SIKA SPECIFICATION NOTE: This guide specification is provided in CSI Format for use by design professionals for individual construction projects. Modify the text based on your project requirements, and delete products not required. Coordinate designations of corrosion inhibitor types in this specification with corrosion inhibitor types indicated on the Drawings. Questions? Call 800-933-SIKA.

SIKA SPECIFICATION NOTE: This guide specification includes test methods, materials and installation procedures for Sika FerroGard 903, a surface-applied, corrosion-inhibitor (SACI) for reinforced concrete and Sika FerroGard 908, a dual-functional, SACI and penetrating sealer for reinforced concrete by Sika Corporation. Sika FerroGard 903 and Sika FerroGard 908 may be applied to the vertical, horizontal and overhead surfaces of concrete.

SECTION 03 91 13

surface applied corrosion inhibitor (SACI)

1. GENERAL
   * + 1. RELATED DOCUMENTS
          1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
       2. SUMMARY
          1. Provide a SACI on concrete and other acceptable substrates in order to reduce the effects of corrosion.

Work includes substrate preparation including crack and joint treatment.

* + - * 1. Related Work: The following items are not included in this Section and are specified under the designated Sections:

Section 03 30 00 – CAST-IN-PLACE CONCRETE.

Section 07 18 13 – PEDESTRIAN TRAFFIC COATINGS.

Section 07 18 16 – VEHICULAR TRAFFIC COATINGS.

Section 07 92 13 – ELASTOMERIC JOINT SEALANTS

Section 09 96 53 – ELASTOMERIC COATINGS.

* + - 1. PERFORMANCE REQUIREMENTS
         1. The SACI is intended to mitigate active corrosion, and/or delay the onset of corrosion.

System shall perform as a corrosion inhibitor.

Manufacturer shall provide all SACI materials that are physically and chemically compatible when installed in accordance with manufacturer’s current application requirements.

* + - 1. SUBMITTALS
         1. Submittals: Comply with project requirements for submittals as specified in Division 01.
         2. Product Data:

Materials list of items proposed to be provided under this Section.

Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

* + - * 1. Site mockup: For confirmation of performance, construction sequencing and standard of acceptance. Complete prior to commencing with the project.
        2. Pre-Construction Field Adhesion Testing: Written results of field tests, including summary of joint preparation, surface preparation, products used and installation techniques.
        3. Sustainable Design Submittals: For projects seeking USGBC LEED certification, submit manufacturer’s printed statement of VOC content and manufacturing location relative to project site for product used.
      1. QUALITY ASSURANCE
         1. Installer Qualifications:

Installer shall have at least three years experience in installing materials of types specified and shall have successfully completed at least three projects of similar scope and complexity.

Installer shall designate a single individual as project foreman who shall be on site at all times during installation.

* + - * 1. Applicable Regulations: Comply with local code and requirements of authorities having jurisdiction. Do not exceed VOC regulations as established by the State in which they are being installed; including total VOC content, in grams per liter, for all system components (i.e. primers, adhesives, coatings, and similar items.)
      1. PRE-INSTALLATION CONFERENCE
         1. Prior to scheduled commencement of the SACI installation and associated work, conduct a meeting at the project site with the installer, architect/consultant, owner, manufacturer’s representative and any other persons directly involved with the performance of the Work. The Installer shall record conference discussions and include decisions and agreements reached (or disagreements), and furnish copies of recorded discussions to each attending party. The main purpose of this meeting is to review foreseeable methods and procedures related to the Work.
      2. DELIVERY, STORAGE AND HANDLING
         1. SACI 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.
         2. Store SACI materials off the ground and protect from rain, freezing or excessive heat until ready for use.
         3. Condition the specified product as recommended by the manufacturer.
      3. PROJECT CONDITIONS
         1. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature is 40 degrees F (5 degrees C) and rising.
         2. Protection: Precautions should be taken to avoid damage to any surfaces near the work zone due to mixing and handling of the specified material.
      4. WARRANTY
         1. Warranty: Provide manufacturer’s standard warranty for each type of product. Warranty shall include manufacturer’s statement that materials in contact with another have been tested and verified to be compatible. Include written testing documentation and test reports if requested by Architect.

