers and method of application.
Horizontal: Average coverage is 125 sq ft per gallon (max 200 sq ft per gallon)
Vertical: Average coverage is 75 sq ft per gallon

Test Area:
Due to variances in surfaces and conditions, always test in a small, inconspicuous area before using on complete project.

Application:
Apply a thick layer of **600GL** by pouring, brushing, squeegee, or commercial airless sprayer. Applying too thin will cause **600GL** to dry out before removal is complete. Use a scraper to check if the coating is softened down to the surface. If not, wait longer and recheck. When the coating is completely softened, remove with a scraper.

Clean Up:
Use **BLUE BEAR 700DG Degreaser** or water and a scrub brush, mop, or power washer to clean remaining thin residue. Remove excess coating(s) and **600GL** before using a power washer for final cleaning. Allow surface to dry before further preparations.

Usage Tips from the Pros:
- For large application areas, use a professional airless sprayer or a 4-stage HVLP sprayer.
- For tough coatings or numerous layers, use a notched ½" squeegee or ¼" gauge rake. Square footage will be greatly reduced.
- When used outdoors, cover with a 2mil or thicker plastic to help keep **600GL** wet and working.

Biodegradable: Meets or exceeds ASTM standards

Precautions: Concrete surfaces may darken with use of **600GL**. Protect plants and vegetation with a plastic drop cloth. Always use care to prevent overspray from getting on surfaces other than the one being prepped or cleaned.

Warnings: May cause skin irritation. May cause eye irritation. May cause respiratory irritation or may cause drowsiness and dizziness. May be harmful if swallowed. This product contains a chemical known to the state of California to cause birth defects or other reproductive harm. Keep out of reach of children.

Flash Point Above 200ºF (93.3ºC)

pH Level 8.1 pH of 1/10 wt/wt solution in soft water

VOC (Volatile Organic Compounds): 49%, 4.249 lb/g, 509 g/l
California and OTC Compliant

Ingredients: N-Methyl Pyrrolidone, Dibasic Ester LVP, Soy Ester, Proprietary Thickening and Surfactant Blend

Safe for Use On: Concrete, masonry, wood, and metal

Do Not Use On: PVC, drywall, liimestone, plastic, veneer, terrazzo tile, or rubber

NON-EMERGENCY
Call: 800.538.5069
www.franmar.com
CHEMICAL EMERGENCY:
Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
USA and Canada: **800.242.9300**
CCN717946 or **+1 703.527.3887**
(Collect Calls Accepted)

Franmar®
PO Box 5565
Bloomington IL 61702

Rev. 3/29/2015

Cathedral Stone® Products, Inc.
The leader in scientific masonry restoration

CSP Heavy Duty Cleaner

The CSP Heavy Duty Cleaner is a safe gel based cleaner intended for the removal of severe black carbon staining, dirt, and grime on sandstone, unpolished granite, brick, concrete and brownstone. **When using on limestone, marble or any calcareous stone limit dwell times to 10-15 minutes.** The product is designed for exterior use on buildings and monuments.

Features and Benefits

- **Biodegradable**
- **Short dwell time**
- **Gel clings to vertical surfaces**
- **Brush, roll or spray apply**
- **User friendly**
- **No on-site mixing**

Application Procedures

Test Area

Always prepare a test area prior to full application. This will indicate the time required for project completion and suitability of product for effective cleaning of the substrate. Additionally, specific jobsite consumption rates can be calculated after the test area is completed.

Equipment and Tools

This product can be applied by brush, roll or low-pressure spray (>300 psi). Natural bristle brushes work well on most surfaces while ¾" nap rollers can be used for smooth surfaces such as brick and marble. When spraying is desired an air driven or low voltage pump can be used. Hudson style sprayers are acceptable for small-scale spray applications. Other equipment required: brushes, masking tape, plastic (polyethylene) sheet, can be used for protecting surfaces not to be treated with CSP Heavy Duty Cleaner.

Preparation

MASKING: Cover / protect areas where cleaning is not desired, including adjoining surfaces where over spray may travel. Plastic (polyethylene) sheets make a very effective barrier. **The CSP Heavy Duty Cleaner will harm most aluminum and some glass surfaces. Protection is required!** Plants should be covered before and during the application. **MIXING:** If the product appears to have separated, thoroughly mix the CSP Heavy Duty Cleaner with a drill until it becomes homogeneous once again. DO NOT SHAKE. DO NOT DILUTE.

Application

Apply a thick, even layer of Heavy Duty Cleaner onto a Surface Saturated Dry (SSD) substrate. A sprayer is the most effective means of application, however rolling on the cleaner will work as well. The minimum wet film thickness should be **5** mils. When applying Heavy Duty Cleaner by brush, the agitation will cause the product to be more effective. If gel begins to dry another coat of the cleaner may be applied directly on top of the existing one. If needed a stiff brush can be used to agitate tough stains. **DO NOT ALLOW PRODUCT TO COMPLETELY DRY ON SUBSTRATE.** If product begins to dry mist the substrate with water in a way that adds moisture but does not wash the cleaner off.

Dwell Time

The time required for the CSP Heavy Duty Cleaner to adequately clean a substrate is approximately 5-45 minutes. Apply test panels to determine the dwell time prior to full application of product. **DO NOT ALLOW TO DRY ON SUBSTRATE.**

Removal and Cleanup

After allowing the product to dwell, rinse the surface with copious amounts water (pressure washer). Rinse the substrate well to ensure all cleaner residue is removed. Thoroughly clean and lubricate spray equipment per manufacturers instructions. This process should be done soon after the spraying has been completed

Safety Requirements

Proper safety procedures should be followed at all times while handling this product. Refer to the Material Safety Data Sheet for important health/safety information before use. CSP Heavy Duty Cleaner is an acidic gel. It is essential to wear protective clothing and glasses while using this product.

Cathedral Stone® Products, Inc. 7266 Park Circle Drive, Hanover Maryland 21076
(800) 684-0901 FAX: (410) 782-9155 WEBSITE: www.cathedralstone.com

Limitations

Surface temperatures should be 40° to 95°F (5° to 32°C). The product performs effectively at lower temperatures (even at 40°F, 5°C), but the dwell time increases.

Packaging and Coverage

Packaging: Approximately 5 gallons

The product is engineered for thick film build up on vertical and overhead surfaces. Minimum wet film thickness should be **5** mils. **Always test the substrate to ensure accurate coverage rates.** Typical coverage rates on a rough porous surface are between 80 and 120 sq. ft. per gallon. Coverage rates on a smooth nonporous surface are typically between 350 and 400 sq. ft. per gallon

Technical Data

Appearance	Clear to light yellow liquid
Specific Gravity	1
Boiling Point	97.2
pH	4.3
VOC content	**N/A**

DO NOT ALLOW PRODUCT TO FREEZE!

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

9/2016

JAHN M100

• Terra Cotta Repair
• Brick Repair Mortar

CERTIFIED INSTALLERS ONLY

This single-component, cementitious, mineral based mortar is designed for the restoration of terra cotta and brick surfaces. **Jahn M100 is completely vapor permeable and contains no latex or acrylic bonding agents or additives.** M100 is specifically engineered for compatibility with oven-fired materials to provide a permanent repair, which both enhances and protects the original substrate. (Only Certified Installers may purchase Jahn M100 Terra Cotta Repair Mortar.)

To restore the original glaze and keep water from entering the substrate through the new repair, use **a MasonRE Mineral Coating** to paint the repair and **MasonRE TerraCoat** to replicate the glaze. (Call Cathedral Stone at 800-684-0901 for more information about our complete Terra Cotta Coating System).

Features and Benefits

- **Single-Component:** Mixes with water only, improving quality control and consistency of application.
- **Compatible Formulations:** Compatibility of physical properties ensures that the mortar and natural substrate react to the environment in the same way.
- **Contains No Latex or Acrylic Bonding Agents:** It protects the substrate by allowing salts, water vapor, and liquid water to reach the surface, preventing failure due to salt expansion or freeze/thaw cycles.
- **Tenacious Adhesion:** Strong bonding capabilities without relying on synthetic bonding agents.
- **Factory Controlled:** No field chemistry resulting in product variation.
- **Custom Colored Upon Request:** Closely matches existing masonry. Choose from Standard or Custom Colors.

Application Procedures

Surface Preparation

Surfaces to receive M100 must be sound and free of all dust, dirt, grease, laitance and/or any other coating or foreign substance which may prevent proper adhesion. Remove all loose and deteriorated masonry from the repair area using manual or pneumatic cutting tools. Areas to be repaired should be cut to provide a minimum of 1/2" depth. Do not install repairs that have a feathered edge (see diagram below), incorrect installation will cause repairs to fail prematurely. Wash the prepared surface with clean water and a bristle brush to remove dust from the pores.

Section: Correct *(Square Cut)* Surface Preparation

Section: Incorrect *(Feathered Edge)* Surface Preparation

Exposed Ferrous Metals

In the event that ferrous metal reinforcement (re-bar, threaded rod, etc.) is exposed within the repair area or repairs are adjacent to ferrous metal jambs, lintels, anchoring systems etc., the Coronado Surface Tolerant Mastic 113 Line must be applied to all properly prepared ferrous metal surfaces before repairs are made. Refer to the Technical Data Sheets within Cathedral Stone's Product line for proper preparation and use of the Coronado Surface Tolerant Mastic 113 Line.

Mixing

The mixing ratio is approximately 4 1/2 to 5 parts powder to 1 part water by volume, **depending on temperature and humidity.** More water may be required as ambient temperature rises. The mixing may be done by hand, stirring until the mortar is thoroughly mixed. The mortar should be the consistency of stiff putty, without lumps. M100 may also be mixed using a slow speed drill (400 - 600 rpm) equipped with a Jiffler-type mixing paddle. For best results, add the powder to the water slowly. The working time will vary, depending upon wind, temperature, and humidity. Using excessive water in the mixture may affect the color of the repair.

Application

Moisten the substrate using clean water. Jahn Mortar should be applied to a glistening wet surface on vertical applications and a well-dampened surface (with no pooling water) on horizontal applications. **If**

the surface is allowed to dry out before applying M100, this step must be repeated. This is very important.

The next step of the application is what CSP has termed the "Peanut Butter" coat. The Jahn mortar should be mixed with water to the consistency of wet putty. Apply the "Peanut Butter" coat to the glistening wet substrate approximately 1/8 inch thick. **Important – To achieve proper bond, the "Peanut Butter" coat must not dry out prior to application of Jahn Mortar (4.5:1) mix!**

Since the working consistency of M100 is somewhat wet, large repairs may require successive applications in order to avoid material slump. If this is necessary, be sure to remove the shiny cement skin that sometimes forms on the surface by scraping away 1/16" of material. This will open the pores before an additional layer of material is applied. Dampen surface and continue application.

Build up material beyond the surface of the substrate. The waiting period before finishing will vary, depending upon wind, temperature, and humidity. After achieving initial set, scrape away excess mortar until the desired profile is reached.

Use a MasonRE Mineral Coating along with MasonRE Terra Coat to simulate the original terra cotta glaze.

Curing

Periodically mist M100 repairs using clean water for at least a 72-hour period. The timing for initial misting will vary with ambient conditions. Hot, dry conditions may require misting in 30 to 60 minutes. Cooler, damp conditions may require waiting several hours before beginning the curing process. Mist several times a day. Should access to the repairs be impossible over a period of time, plastic may be used to cover them temporarily. The application of plastic, however, does not remove the need for normal curing techniques.

Clean Up

Remove uncured mortar from the perimeter of the repair before it dries using clean water and a rubber sponge. **Repeat several times with clean water to prevent a halo effect (staining of adjacent masonry).** Cured mortar may only be removed chemically or mechanically.

Safety Requirements

It is recommended that safety goggles, gloves, and a dust mask equipped with P-2 filters (or equivalent) be worn for protection while mixing.

Limitations

- Do not apply Jahn Mortar to a frozen or exceedingly hot substrate. The applied mortar must be protected from extreme heat, freezing, excessive wind, direct sunlight, and rain. Ambient temperature range should be 40° F to 90° F with low to average humidity.
- Do not add bonding agents to Jahn Mortar or use them as surface preparation materials.
- Minimum thickness of mortar application is ½"

Packaging and Coverage

A 5-gallon plastic pail contains approx. 44 lb. of material. This will cover 0.5 cubic ft. (12 sq. ft. at 1/2" thickness).

Storage And Shelf Life

Store material in a dry area away from direct sunlight. Ambient storage conditions should be in the range of 40° F to 90° F with low to average humidity. Average shelf life is 6 months in original, unopened packaging.

Technical Data

Jahn M100

LIQUID/PLASTIC PHASE	
Ratio of water/dry material	3 fl. oz. to 4.5 lb.
Volume per pound mixed mortar	12.0 fl. oz./lb
HARDENED PHASE	
Compressive strength	3000 to 3800 psi
Tensile bending strength	619 psi
Tensile strength	150 psi
Linear coefficient of thermal expansion	0.1E-06 to 0.3E-06 in inches ºF
Modulus of elasticity	218 to 1540 ksi
Open porosity (%)	4.2 to 16.5
Specific gravity	1.3

Warning

Not for internal consumption. Keep out of reach of children and animals. Consult Material Safety Data Sheet (MSDS) for specific information.

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

010/2015

Bonstone Materials Corporation
800-425-2214 / www.bonstone.com

TECHNICAL DATA SHEET

FILE UNDER DIVISION 4

1. PRODUCT NAME

BONSTONE®
HRM™
Historic Restoration Mortar

2. MANUFACTURER

Bonstone Materials Corporation

3. PRODUCT DESCRIPTION

A two-component, lime-based, latex modified mortar for the restoration of historic masonry structures.

Basic Uses:

- Surface repairs to historic stone and masonry structures.
- Skim coating vertical stone
- Designed for durable aesthetic repairs
- Easy to mix and apply to your surface
- Designed as a slurry or knife grade application

Limitations:

Use on oil, grease, and coating free substrates.

4. TECHNICAL DATA

(see next page)

5. INSTALLATION

Surface Preparation & Use:

Use gloves, wear eye protection, and avoid skin contact. When grinding cured materials, wear a dust mask. Mix only the amount of material which can be used in 15 minutes. Clean uncured HRM Historic Restoration Mortar from tools with hot, soapy water. Remove cured material mechanically.

Recommend testing an area of the structure before applying to large sections.

Mixing instructions:

All materials should be at or above 55°F. Priming: For best adhesion, do not apply product to dry surfaces- light misting is appropriate. MIX PART B WELL BEFORE USING. Combine the two ingredients of powder and liquid until a slurry or knife grade desired consistency is obtained. Determine the powder to liquid proportion that works and handles the best for your particular application. Use a straight edge trowel to spread the material. Lightly mist the repair mortar with clean water immediately after application. Allow to cure before carving, grinding, or shaping.

Temperature dependency:

Temperature will affect the working properties of the material. Minimum temperatures are above 50F.

6. AVAILABILITY

Packaging and storage:

BONSTONE® HRM Historic Restoration Mortar is packaged in 7 pound kits (5 lbs part A powder and 2 lbs latex binder part B); and also in larger 63-pound kits.

Shelf life is approximately one year if kept in unopened cans in a dry area at 75°F.

7. WARRANTY

This warranty is limited to replacement of defective material and freight charges to destination only. Bonstone Materials Corp. is not responsible for consequential damages.

8. MAINTENANCE

Designed for application in areas inaccessible to maintenance procedures.

9. TECHNICAL SERVICE

- specifications for various applications
- specification writing dept. for unique application

4. **TECHNICAL DATA** **BONSTONE™ HRM**

Cured Properties:

Initial set time at 75°F:	**0.5--1 hour**
Full cure time at 75°F:	**within 24 hours**

STRENGTH:

Compressive:	**1433 psi**
Flexural:	**494 psi**

MODULUS:

Flexural:	**61,246 psi**

Moisture Vapor Permeability:

ASTM E-96	**55.2 perms**

Shrinkage:

ASTM C157	**0.24%**

Application Thickness:

The Historic Restoration Mortar(HRM) is recommended for maximum thickness of 1 inch per application. For a thickness greater than 1 inch, multiple layering applications are recommended.

JAHN M110

Historic Pointing Mortar

Jahn M110 Historic Pointing Mortars have been designed to be used where other mortars have failed. These single-component, cementitious, mineral based pointing mortars are specifically formulated for the restoration of mortar joints in all types of masonry. **Jahn M110 contains no latex or acrylic bonding agents or additives, and is compatible with historic masonry.** Each pointing mortar formula is designed to have a lower compressive strength than the surrounding masonry. These mortars perform well even in situations where previous methods and materials have failed due to repeated water and salt saturation. The material is completely vapor permeable and may be custom colored. **Jahn M110 Historic Pointing Mortar can be applied in a single lift regardless of the depth. Successive lifts with waiting periods between lifts are not necessary.**

Features and Benefit

- **Not Affected by Salts**
- **No Shrinkage**
- **Single Layer Build-Up:** Faster application and reduced installation costs.
- **Factory Controlled:** No field chemistry resulting in product variation.
- **Individually Formulated Mixes:** Specific formulas for the restoration of limestone, sandstone, historic brick, Type O, Type N, and a universal pointing mortar. All formulations can be adjusted for specific requirements.
- **Custom Colored Upon Request:** Closely matches existing masonry. Choose from Standard or Custom Colors.
- **Single-Component:** Mixes with water only, improving quality control and consistency of application.
- **Contains No Latex or Acrylic Bonding Agents:** It protects the substrate by allowing salts, water vapor, and liquid water to reach the surface, preventing failure due to salt expansion or freeze/thaw cycles.

Application Procedures

Surface Preparation

Joints to receive M110 must be sound and free of all dust, dirt, grease, laitance and/or any other coating or foreign substance which may prevent proper adhesion. Remove all loose and deteriorated mortar. Rinse joints with clean water.

Exposed Ferrous Metals

In the event that ferrous metal reinforcement (re-bar, threaded rod, etc.) is exposed within the repair area or repairs are adjacent to ferrous metal jambs, lintels, anchoring systems etc., the Corotech V160 Surface Tolerant Epoxy Mastic must be applied to all properly prepared ferrous metal surfaces before repairs are made. Refer to the Technical Data Sheets within Cathedral Stone's Product line for proper preparation and use of the Corotech V160 Surface Tolerant Epoxy Mastic.

Mixing

The mixing ratio is approximately 4 to 5 parts powder to 1 part water by volume, **depending on the M110 formulation, temperature and humidity.** More water may be required as ambient temperature rises. The mixing may be done by hand, stirring until the mortar is thoroughly mixed. For best results, add the powder to the water slowly. The working time will vary, depending upon wind, temperature, and humidity. Using excessive water in the mix may affect the color of the repair.

Pointing

Moisten the joint using clean water. **If the surface is allowed to dry out before applying M110, this step must be repeated. This is very important.** The mortar should be applied one lift using appropriate pointing tools. Place the mortar into the joint so that it matches the original joint profile.

Curing

Periodically mist M110 joints using clean water for at least a 72-hour period. The timing for initial water misting will vary with ambient conditions. Hot, dry conditions may require misting within 30 to 60 minutes. Cooler, damp conditions may require waiting several hours before beginning the curing process. Mist several times a day. Should access to the repairs be impossible over a period of time, plastic may be used to cover them

Cathedral Stone® Products, Inc. 7266 Park Circle Drive, Hanover Maryland 21076
(800) 684-0901 FAX: (410) 782-9155 WEBSITE: www.cathedralstone.com

temporarily. The application of plastic, however, does not remove the need for normal curing techniques**. Do not use water or solvents immediately after application to wash off excess mortar.**

Clean Up

Clean up should be done by brushing with a clean dry brush across the joint. If any mortar residue remains on the surface of the masonry unit, cleaning with clean water and a sponge is sufficient if done before the mortar dries. Cleaning with acids and/or power washers should be not necessary if good pointing practices are followed. If acid cleaning is required test samples should be applied prior to start of cleaning to ensure no damage will result. **Neutralization of all acids must be ensured.**

Safety Requirements

It is recommended that safety goggles, gloves, and a dust mask equipped with P-2 filters (or equivalent) be worn for protection while mixing.

Limitations

- Do not apply Jahn Mortar to a frozen or exceedingly hot substrate. The applied mortar must be protected from extreme heat, freezing, excessive wind, direct sunlight, and rain. Ambient temperature range should be 40° F to 90° F with low to average humidity.
- Do not add bonding agents to Jahn Mortar or use them as surface preparation materials.
- Minimum thickness of mortar application is ½".

Packaging and Coverage

A 5-gallon plastic pail contains approx. 44 lb. of material. This will cover 288 linear feet (¼" joint at 1" depth).

Storage And Shelf Life

Store material in a dry area away from direct sunlight. Ambient storage conditions should be in the range of 40°F to 90° F with low to average humidity. Average shelf life is 10 years in original, unopened packaging.

Warning

Not for internal consumption. Keep out of reach of children and animals. Consult Material Safety Data Sheet (MSDS) for specific information.

Technical Data

Jahn M110 JL – Joint Limestone

Compressive strength	2100 - 2400 psi
Tensile bending strength	478 psi
Modulus of elasticity	---
Absorption (%)	12

Jahn M110 JS – Joint Sandstone

Compressive strength	1100 - 1500 psi
Tensile bending strength	536 psi
Modulus of elasticity	---
Absorption (%)	14

Jahn M110 JB – Historic Brick

Compressive strength	2400 – 2700 psi
Tensile bending strength	522 psi
Modulus of elasticity	---
Absorption (%)	15

Jahn M110 JU - Universal

Compressive strength	1400 – 1700 psi
Tensile bending strength	449 psi
Modulus of elasticity	---
Absorption (%)	13

Jahn M110 JN - Type N

Compressive strength	783 psi
Tensile bending strength	232 psi
Modulus of elasticity	155 ksi
Absorption (%)	10 %

Jahn M110 JO - Type O

Compressive strength	370 psi
Tensile bending strength	116 psi
Modulus of elasticity	105 ksi
Absorption (%)	12.5 %

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

03/2014

STIX®

WATERBORNE BONDING PRIMER

SXA-110

Features

- Strongly Bonds to Glossy Surfaces
- Unparalleled Adhesion to the Most Challenging Surfaces.
- Excellent Holdout
- Soap & Water Clean-up
- Cures as low as 35 °F (1.7 °C)

General Description

Stix® Waterborne Bonding Primer is a premium quality, waterborne, acrylic urethane primer/sealer with unparalleled adhesion to the most challenging surfaces, including PVC, Vinyl, Plastic, Glass, Tile, Glazed Block, Glossy Paints, Pre-Coated Siding, Fiberglass, and Galvanized Metals. Stix is also ideal for use on plaster, drywall, wood, and non-ferrous metals, where a low ambient or surface temperature would present a problem for conventional primers. Offers an extremely hard film when cured. Use it on interior and exterior surfaces and topcoat with almost any type of coating including Alkyd, Acrylic Latex, Urethane, Epoxy, and Lacquer Finishes. Stix levels to a smooth surface and cleans up with soap and water.

Recommended For

Interior and Exterior surfaces. Drywall, Plaster, Ceiling, Acoustical Tile, Wood Trim & Doors, Formica, Ceramic Tiles, Glossy Surfaces, PVC Plastic, Masonry Walls, Wood, Trim, Shutters, Masonry, Stucco, Concrete, Cement Block, Galvanized Metal, Aluminum, etc.

Limitations

- Apply when air and surface temperatures are above 35 °F
- Do not apply in direct sunlight or on a hot surface. Avoid rain, moisture or high humidity for the first 24 hours of curing
- Not intended for immersion service or continuous water contact. Not for below grade applications
- Not recommended for use over polyethylene or polypropylene. Stix® must be top coated for exterior use
- Not recommended over Kynar® (and similar finishes) unless tested and approved by the buyer
- Not recommended as a whole house exterior primer over wood

Product Information

Colors — Standard:

SXA-110, White

— Tint Bases:

N/A

Can be Tinted With a Maximum of 2 oz. Universal Colorant per gallon

— Special Colors:

Contact your dealer.

Certifications & Qualifications:

VOC compliant in all regulated areas

All products supported by this data sheet contain a maximum of 100 grams per liter VOC/VOS (.83 lbs. /gal.) excluding water & exempt solvents.

Qualifies for LEED® v4 Credit

Qualifies for CHPS low emitting credit
(Collaborative for High Performance Schools)

CDPH v1 Emission Certified

Technical Assistance:

Available through your local authorized independent Insl-x dealer. For the location of the dealer nearest you, call 1-866-708-9180 or see www.insl-x.com

Technical Data◊		White
Vehicle Type		Urethane Modified Acrylic
Pigment Type		Titanium Dioxide
Volume Solids		40.0 ± 1.0%
Coverage per Gallon at Recommended Film Thickness		300 – 400 Sq. Ft.
Recommended Film Thickness	– Wet	4.0 - 5.5 mils
	– Dry	1.6 - 2.2 mils
Depending on surface texture and porosity. Be sure to estimate the right amount of paint for the job. This will ensure color uniformity and minimize the disposal of excess paint.		
Dry Time @ 77 °F (25 °C) @ 50% RH	– Tack Free	30 Minutes
	– To Recoat	3 – 4 Hours
	– Full Cure	3 – 4 Days
High humidity and cool temperatures will result in longer dry, recoat and service times.		
Dries By		Coalescence
Viscosity		70 – 80 KU
Flash Point		200 °F or greater (TT-P-141, Method 4293)
Gloss / Sheen		Flat
Surface Temperature at Application	– Min.	35 °F
	– Max.	90 °F
Thin With		Do not Thin
Clean Up Thinner		Warm, Soapy Water
Weight Per Gallon		11.0 lbs.
Storage Temperature	– Min.	45 °F
	– Max.	95 °F

Volatile Organic Compounds (VOC)

87.6 grams/liter .73 lbs./gallon

◊ Reported values are for White. Contact dealer for values of other bases or colors.

Surface Preparation

General – All surface areas to be painted should be clean, dry, sound and free of all dirt, grease, oils, waxes, mildew and any other surface contaminants that can cause paint failure. Dirt and chalk should be thoroughly removed by scrubbing with warm soapy water. Surface wax should be removed with a commercial wax stripper. Grease residue should be removed with a grease and oil emulsifier. Remove all loose chipping, cracking and peeling from previously painted surfaces by hand scraping, sanding, wire brushing and/or by use of power tool cleaning methods such as electric sanders, grinders, etc. Remove any loose rust, mill scale, rust deposits from metal surfaces by hand or power tool cleaning according to SSPC Standards. Repair/replace any seriously damaged and/or delaminated surface areas. Use over most glossy surfaces without sanding.

Mildew – Surface areas affected by mildew should be thoroughly hand scrubbed with a soft to medium bristle scrub brush and a solution of one cup Tri-Sodium Phosphate or a nonammoniated detergent cleaner mixed with one-part household bleach* and three parts warm water, per gallon solution, Allow solution to stand on the affected surface areas for approximately 10 – 20 minutes, then rinse thoroughly with clean water and allow 24 – 48 hours to dry.

*Follow bleach manufacturer's instructions for safe handling and use of bleach solution.

SPECIAL NOTE ON SURFACE PREPARATION:

Glossy Surfaces – Although Stix® is formulated to be applied to hard to coat surfaces without the need for sanding, it is recommended that proper surface preparation still be completed to enhance adhesion properties. Surfaces such as Formica, ceramic tile and glossy painted surfaces should be properly deglossed. Once applied, allow Stix® to cure for approximately 3 to 4 days to achieve maximum resistance to scrape off. However, Stix® may be topcoated with a quality latex or oil-based finish within 3 to 4 hours, depending on overall drying conditions.

WARNING! If you scrape, sand or remove old paint, you may release lead dust. **LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a NIOSH-**approved respirator to control lead exposure. Carefully clean up with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead

Application

Stix® may be applied by brush, roller, pad applicator, or airless spray. Use a high quality nylon brush or a ¼" – ½" synthetic nap roller cover. Do not thin. Do not apply when surface, air, or product temperature is below 35 °F. Do not paint in direct sun or on a hot surface. If possible, plan your painting to avoid rain, moisture, or high humidity for the first 24 hours of curing. Stop application a minimum of two hours before rain or dew is expected. Do not paint if surface temperature is within 5 °F of the dew point.

When top coating with two component paints, allow 24 hours dry time before painting. Always test questionable substrates such as plastics, composites, Kynars, and polyester surfaces by applying a small area for adhesion and top-coat compatibility before proceeding with the entire job.

Airless Spray: Tip range between .013 and .017. Total fluid output pressure at the tip should not be less than 2200 PSI. Preferred pressure is 2500 PSI.

Clean Up

Clean brushes, rollers and other equipment with warm, soapy water immediately after use. If dry, clean with lacquer thinner.

USE COMPLETELY OR DISPOSE OF PROPERLY. Dry empty containers may be recycled in a can recycling program. **Local disposal requirements vary; consult your sanitation department or state-designated environmental agency on disposal options.**

Environmental Health & Safety Information

WARNING!

Cancer Hazard. Contains Crystalline Silica that can cause cancer when in respirable form (spray mist or sanding dust).

Possible birth defect hazard. Contains, 2,2,4-trimethyl-1,3-pentanediol diisobutyrate, which may cause birth defects based on animal data.

Use only with adequate ventilation. Do not breathe vapors, spray mist or sanding dust. Ensure fresh air entry during application and drying. Avoid contact with eyes and prolonged or repeated contact with skin. Avoid exposure to dust and spray mist by wearing a NIOSH approved respirator during application, sanding and clean up. Follow respirator manufacturer's directions for respirator use. Close container after each use. Wash thoroughly after handling.

WARNING Cancer and Reproductive Harm– www.P65warnings.ca.gov

FIRST AID: In case of eye contact, flush immediately with plenty of water for at least 15 minutes; for skin, wash thoroughly with soap and water. If symptoms persist, seek medical attention. If you experience difficulty breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical attention immediately.

IN CASE OF SPILL – Absorb with inert material and dispose of as specified under "Clean Up".

KEEP OUT OF REACH OF CHILDREN
PROTECT FROM FREEZING

Refer to Safety Data Sheet for additional health and safety information.

Manufactured by Benjamin Moore & Co. 101 Paragon Drive, Montvale, NJ 07645 Tel: 866-708-9180 Fax: 888-248-2143 www.Insl-x.com M72 SXA-110 US 050119
All trademarks belong to their respective owners. All other marks are the property of their respective owner.
© 2017, 2019 Benjamin Moore & Co. All rights reserved

AURA®

WATERBORNE EXTERIOR PAINT LOW LUSTRE FINISH 634

Features

- Extreme hide - it covers dark colors and imperfections in less coats
- Low temperature application
- Superior adhesion
- Delivers a high-build paint film for excellent durability
- Color Lock® technology and extreme UV resistance
- Soap and water clean up Fast dry and re-coat times
- Resistant to fading, cracking, peeling, chalking blistering, dirt pick-up
- Provides a mildew resistant film
- Self priming in most situations
- Vapor permeable

General Description

A super premium quality, 100% acrylic exterior low lustre latex finish. This product combines the advantages of our latest resin technology and our proprietary Gennex® colorant system to provide the ultimate exterior coating. This high solids formula is suitable for a variety of exterior surfaces and can be applied as low as 40 °F (4.4 °C). Aura® Waterborne Exterior Low Lustre Finish is suitable for wind driven rain when applied according to recommendations.

Recommended For

Recommended for exterior use on wood, fiber cement board, hard board, vinyl and aluminum siding, shakes, unglazed brick, concrete, stucco, cinder block and primed metal.

Limitations

- Do not apply when air and surface temperatures are below 40 °F (4.4 °C)
- For Wind-Driven Rain over smooth, and stable masonry only (non-elastomeric use). Follow primer/finish instructions.

Product Information

Colors — Standard:

White (01)

— Tint Bases:

Benjamin Moore® Gennex® bases 1X, 2X, 3X & 4X

— Special Colors:

Contact your Benjamin Moore representative.

Certifications & Qualifications:

VOC compliant in all regulated areas

Master Painters Institute MPI # 15, 315

The following results are based on independent, third-party laboratory testing:
-Passes Wind Driven Rain Test (3.0 oz)
ASTM D6904
1 coat Ultra Spec® Acrylic Masonry Sealer 608 @ 4 mils WFT
1 or 2 coats Aura® Exterior Paint Low Lustre Finish 634 each @ 2.8 DFT
-Passes Alkali Resistance Test (no effect)
ASTM D1308
1 coat Ultra Spec® Acrylic Masonry Sealer 608 @ 4 mils WFT
1 or 2 coats Aura® Exterior Paint Low Lustre Finish 634 @ 2.8 DFT
-Passes Conical Mandrel Flexibility Test (no cracking)
ASTM D522
1 coat Aura® Exterior Paint Low Lustre Finish 634 @ 2.8 DFT
-Passes Mildew, Mold Resistance Test (no growth)
ASTM D3273/D3274
1 coat Aura® Exterior Paint Low Lustre Finish 634 @ 2.8 DFT
-ASTM D1653 – Water Vapor Transmission Properties
Topcoat 63401, one-coat at 250 ft²/gal (2.8-mils DFT)---25.7 perms
-ASTM D2370
Tensile Properties

Peak Tensile Strength, psi	255
Elongation at Break, percent	120

Technical Assistance

Available through your local authorized independent Benjamin Moore retailer. For the location of the retailer nearest you, call 1-866-708-9180 or visit www.benjaminmoore.com

Technical Data		Pastel Base
Vehicle Type		100% Acrylic Latex
Pigment Type		Titanium Dioxide
Volume Solids		44%
Coverage per Gallon at Recommended Film Thickness		250 – 350 Sq. Ft.
Recommended Film Thickness	– Wet	4.6 – 6.4 mils
	– Dry	2.0 – 2.8 mils
Depending on surface texture and porosity. Be sure to estimate the right amount of paint for the job. This will ensure color uniformity and minimize the disposal of excess paint		
Dry Time @ 77°F (25°C) @ 50% RH	– To Touch	1 Hour
	– To Recoat	4 Hours
Painted surfaces can be washed after two weeks. High humidity and cool temperatures will result in longer dry, recoat and service times		
Dries By		Evaporation, Coalescence
Viscosity		102 ± 2 KU
Flash Point		None
Gloss / Sheen		Low Lustre (9-14 @ 60°)
Surface Temperature at Application	– Min.	40 °F (4.4 °C)
	– Max	100 °F (37.7 °C)
Thin With		See Chart
Clean Up Thinner		Clean Water
Weight Per Gallon		11.6 lbs
Storage Temperature	– Min.	40 °F (4.4 °C)
	– Max	90 °F (32 °C)

Volatile Organic Compounds (VOC)

47 Grams / Liter 0.39 LBS / Gallon

◊Reported values are for Pastel Base. Contact Benjamin Moore for values of other bases or colors.

Surface Preparation

Surfaces must be clean and free of grease, wax, and mildew. Remove any chalk and loose or scaling paint. If previously coated with cement-base waterproofing paints, clean by sandblasting. Glossy surfaces must be dulled. Un-weathered areas such as eaves, ceilings, and overhangs should be washed with a detergent solution and/or rinsed with a strong stream of water from a garden hose to remove contaminants that can interfere with proper adhesion. Stains from mildew must be removed by cleaning with Benjamin Moore® Clean (N318) prior to coating the surface. **Caution:** Refer to the (N318) Clean technical data and material safety data sheets for instructions on its proper use and handling. For metal surfaces, remove rust. Wipe down with paint thinner to remove surface oils.

Difficult Substrates: Benjamin Moore offers a number of specialty primers for use over difficult substrates such as bleeding woods, grease stains, crayon markings, hard glossy surfaces, or other substrates where paint adhesion or stain suppression is a particular problem. Your Benjamin Moore® retailer can recommend the right problem-solving primer for your special needs.

WARNING! If you scrape, sand or remove old paint, you may release lead dust. **LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE.** Wear a NIOSH-approved respirator to control lead exposure. Carefully clean up with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead.

Primer/Finish Systems

Aura® Waterborne Exterior Low Lustre Finish is self priming on most properly prepared substrates, including: wood, fiber cement board, hardboard, nonferrous metals and cured masonry surfaces. On bare substrates two coats are required; previously painted surfaces can be finished with 1 or 2 coats. **Special Note**: For certain deep colors, Aura® Color Foundation must be used to achieve maximum hide and the desired topcoat color. Consult your retailer.

Wood and engineered wood products:
Primer: No primer needed
Finish: 2 coats Aura® Waterborne Exterior Low Lustre Finish (634)

Bleeding Type Woods, (Redwood and Cedar):
Primer: Fresh Start® Exterior Wood Primer (094) or 1-2 coats of Fresh Start® High-Hiding All Purpose Primer (046) may be used
Finish: 2 coats Aura® Waterborne Exterior Low Lustre Finish (634)

Hardboard Siding, Bare or Factory Primed:
Primer: No primer needed
Finish: 1 or 2 coats Aura® Waterborne Exterior Low Lustre Finish (634)

Vinyl Siding & Vinyl Composite
Note: **Do not paint vinyl siding or trim darker than the original color**
Primer: Fresh Start® High-Hiding All Purpose Primer (046)
Finish: 1 or 2 coats Aura® Waterborne Exterior Low Lustre Finish (634)

Rough or Pitted Masonry: Poured and precast concrete and block construction should be allowed to sure for at least 30 days. New masonry only needs to be cured for 7 days when using Ultra Spec® Masonry Interior / Exterior 100% Acrylic Masonry Sealer (608). All surfaces must be thoroughly brushed with stiff fiber bristles to remove loose particles.
Primer: Ultra Spec® Masonry Interior/Exterior Hi-Build Block Filler (571)
Finish: 2 coats Aura® Waterborne Exterior Low Lustre Finish (634)

Poured or Pre-cast Concrete and Fiber Cement Siding:
Primer: No primer needed
Finish: 1 or 2 coats Aura® Waterborne Exterior Low Lustre Finish (634)

Masonry, Weathered and Unpainted, Soft with Age (Including Unglazed Brick): Remove any loose, sandy masonry by dry brushing.
Primer: Ultra Spec® Masonry Interior / Exterior 100% Acrylic Masonry Sealer (608)
Finish: 1 or 2 coats Aura® Waterborne Exterior Low Lustre Finish (634)

Ferrous Metal (Steel and Iron):
Primer: Ultra Spec® HP Acrylic Metal Primer (HP04) or Super Spec HP® Alkyd Metal Primer (P06)
Finish: 1 or 2 coats Aura® Waterborne Exterior Low Lustre Finish (634)

Non-Ferrous Metal (Galvanized & Aluminum): All new metal surfaces must be thoroughly cleaned with Corotech® Oil & Grease Emulsifier (V600) to remove contaminants. New shiny non-ferrous metal surfaces that will be subject to abrasion should be dulled with very fine sandpaper or a synthetic steel wool pad to promote adhesion
Primer: Not required on properly prepared surfaces
Finish: 1 or 2 coats Aura® Waterborne Exterior Low Lustre Finish (634)

Repaint, All Substrates: Prime bare areas with the primer recommended for the substrate above.

Application

Use the same application techniques as you would for any low-VOC compliant coating. Use a Benjamin Moore® Premium roller or Premium extra firm nylon polyester brush for best results. Aura® paint features excellent flow and leveling; it's not necessary to over brush to smooth out brush marks. Aura® dries faster than other acrylic paints; avoid lap marks by not painting in direct sunlight and by coating sections of the surface either down or across the structure to natural breaks, maintaining a wet edge. If your edge begins to dry or you see that you missed a spot and the paint is already setting up, allow it to dry completely before touching up that area.
This product can also be sprayed; refer to the chart below.

Thinning/Cleanup

Conditioning with Benjamin Moore® 518 Extender may be necessary under certain conditions to adjust open time or spray characteristics. The chart below is for general guidance

	Mild conditions	**Severe conditions**
	Humid (RH> 50%) with no direct sunlight & with little to no wind	Dry (RH<50%), in direct sunlight, or windy conditions
Brush: Nylon / Polyester	No thinning necessary	Add **518 Extender** or **water:** Max of 8 fl. oz. to a gallon of paint **Never add other paints or solvents.**
Roller: Aura® Roller Cover		
Spray: Airless Pressure: 2000 -3000 psi Tip: 0.015-0.017		

* Under normal application conditions AURA® may be sprayed to achieve a high build one coat system over properly prepared substrates that are in good condition. Refer to Surface Preparation / Priming Sections for appropriate priming and preparation information.
High Build System Coverage: 160 – 265 sq. ft. 6-10 mils wet film thickness.

Cleanup: Wash painting tools in warm soapy water immediately after use. Spray equipment should be given a final rinse with mineral spirits to prevent rusting.
USE COMPLETELY OR DISPOSE OF PROPERLY. Dry, empty containers may be recycled in a can recycling program. **Local disposal requirements vary; consult your sanitation department or state-designated environmental agency on disposal options.**

Environmental Health & Safety Information

Use only with adequate ventilation. Do not breathe spray mist or sanding dust. Ensure fresh air entry during application and drying. Avoid contact with eyes and prolonged or repeated contact with skin. Avoid exposure to dust and spray mist by wearing a NIOSH approved respirator during application, sanding and clean up. Follow respirator manufacturer's directions for respirator use. Close container after each use. Wash thoroughly after handling.

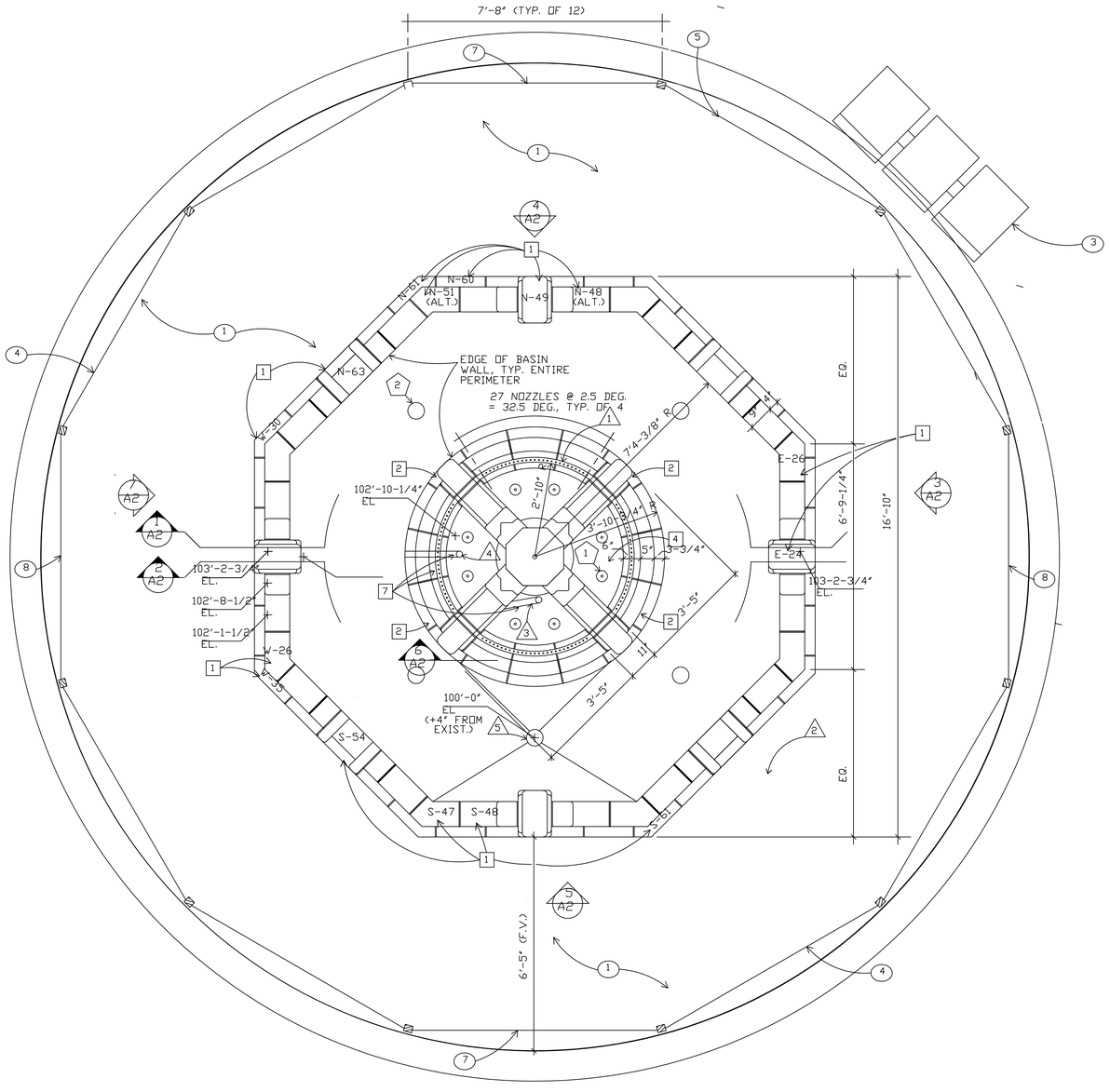
WARNING Cancer and Reproductive Harm– www.P65warnings.ca.gov
FIRST AID: In case of eye contact, flush immediately with plenty of water for at least 15 minutes; for skin, wash thoroughly with soap and water. If symptoms persist, seek medical attention. If you experience difficulty breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical attention immediately.
IN CASE OF SPILL – Absorb with inert material and dispose of as specified under **Thinning/Cleanup.**

KEEP OUT OF REACH OF CHILDREN
PROTECT FROM FREEZING
Refer to Safety Data Sheet for additional health and safety information.

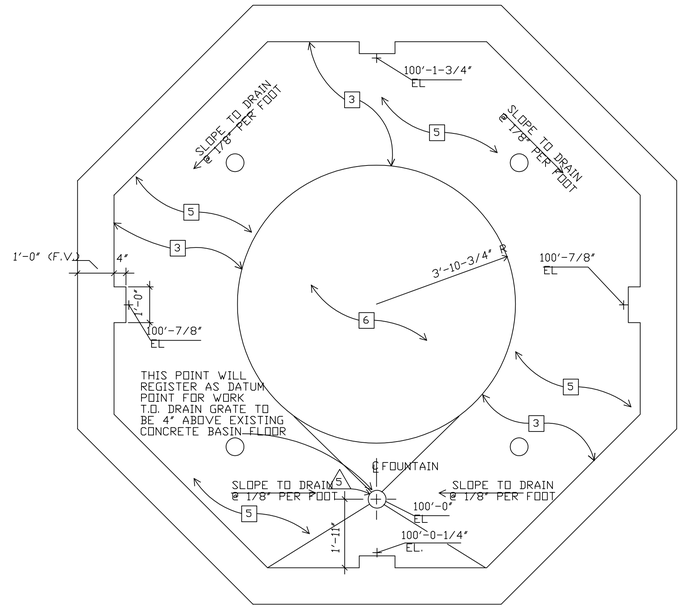
Benjamin Moore & Co., 101 Paragon Drive, Montvale, NJ 07645 Tel: (201) 573-9600 Fax: (201) 573-9046 www.benjaminmoore.com M72 634 US 080218
Aura, Benjamin Moore, Color Lock, Fresh Start, Gennex, Super Spec, Ultra Spec and the triangle "M" symbol are registered trademarks, licensed to Benjamin Moore & Co. © 2009, 2018 Benjamin Moore & Co. All rights reserved

DRAWINGS FOR REFERENCE ONLY!

DRAWINGS FOR REFERENCE ONLY!



1 A1 LION'S CLUB FOUNTAIN PLAN



2 A1 FOUNDATION PLAN

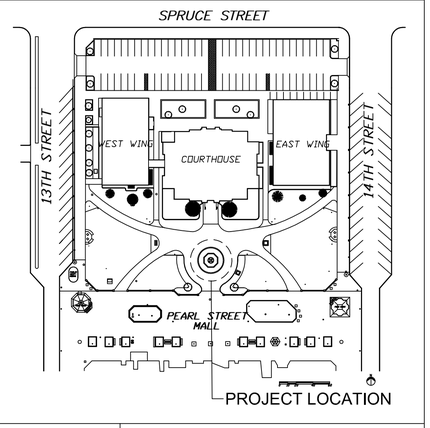
ELECTRICAL NOTES:

1. EXISTING BRASS MOUNTS FOR UPPER BASIN LIGHTING TO REMAIN, TYP. OF 8
2. NEW RECESSED FOUNTAIN UP LIGHTS (BY COUNTY ELECTRICAL CREW), TYP. OF 4.

PLUMBING NOTES:

1. NEW 1-1/2" BRASS MANIFOLD, REFER TO MECHANICAL FOR SPECIFICATIONS. NOZZLES TO BE CENTERED ON TOP OF MANIFOLD AND PLACED AS NOTED.
2. APPROXIMATE LOCATION OF PLUMBING SUPPLY AND RETURN LINE TERMINATION. COUNTY TO REMOVE PLANTING BED FILL DIRT AND EXPOSE LINES.
3. EXISTING COPPER WATER SUPPLY LINE. PLUMBING CONTRACTOR TO EXAMINE CONDITION OF PIPING DURING DISASSEMBLY OF FOUNTAIN SUBSTRUCTURE TO DETERMINE IF IT WILL BE REUSED OR REPLACED.
4. EXISTING COPPER DRAIN LINE TO REMAIN. NEW STRAINER INSERT PIECE TO BE FABRICATED TO RAISE ELEVATION OF WATER IN UPPER BASIN TO 10" MINIMUM.
5. NEW LOWER BASIN FLOOR DRAIN

LOCATION PLAN



GENERAL NOTES:

1. DIMENSIONS SHOWN ARE FOR ESTIMATING AND PLANNING PURPOSES ONLY. THE MANUFACTURER/FABRICATOR IS RESPONSIBLE FOR VERIFICATION/ FIELD MEASUREMENT OF EXISTING CONDITIONS.
2. EXISTING CONSTRUCTION, FINISHES, LAWN AREAS, AND PLANTING BEDS ARE TO BE PROTECTED DURING PROJECT.

BOULDER COUNTY
DESIGN & CONSTRUCTION

P. O. BOX 471
BOULDER, CO. 80306
PHONE: 441-3965

LION'S CLUB FOUNTAIN

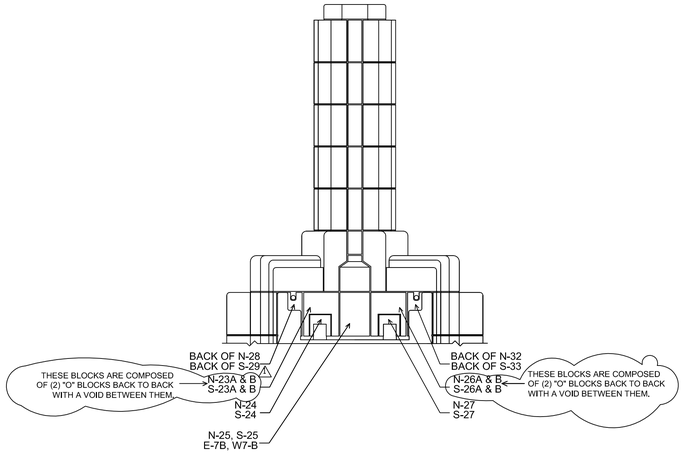
FOUNTAIN PLAN

JOB NO.	DATE
041-GR1-GR69	6/20/97
DRAWN BY: M. BOULETTE	REVISIONS
CHECKED BY: MJB	

A1

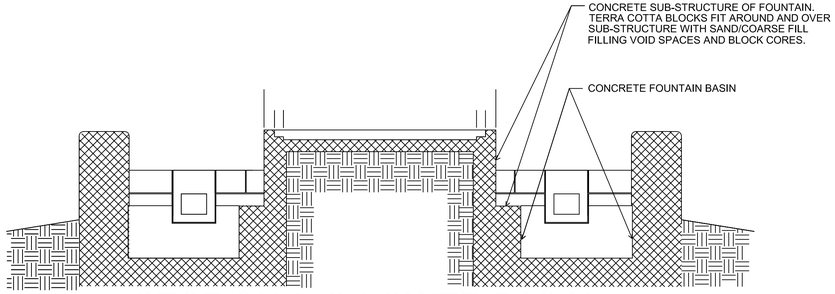
DRAWINGS FOR REFERENCE ONLY!

DRAWINGS FOR REFERENCE ONLY!



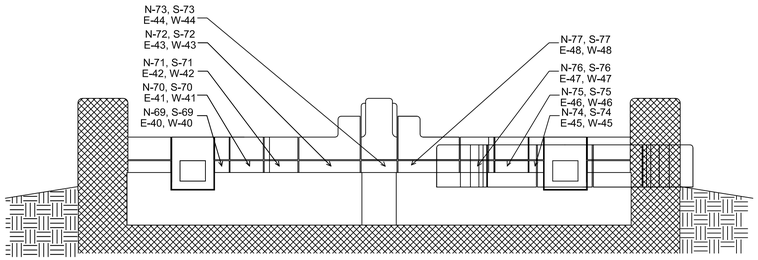
SECTION @ UPPER BASIN (TYP.)

6 / A2 SCALE: 1/2" = 1'-0"



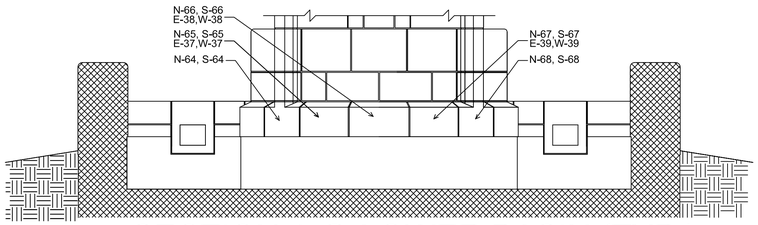
SECTION 3 @ LOWER BASIN

2 / A2



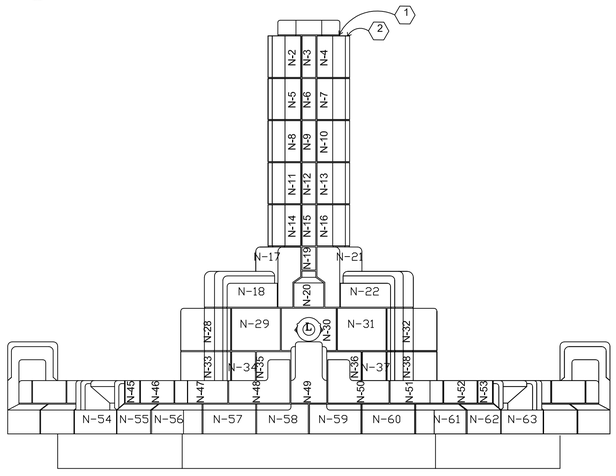
SECTION 2 @ LOWER BASIN (TYP.)

1 / A2 SCALE: 1/2" = 1'-0"



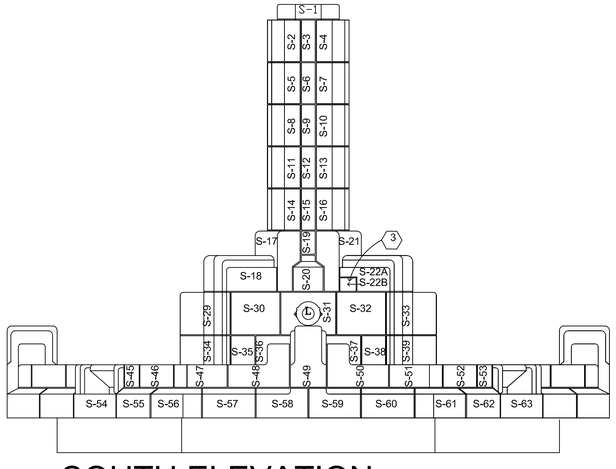
SECTION 1 @ LOWER BASIN (TYP.)

2 / A2 SCALE: 1/2" = 1'-0"



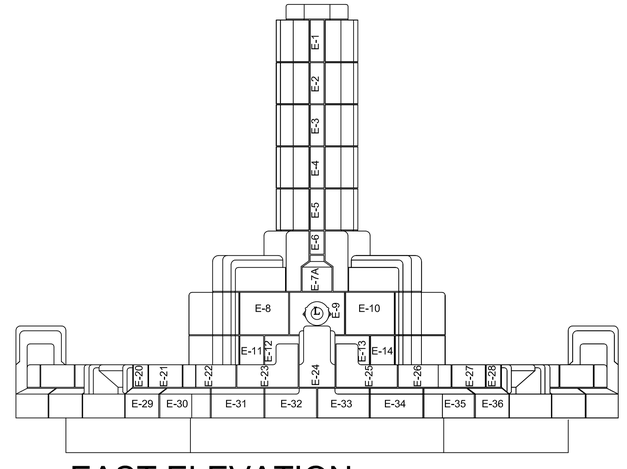
NORTH ELEVATION

4 / A2 SCALE: 1/2" = 1'-0"



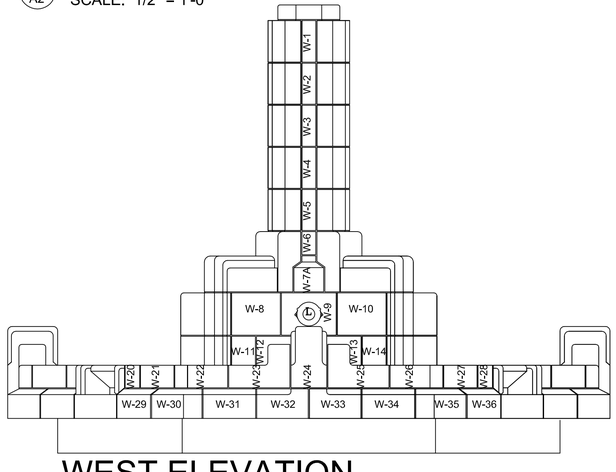
SOUTH ELEVATION

5 / A2 SCALE: 1/2" = 1'-0"



EAST ELEVATION

3 / A2 SCALE: 1/2" = 1'-0"



WEST ELEVATION

7 / A2 SCALE: 1/2" = 1'-0"

BOULDER COUNTY
DESIGN & CONSTRUCTION

P. O. BOX 471
BOULDER, CO. 80306
PHONE: 441-3965

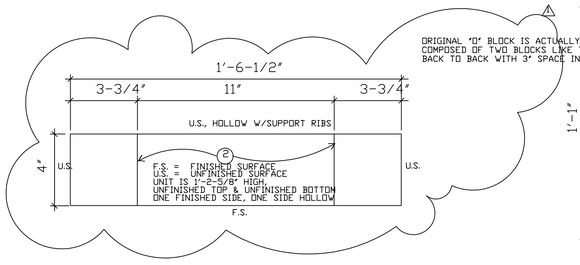
LION'S CLUB FOUNTAIN

ELEVATIONS/SECTIONS

JOB NO.	DATE
041-GR1-GR69	6/20/97
DRAWN BY: M. BOULETTE	REVISIONS: ⚠ REVISED 10/22/97 DRAWING LAYOUT AND CHANGES MADE TO AREAS INDICATED ⚠ REVISED 12/2/97
CHECKED BY: MJB	

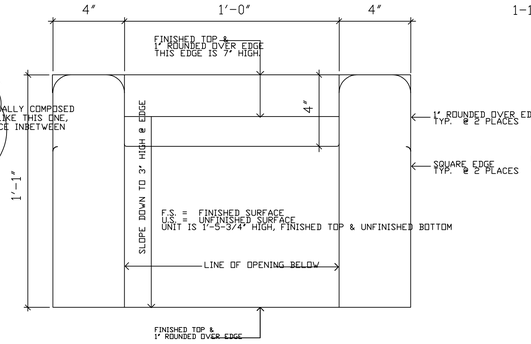
A2

DRAWINGS FOR REFERENCE ONLY!



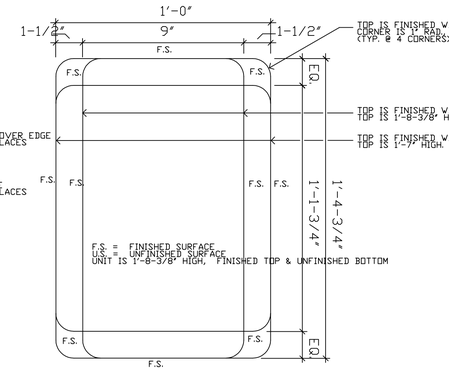
BLOCK STYLE: O

SCALE: 3" = 1'-0"



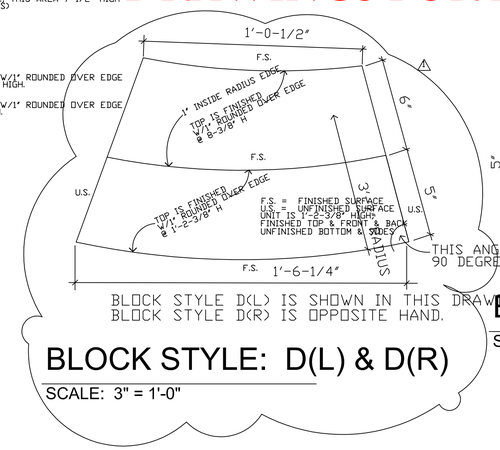
BLOCK STYLE: K

SCALE: 3" = 1'-0"



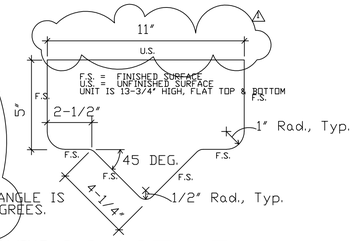
BLOCK STYLE: G

SCALE: 3" = 1'-0"



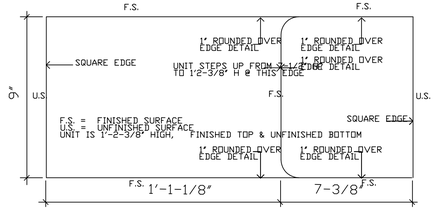
BLOCK STYLE: D(L) & D(R)

SCALE: 3" = 1'-0"



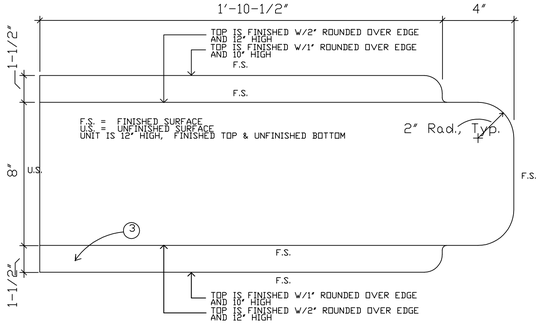
BLOCK STYLE: A

SCALE: 3" = 1'-0"



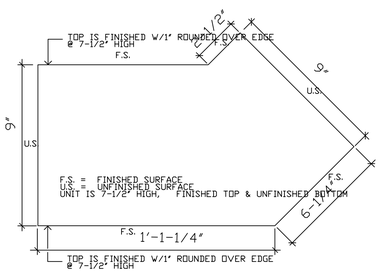
BLOCK STYLE: P

SCALE: 3" = 1'-0"



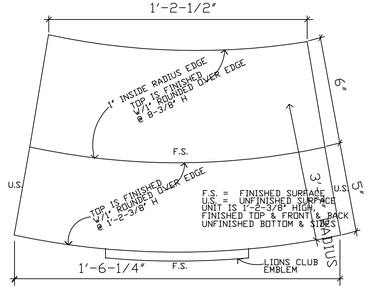
BLOCK STYLE: L

SCALE: 3" = 1'-0"



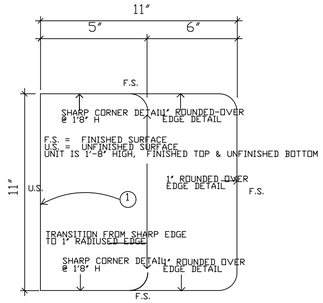
BLOCK STYLE: H

SCALE: 3" = 1'-0"



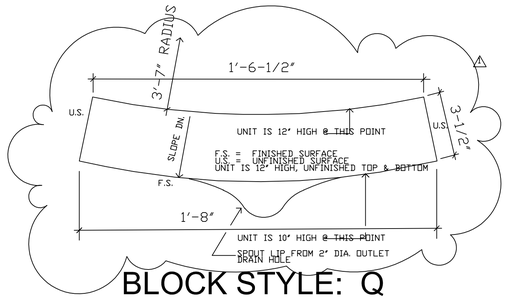
BLOCK STYLE: E

SCALE: 3" = 1'-0"



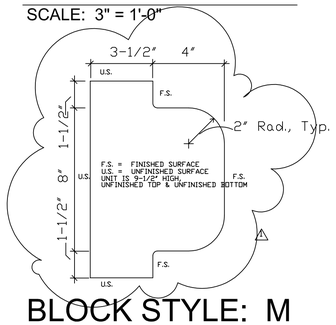
BLOCK STYLE: B

SCALE: 3" = 1'-0"



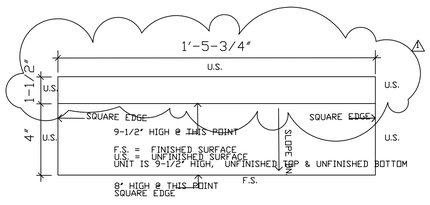
BLOCK STYLE: Q

SCALE: 3" = 1'-0"



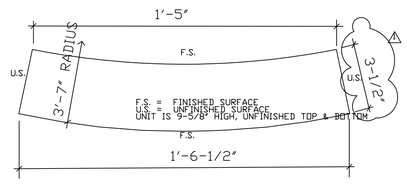
BLOCK STYLE: M

SCALE: 3" = 1'-0"



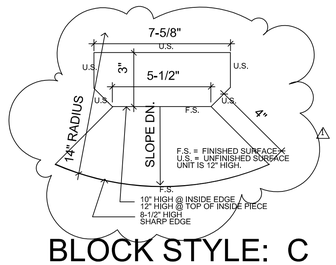
BLOCK STYLE: I

SCALE: 3" = 1'-0"



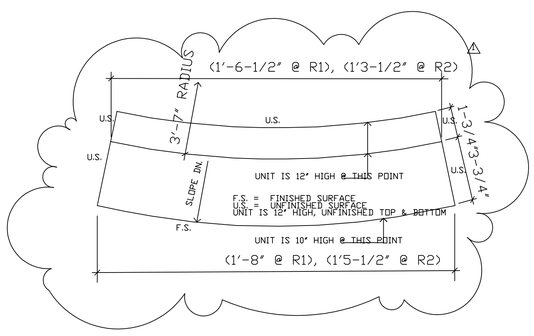
BLOCK STYLE: F

SCALE: 3" = 1'-0"



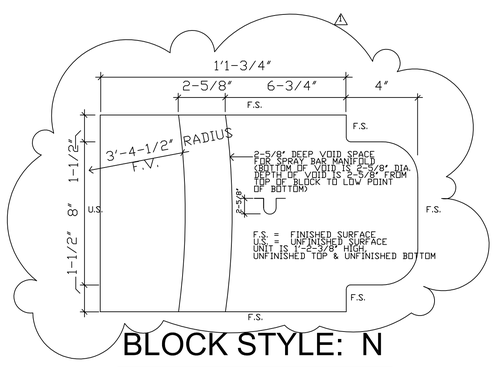
BLOCK STYLE: C

SCALE: 3" = 1'-0"



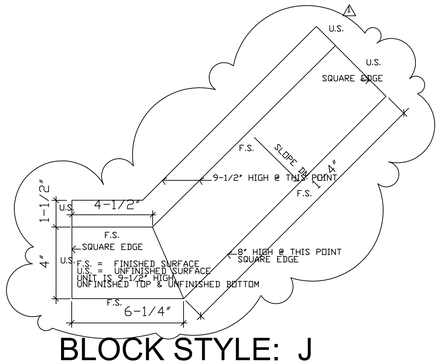
BLOCK STYLE: R1 &2

SCALE: 3" = 1'-0"



BLOCK STYLE: N

SCALE: 3" = 1'-0"



BLOCK STYLE: J

SCALE: 3" = 1'-0"

TERRA COTTA NOTES:

1. DASHED PORTION OF BLOCK IS CURRENTLY HIDDEN. DISASSEMBLY IS REQUIRED TO DETERMINE EXACT DIMENSIONS. ACTUAL CONFIGURATION/ DIMENSIONS MAY DIFFER FROM THAT WHICH IS SHOWN.
2. UNIT HAS 11" W x 7-1/4" VOID (UNIT IS U-SHAPED) BELOW. ANOTHER BLOCK FITS IN THE VOID. SEE 6/A2
3. BLOCK 22A IS A BLOCK STYLE L WITH A 7-1/2"W x 4-3/4"H CUTOUT AT BOTTOM SIDE @ UNFINISHED END FOR ACCESS.

GENERAL NOTES:

3. FINISHED SURFACE REFERS TO GLAZED SURFACE. UNFINISHED REFERS TO UNGLAZED SURFACE NOT MEANT TO BE EXPOSED IN FINAL ASSEMBLY. GLAZED SURFACE ON FOUNTAIN IS OFF-WHITE FIELD TENDING TOWARDS IVORY COLOR WITH YELLOWISH SECONDARY COLOR PATCHES.

BOULDER COUNTY
DESIGN & CONSTRUCTION
P. O. BOX 471
BOULDER, CO. 80306
PHONE: 441-3965

LION'S CLUB FOUNTAIN

TERRA COTTA BLOCK STYLES

FILE: BCCFNTPC

JOB NO.	DATE
041-GR1-GR69	6/4/97
DRAWN BY	REVISIONS
M. BOULETTE	⚠ REVISED 10/14/97
CHECKED BY	
MJB	

A3

3 OF 3

DRAWINGS FOR REFERENCE ONLY!

BOULDER COUNTY SAMPLE CONTRACT

THIS CONTRACT ("Contract") is entered into by and between the County of Boulder, State of Colorado, a body corporate and politic, acting by and through its Board of County Commissioners for the benefit of the [Department] ("County") and [Supplier] ("Contractor"). County and Contractor are each a "Party," and collectively the "Parties."

In consideration of the mutual covenants contained in this Contract, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. Incorporation into Contract: The **Details Summary** is incorporated into this Contract. The **Contract Documents** are incorporated into this Contract by reference, except to the extent that the Proposal, if any is incorporated, contains any obligations placed upon County and not otherwise contained in this Contract.

2. Work to be Performed: Contractor will provide all labor and equipment and do all tasks necessary and incidental to performing the work as described in the **Details Summary** and **Contract Documents** (the "Work"). Contractor will perform the Work (a) in a good and workmanlike manner, (b) at its own cost and expense, (c) in accordance with recognized industry standards of care, skill and diligence for the type of work being performed, and (d) in strict accordance with the Contract.

3. Term of Contract: The **Contract Term** begins on the **Start Date** and expires on the **Expiration Date**, unless terminated sooner. All the Work must be performed during the **Contract Term**.

4. Payment for Work Performed: In consideration of the Work performed by Contractor, and subject to conditions contained in this Contract, County will pay an amount not to exceed the **Contract Amount** to Contractor in accordance with the **Contract Documents**.

5. Invoicing: Contractor will promptly provide a copy of its Form W-9 and invoice template to County upon request. Contractor must submit an invoice to the County by the fifteenth (15th) day of the month following completion of the Work. All invoices submitted require the following components: Contractor's name and address (submitted W-9 address must match remit address), detailed description of services, dates of services, itemization of labor and materials costs, "Bill to: Boulder County" language, payment remittance address, payer, name and address, date of invoice, unique invoice number, and total amount due. Contractor must send all completed invoices to the **Invoice Contact** in the **Details Summary**. Email delivery is preferred by the County; County may require delivery of invoices by email. Failure to submit invoices in a timely manner and in accordance with the terms of this Contract may cause a delay in payment. County may recoup any damages incurred because of Contractor's failure to submit invoices pursuant to the terms of this paragraph. County's acceptance or payment of an invoice will not constitute acceptance of any Work performed under this Contract.

6. Extra Time to Complete the Work: If Contractor cannot complete the Work by the **Expiration Date**, Contractor may request extra time to complete the Work. County, in its sole discretion, may grant Contractor additional time to complete the Work and, if so, will provide Contractor with written notice of the amount of extra time granted. County granting extra time to complete the Work will not entitle Contractor to additional compensation from County. This Contract will remain in full force and effect during any time period that Contractor is permitted to finish completing the Work.

7. Extension of Contract Term (Additional Work): Upon mutual agreement of the Parties, this Contract may be extended until the **Final End Date**. During any extended **Contract Term**, the terms of this Contract will remain in full force and effect, unless otherwise amended in writing by the Parties. Where the Contractor will provide additional services for additional compensation beyond the initial **Contract Amount**, the Parties must execute a written amendment before the then-current **Expiration Date**. If necessary, the written amendment will incorporate an updated Scope of Work and updated Fee Schedule as exhibits. Contractor must provide a current Certificate of Insurance to the County that complies with the **Insurance Requirements** of this Contract, if any, prior to any extended **Contract Term**.

8. Schedule of Work: County may designate the hours (on a daily or weekly basis) during which Contractor can perform the Work, strictly for the purposes of minimizing inconvenience to the County and interference with County operations. Contractor will otherwise set its own work schedule.

9. Indemnity: Contractor will be liable for any damages to persons or property caused by or arising out of the actions, obligations, or omissions of Contractor, its employees, agents, representatives or other persons acting under Contractor's direction or control in performing or failing to perform the Work under this Contract. Contractor will indemnify and hold harmless County, its elected and appointed officials, and its employees, agents and representatives (the "indemnified parties"), from any and all liability, claims, demands, actions, damages, losses, judgments, costs or expenses, including attorneys' fees, which may be made or brought or which may result against any of the indemnified parties as a result or on account of the actions or omissions of Contractor, its employees, agents or representatives, or other persons acting under Contractor's direction or control. This indemnification obligation will extend to claims based on Contractor's unauthorized use or disclosure of confidential information and intellectual property infringement. County will not be obligated to indemnify or defend Contractor under any circumstances. Contractor's obligations under this provision shall survive expiration or termination of this Contract.

10. Nondiscrimination: Contractor will comply with the letter and spirit of the Colorado Anti-Discrimination Act, C.R.S. § 24-34-401, et seq., as amended, and all applicable local, State and Federal laws concerning discrimination and unfair employment practices. County prohibits unlawful discrimination on the basis of race, color, religion, gender, gender identity, national origin, age 40 and over, disability, socio-economic status, sexual orientation, genetic information, or any other status protected by applicable Federal, State or local law. Contractor must require that its subcontractors, if any, similarly comply with all applicable laws concerning discrimination and unfair employment practices.

11. Information and Reports: Contractor will provide to authorized County, State, and Federal government representatives all information and reports that may be required for any purpose authorized by law. Contractor will permit access to such representatives to Contractor's facilities, books, records, accounts, and any other relevant sources of information. Where information required by a representative is in the exclusive possession of a person or entity other than Contractor, Contractor must so certify to the County and explain what efforts it has made to obtain the information.

12. Independent Contractor: Contractor is an independent contractor for all purposes in performing the Work. Contractor is not an employee of the County for any purpose, including the Federal Insurance Contribution Act, the Social Security Act, the Federal Unemployment Tax Act, the provisions of the Internal Revenue Code, the Colorado Workers' Compensation Act, the Colorado Unemployment Insurance Act, and the Public Employees Retirement Association. Accordingly, County will not withhold or pay any income tax, payroll tax, or retirement contribution of any kind on behalf of Contractor or Contractor's employees. As an independent contractor, Contractor is responsible for employing and directing such personnel and agents as it requires to perform the Work. Contractor will exercise complete authority over its personnel and agents and will be fully responsible for their actions.

13. Termination for Non-Appropriation: The other provisions of this Contract notwithstanding, the County is prohibited by law from making commitments beyond the current fiscal year. Payment to Contractor beyond the current fiscal year is contingent on the appropriation and continuing availability of funding in any subsequent year. County has reason to believe that sufficient funds will be available for the full **Contract Term**. Where, however, funds are not allocated for any fiscal period beyond the current fiscal year, County may terminate this Contract without penalty by providing seven (7) days' written notice to Contractor.

14. Termination for Breach: Either Party's failure to perform any of its material obligations under this Contract, in whole or in part or in a timely or satisfactory manner, will be a breach. The institution of proceedings under any bankruptcy, insolvency, reorganization or similar law, by or against Contractor, or the appointment of a receiver or similar officer for Contractor or any of its property, which is not vacated or fully stayed within thirty (30) days after the institution of such proceeding, will also constitute a breach. In the event of a breach, the non-breaching Party may provide written notice of the breach to the other Party. If the notified Party does not cure the breach, at its sole expense, within thirty (30) days after delivery of notice, the non-breaching Party may exercise any of its remedies provided under this Contract or at law, including immediate termination of this Contract.

15. Termination for Convenience: County may terminate this Contract, in whole or in part, for any reason, upon seven (7) days' advance written notice to Contractor.

16. Remedies for Non-Performance: If Contractor fails to perform any of its obligations under this Contract, County may, at its sole discretion, exercise one or more of the following remedies, which shall survive expiration or termination of this Contract:

a. Suspend Performance: County may require that Contractor suspend performance of all or any portion of the Work pending necessary corrective action specified by the County and without entitling Contractor to an increase in compensation or extension of the performance schedule. Contractor must promptly stop performance and incurring costs upon delivery of a notice of suspension by the County.

b. Withhold Payment Pending Corrections: County may permit Contractor to correct any rejected Work at the County 's discretion. Upon County 's request, Contractor must correct rejected work at Contractor's sole expense within the time frame established by the County. Upon completion of the corrections satisfactory to the County, County will remit payment to Contractor.

c. Deny Payment: County may deny payment for any Work that does not comply with the requirements of the Contract or that Contractor otherwise fails to provide or complete, as determined by the County in its sole discretion. Upon County request, Contractor will promptly refund any amounts prepaid by the County with respect to such non-compliant Work.

d. Removal: Upon County 's request, Contractor will remove any of its employees or agents from performance of the Work, if County, in its sole discretion, deems any such person to be incompetent, careless, unsuitable, or otherwise unacceptable.

17. Binding Arbitration Prohibited: County does not agree to binding arbitration by any extra-judicial body or person.

18. Conflicts of Interest: Contractor must not engage in any business or personal activities or practices or maintain any relationships that conflict in any way with the full performance of Contractor's obligations.

19. Notices: All notices provided under this Contract must be in writing and sent by Certified U.S. Mail (Return Receipt Requested), electronic mail, or hand-delivery to the other Party's **Contact** at the address specified in the **Details Summary**. For certified mailings, notice periods will begin to run on the day after the postmarked date of mailing. For electronic mail or hand-delivery, notice periods will begin to run on the date of delivery.

20. Statutory Requirements: This Contract is subject to all statutory requirements that are or may become applicable to counties or political subdivisions of the State of Colorado generally, including but not limited to: C.R.S. § 38-26-107, which requires withholding funds where the County receives a claim for payment from a supplier or subcontractor of Contractor upon notice of final settlement (required for public works contracts that exceed $150,000); C.R.S. § 8-17-101 et seq.; C.R.S. § 18-8-301, et seq.; and C.R.S. § 18-8-401, et seq.

21. Public Contracts for Services (C.R.S. §§ 8-17.5-101, et seq.): Contractor hereby certifies, warrants, and agrees that it does not knowingly employ or contract with an illegal alien who will perform work under this Contract and further certifies that it will confirm the employment eligibility of all employees who are newly hired for employment to perform work under this Contract by participating in the E-Verify Program established under Pub. L. 104-28 or the department verification program established under C.R.S. § 8-17.5-102(5)(c). Contractor (i) shall not knowingly employ or contract with an illegal alien to perform work under this Contract; (ii) shall not enter into a contract with a subcontractor that fails to certify to the contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Contract; (iii) has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this Contract through participation in the E-Verify program or department program; (iv) is prohibited from using either the E-Verify program or department program procedures to undertake preemployment screening of job applicants while this Contract is being performed; and (v) shall comply with any reasonable request by the department made in the course of an investigation that the Colorado Department of Labor and Employment is undertaking pursuant to the authority established in C.R.S. § 8-17.5-102(5). If Contractor obtains actual knowledge that a subcontractor performing work under this

Contract knowingly employs or contracts with an illegal alien, Contractor shall (a) notify the subcontractor and County within three (3) days that Contractor has actual knowledge that subcontractor is employing or contracting with an illegal alien; and (b) terminate the subcontract if, within three (3) days of receiving notice hereunder, subcontractor does not stop employing or contracting with the illegal alien; except that Contractor shall not terminate the contract with the subcontractor if during such three (3) days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien. Contractor's violation of this provision will constitute a material breach of this Contract, entitling the County to terminate the contract for breach. If this Contract is so terminated, Contractor shall be liable for actual and consequential damages to the County.

22. Entire Agreement/Binding Effect/Amendments: This Contract represents the complete agreement between the Parties and is fully binding upon them and their successors, heirs, and assigns, if any. This Contract terminates any prior agreements, whether written or oral in whole or in part, between the Parties relating to the Work. This Contract may be amended only by a written agreement signed by both Parties.

23. Assignment/Subcontractors: This Contract may not be assigned or subcontracted by Contractor without the prior written consent of the County. If Contractor subcontracts any of its obligations under this Contract, Contractor will remain liable to the County for those obligations and will also be responsible for subcontractor's performance under, and compliance with, this Contract.

24. Governing Law/Venue: The laws of the State of Colorado govern the construction, interpretation, performance, and enforcement of this Contract. Any claim relating to this Contract or breach thereof may only be brought exclusively in the Courts of the 20th Judicial District of the State of Colorado and the applicable Colorado Appellate Courts.

25. Breach: The failure of either Party to exercise any of its rights under this Contract will not be deemed to be a waiver of such rights or a waiver of any breach of the Contract. All remedies available to a Party in this Contract are cumulative and in addition to every other remedy provided by law.

26. Severability: If any provision of this Contract becomes inoperable for any reason but the fundamental terms and conditions continue to be legal and enforceable, then the remainder of the Contract will continue to be operative and binding on the Parties.

27. Third-Party Beneficiary: Enforcement of the terms and conditions and all rights and obligations of this Contract are reserved to the Parties. Any other person receiving services or benefits under this Contract is an incidental beneficiary only and has no rights under this Contract. Notwithstanding, where the beneficiary **Department** is led by an Elected Official, such Elected Official shall be considered a third-party beneficiary.

28. Colorado Open Records Act: County may disclose any records that are subject to public release under the Colorado Open Records Act, C.R.S. § 24-72-101, et seq.

29. Conflict of Provisions: If there is any conflict between the terms of the main body of this Contract and the terms of any of the **Contract Documents**, the terms of the main body of the Contract will control.

30. Governmental Immunity: Nothing in this Contract shall be construed in any way to be a waiver of the County's immunity protection under the Colorado Governmental Immunity Act, C.R.S. § 24-10-101, et seq., as amended.

31. Representations and Warranties: Contractor represents and warrants the following:

a. Execution of this Contract and performance thereof is within Contractor's duly authorized powers;

b. The individual executing this Contract is authorized to do so by Contractor;

c. Contractor is authorized to do business in the State of Colorado and is properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over the Work and the Contractor; and

d. Contractor and its subcontractors, if any, are financially solvent, able to pay all debts as they mature, and have sufficient working capital to complete the Work and perform all obligations under the Contract.

32. Legal Compliance: Contractor assumes full responsibility for obtaining and maintaining any permits and licenses required to perform the Work. Contractor's performance under this Contract and the Work itself will comply with all Federal, State, and local laws, regulations, ordinances and codes.

33. Litigation Reporting: Contractor is not currently involved in any action before a court or other administrative decision-making body that could affect Contractor's ability to perform the Work. Contractor will promptly notify the County if Contractor is served with a pleading or other document in connection with any such action.

34. Tax Exemption: County is exempt from payment of Federal, State, and local government taxes. Contractor shall collect no tax from the County, and the County shall not be liable to pay any taxes imposed on Contractor. County shall provide its tax exemption status information to Contractor upon request.

35. Delegation of Authority: The Parties acknowledge that the Board of County Commissioners has delegated authority to the Department Head or Elected Official that leads the beneficiary **Department** and their designees to act on behalf of the County under the terms of this Contract, including but not limited to the authority to terminate this Contract.

36. Ownership of Work Product: All work product, property, data, documentation, information or materials conceived, discovered, developed or created by Contractor pursuant to this Contract ("Work Product") will be owned exclusively by the County. To the extent possible, any Work Product will be deemed to be a work made for hire. Contractor unconditionally and irrevocably transfers and assigns to the County all right, title and interest in and to any Work Product.

37. Publicity Releases: Contractor will not refer to this Contract or the County in commercial advertising without prior written consent of the County. This provision shall survive expiration or termination of this Contract.

38. Execution by Counterparts; Electronic Signatures: This Contract may be executed in multiple counterparts, each of which will be deemed an original, but all of which will constitute one agreement. The Parties approve the use of electronic signatures, governed by the Uniform Electronic Transactions Act, C.R.S. §§ 24 71.3 101 to 121. The Parties will not deny the legal effect or enforceability of this Contract solely because it is in electronic form or because an electronic record was used in its creation. The Parties will not object to the admissibility of this Contract in the form of electronic record, or paper copy of an electronic document, or paper copy of a document bearing an electronic signature, because it is not in its original form or is not an original.

39. Limitation on Public Statements and Lobbying Activity. During the term of this Contract, Contractor may receive from the County its confidential data, work product, or other privileged or confidential information that is protected by law. To maintain the fact and appearance of absolute objectively, Contractor shall not, without the prior written consent of the County, which shall not be unreasonably withheld, do any of the following: (a) disclose information obtained because of this contractual relationship to any third party; (b) lobby any State or Federal agency on any pending matter while this Contract is effective; or (c) make any public statements or appear at any time to give testimony at any public meeting on the subject matters regarding which Contractor is or was retained by the County. County may set reasonable conditions on any disclosure authorized by the County under this provision. Notwithstanding, Contractor may make disclosures as required by law, and to law enforcement officials in connection with any criminal justice investigation.

40. Sustainability: County encourages Contractor to consider the procurement and use of environmentally preferable products and services while performing services under this Contract. "Environmentally preferable purchasing" means making purchasing choices for products and services that have a lesser or reduced adverse effect on human health and the environment when compared with competing products and services that serve the same purpose. Environmentally preferable purchasing is consistent with the County's commitment to protecting our air, water, soil, and climate for current and future generations. County encourages Contractor to incorporate the following actions into Contractor's performance of the Work: environmentally preferable supplies and services; conservation of water; efficient energy use; waste prevention; reuse and recycle construction and de-construction materials in a manner that maximizes reuse of materials; sustainable transportation choices, including consideration to business communication software such as Skype alternative to air travel and public transit or carpooling for in-person

meetings; pollution prevention; low toxicity for public health & safety; and reduced emissions to address climate change.

41. Insurance Requirements: Prior to commencing the Work, Contractor will provide a Certificate of Insurance to the County demonstrating adequate insurance coverage as required by this paragraph. All policies evidencing coverage required by the Contract will be issued by insurance companies satisfactory to the County. Contractor will forward Certificates of Insurance directly to the **County Department** and **Contact** listed in the **Details Summary**.

a. For the entire duration of this Contract including any extended or renewed terms, and longer as may be required by this Contract, Contractor shall procure and maintain at its own expense, and without cost to the County, the following kinds and minimum amounts of insurance to insure the liability risks that Contractor has assumed under this Contract:

i. **Commercial General Liability**

Non-Construction contracts use the following language:

This coverage should be provided on an Occurrence Form, ISO CG001 or equivalent, with Minimum limits of $1,000,000 Each Occurrence, $2,000,000 General Aggregate and $2,000,000 Products Completed Operations Aggregate.

Construction Contracts only – include the following paragraph:

Coverage should be provided on an Occurrence form, ISO CG0001 or equivalent. The policy shall be endorsed to include Additional Insured Owners, Lessees or Contractors endorsements CG 2038 (or equivalent), Designated Construction Project(s) General Aggregate Endorsement CG2503 (or equivalent) and Additional Insured Completed Operations for Owners, Lessees or Contractors CG 2037 (or equivalent). Minimum limits required of $1,000,000 Each Occurrence, $2,000,000 General Aggregate and $2,000,000 Products/Completed Operations Aggregate. The County requires the Products/Completed Operations coverage to be provided 3 years after completion of construction. An endorsement must be included with the certificate.

ii. **Automobile Liability**

Bodily Injury and Property Damage for any owned, hired, and non-owned vehicles used in the performance of the Contract. Minimum limits $1,000,000 Each Accident.

This coverage may not be required if Contractor is not using a vehicle as part of its performance under the contract. Contact Risk Management with any questions.

iii. **Workers' Compensation and Employer's Liability**

Workers' Compensation must be maintained with the statutory limits. Employer's Liability is required for minimum limits of $100,000 Each Accident/$500,000 Disease-Policy Limit/$100,000 Disease-Each Employee.

This coverage may not be required if contractor is not mandated under State law to maintain this coverage. A waiver is available on the contracts routing website.

iv. **Umbrella / Excess Insurance**

Umbrella/Excess Liability insurance in the amount $[X],000,000.00, following form.

This insurance is a broad, high-limit policy, which acts more than the underlying primary insurance policy. This coverage is designed to provide additional liability limits beyond the primary insurance limits and is triggered upon the underlying limits becoming exhausted. Umbrella / Excess insurance is most commonly required when an exposure to the County could potentially create liabilities in excess of the basic insurance limits. The most common limits for these policies range from $2,000,000 to $5,000,000.

Please consult with Risk Management if you feel this coverage should be required.

IN ADDITION TO THE ABOVE, ONE OR MORE OF THE FOLLOWING FOUR (4) INSURANCE COVERAGES MAY BE REQUIRED. CONTACT RISK MANAGEMENT IF YOU HAVE QUESTIONS ABOUT WHICH INSURANCE COVERAGE TO INCLUDE. DELETE THIS INSTRUCTION (AND ANY INAPPLICABLE INSURANCE PARAGRAPHS) WHEN FINALIZING THE CONTRACT:

v. **Professional Liability (Errors and Omissions)**

All contractors required to be professionally certified by the State of Colorado (i.e., architects, engineers, doctors, nurses, etc.) and/or any consultants whose errors in judgment, planning, design, etc. could result in economic loss to the **County** ***must provide proof of professional liability coverage. This also applies to anyone managing or overseeing construction.***

Professional liability coverage with minimum limits of $1,000,000 Per Loss and $1,000,000 Aggregate. Professional Liability provisions indemnifying for loss and expense resulting from errors, omission, mistakes or malpractice is acceptable and may be written on a claims-made basis. The contractor warrants that any retroactive date under the policy shall precede the effective date of this Contract; and that either continuous coverage will be maintained or an extended discovery period will be exercised for a period of two (2) years beginning at the time work under this Contract is completed.

vi. **Pollution Liability**

This coverage is required whenever work under the contract involves pollution risk to the environment or losses caused by pollution conditions (including asbestos) that may arise from the operations of the Contractor described in the Contractor's scope of services.

Coverage pay for those sums the Contractor becomes legally obligated to pay as damages because of Bodily Injury, Property Damage or environmental Damage arising out of a pollution incident caused by the Contractor's work including Completed Operations. Coverage shall include emergency response expenses, pollution liability during transportation (if applicable) and at Non-Owned Waste Disposal Site (if applicable). The Minimum limits required are $1,000,000 Per Occurrence/Loss and $1,000,000 Policy Aggregate. If the coverage is written on a claims-made basis, the Contractor warrants that any retroactive date applicable to coverage under the policy precedes the effective date of this Contract; and that continuous coverage will be maintained or an extended discovery period will be exercised for a period of three (3) years beginning from the time that work under this contract is completed. County shall be named as an additional insured for ongoing operations and completed operations.

vii. **Third Party Commercial Crime Insurance / Third Party Fidelity Bond**

Crime / Third Party Fidelity covers the contractor and the contractor's employees when engaged in work for a client on behalf of the **County***. This coverage is for employee dishonesty, theft, embezzlement, forgery and alteration. Coverage is required when the contractor will be handling money or collecting fees on behalf of the*** **County** ***or when the contractor has access to client's personal property and/or documentation***

The Crime limit shall be $1,000,000 Per Loss and include an endorsement for "Employee Theft of Client Property". In order to provide coverage to County during the course of this contract, Commercial Crime policies must be endorsed to cover Third Party Fidelity. Third party fidelity covers the vendor's employees when engaged in work for a client. In addition, the County will be listed as loss payee on the commercial crime coverage. This third-party coverage can also be provided by obtaining a third-party fidelity bond.

viii. **Privacy / Cyber Liability Insurance**

As a provider of a service which *may* require the knowledge and retention of personal identifiable information including but not limited to, names, dates of birth, social security numbers, usernames,

and passwords, and/or HIPAA sensitive personal information of clients served, the following minimum insurance limits are required:

Contractors with 10 or fewer County clients:	$50,000
Contractors with 11 – 15 County clients:	$500,000
Contractors with more than 25 County clients:	$1,000,000

If the scope does not pertain to clients directly, contact Risk Management for appropriate language.

ix. **Sexual Abuse and Molestation Coverage**

As a provider of a service which has contact with individuals that are part of a sensitive population and are in a position of trust the following minimum insurance limits are required:

Contractors with 5 or fewer County clients:	$100,000
Contractors with 6-10 County clients:	$250,000
Contractors with 11-15 County clients:	$500,000
Contractors with 16 or more County clients:	$1,000,000

If the number of clients increases during the contract period, the required coverage limit will increase to correspond accordingly.

If the scope does not pertain to clients directly, contact Risk Management for appropriate language.

THE STATED INSURANCE LIMITS FOR ALL COVERAGES ARE MINIMUM AMOUNTS; DEPENDING ON THE CONTRACT, HIGHER LIMITS MAY BE REQUIRED OR ADVISABLE. CONTACT RISK MANAGEMENT IF YOU HAVE ANY QUESTIONS ABOUT MINIMUM LIMITS. DELETE THIS PARAGRAPH WHEN FINALIZING THE CONTRACT.

b. Boulder County as Additional Insured: Boulder County shall be named as an additional insured for General Liability, Umbrella/Excess Liability, and Pollution Liability, as designated in this Contract. Additional insured shall be endorsed to the policy.

THE ADDITIONAL INSURED WORDING SHOULD BE AS FOLLOWS*: County of Boulder, State of Colorado, a body corporate and politic, is named as Additional Insured*.

c. Notice of Cancellation: Each insurance policy required by this Contract shall provide the required coverage and shall not be suspended, voided or canceled except after thirty (30) days' prior written notice has been given to the County except when cancellation is for non-payment of premium, then ten (10) days' prior notice may be given. If any insurance company refuses to provide the required notice, Contractor or its insurance broker shall notify the County any cancellation, suspension, or nonrenewal of any insurance policy within seven (7) days of receipt of insurers' notification to that effect.

d. Insurance Obligations of County: County is not required to maintain or procure any insurance coverage beyond the coverage maintained by the County in its standard course of business. Any insurance obligations placed on the County in any of the **Contract Documents** shall be null and void.

e. Deductible: Any and all deductibles contained in any insurance policy shall be assumed by and at the sole risk of Contractor.

f. Primacy of Coverage: Coverage required of Contractor and its subcontractors, if any, shall be primary over any insurance or self-insurance program carried by the County.

g. Subrogation Waiver: All insurance policies in any way related to this Contract secured or maintained by Contractor as required herein shall include clauses stating that each carrier shall waive all rights of recovery, under subrogation or otherwise, against County, its organizations, officers, agents, employees, and volunteers.

[Signature Page to Follow]

IN WITNESS WHEREOF, the Parties have executed and entered into this Contract as of the latter day and year indicated below.

<table>
<tr><td>SIGNED for and on behalf of Boulder County</td><td>SIGNED for and on behalf of Contractor</td></tr>
<tr><td>Signature:</td><td>Signature:</td></tr>
<tr><td>Name:</td><td>Name:</td></tr>
<tr><td>Title:</td><td>Title:</td></tr>
<tr><td>Date:</td><td>Date:</td></tr>
<tr><td colspan="2">↓↓For Board-signed documents only↓↓</td></tr>
<tr><td>Attest:</td><td>Initials</td></tr>
<tr><td colspan="2">Attestor Name:</td></tr>
<tr><td colspan="2">Attestor Title:</td></tr>
</table>

CONTRACTOR'S CERTIFICATION OF COMPLIANCE

Pursuant to Colorado Revised Statutes, § 8-17.5-101,et seq., as amended, as a prerequisite to entering into a contract for services with Boulder County, Colorado, the undersigned Contractor hereby certifies that at the time of this certification, Contractor does not knowingly employ or contract with an illegal alien who will perform work under the attached contract for services and that the Contractor will participate in the E-Verify Program or Department program, as those terms are defined in C.R.S. § 8-17.5-101, et seq., in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under the attached contract for services.

CONTRACTOR:

_____ _____

Company Name Date

_____

Name (Print or Type)

_____

Signature

_____

Title

Note: Registration for the E-Verify Program can be completed at: https://e-verify.uscis.gov/enroll/.