1. PRODUCTS
   * + 1. MANUFACTURER
          1. Basis-of-Design Manufacturer: Sika Corporation, 201 Polito Avenue, Lyndhurst NJ 07071. Toll Free 800-933-SIKA (7452), www.sikausa.com. No substitutions without prior written approval by the Architect.
          2. SACI: Sika FerroGard 903 penetrating corrosion inhibitor for hardened concrete with the following properties:
2. Organic and inorganic in nature and environmentally safe.
3. Water based.
4. Shall not contain calcium nitrite.
5. Shall not form a vapor barrier.
6. Shall be a mixed inhibitor.
7. The material shall have ANSI 61 potable water listing.
8. Viscosity (Brookfield Viscometer, Spindle #1, Speed 100) 15 cps.
9. Color: Pale Yellow
10. Density: 1.13 (9.4 lbs./ gal.)
11. PH: 11 (+/-1)
12. Flash point: None (water-based)
13. The material must form a continuous film on the reinforcing steel and displace chloride ions from the steel surface (X-ray Photon Spectroscopy (XPS) and Secondary Ion Mass Spectroscopy (SIMS).
14. The material must penetrate horizontally, vertically, overhead at a rate up to 1/10 to 4/5 inches (2.5 to 20 mm) per day, depending on density of concrete. (Secondary Neutron Mass Spectroscopy (SNMS).
15. The material must have demonstrated the reduction in corrosion currents after treatment as calculated by the Cracked Beam Corrosion Tests of concrete. (Adapted from ASTM G 109)
16. The material must form a protective layer on the reinforcing steel of high integrity measured at 100A thickness. (X-ray Photon Spectrocopy and Secondary ion Mass Spectroscopy).
17. The material must penetrate up to 3 inches (76 mm) in 28 days. (Secondary Nuetron Mass Spectroscopy).
18. The material must be capable of reducing active corrosion rates by a minimum of 65%. This reduction shall be demonstrated by project references and an independent corrosion engineer using linear polarization resistance.
    * + - 1. Dual-Functional, SACI: Sika FerroGard 908 Dual-functional, SACI and penetrating sealer for reinforced concrete with the following properties:

Sealer Type: Alkylalkoxy silane.

Active ingredient content: 99%

Color: Clear

VOC: 327 g/l

Flashpoint: 104 degrees F (40 degrees C)

Chloride penetration (NCHRP 244) applied @ 125 sf/gallon: Series II – Absorbed chloride 88%, Series IV – Absorbed chloride 99%

Application temperature (ambient and substrate): 40°-95°F (5°to 35°C).

Pot life: Indefinite.

Corrosion reduction (ASTM G 109 modifed) with 2.5 years of data, application applied before cracking and before corrosion vs a control: 92% corrosion reduction.

Corrosion reduction (ASTM G 109 modifed) with 2.5 years of data, application applied after cracking and before corrosion vs a control: 95% corrosion reduction.

Corrosion reduction (ASTM G 109 modifed) with 2.5 years of data, application applied after cracking and after corrosion vs a control: 85% corrosion reduction.

Reduction in water absorption vs control: greater than 75% reduction.

* + - * 1. Testing: Unless indicated otherwise, performance testing in this Sections was performed at ambient temperature, with curing conditions of 73 degrees F and 50 percent relative humidity.
        2. Concrete Repair and Patching Materials: As recommended by manufacturer of SACI.
        3. Elastomeric Sealants: As recommended by manufacturer of SACI. For exterior joints in vertical surfaces such as, but not limited to control and/or expansion joints in cast-in-place concrete or unit masonry, joints between architectural pre-cast concrete units, joints between dissimilar materials or perimeter joints at frames of doors, windows, storefronts, louvers and similar openings apply a low-modulus, single-component or multi-component non-sag sealant in compliance with ASTM C920, Type S or M, Grade NS, Class 25, Class 35, Class +50/-50, Class +100/-50. Acceptable products:

Sikaflex 1a, a premium-grade, high-performance, moisture-cured, 1-component, polyurethane-based, non-sag elastomeric sealant.

Sikaflex 2c, a 2-component, premium-grade, polyurethane-based chemical cure, elastomeric sealant.

Sikaflex 15 lm a low-modulus, high-performance, 1-component, polyurethane-based, non-sag elastomeric sealant.

1. EXECUTION
   * + 1. EXAMINATION
          1. Verify that surfaces and conditions are ready to accept the Work of this section. Verify surfaces are clean, dry, sound and free of voids, deformations, protrusions and contaminants that may inhibit application or performance of the elastomeric coatings Notify Architect in writing of any discrepancies. Commencement of the Work in an area shall mean Installer’s acceptance of the substrate.
       2. PREPARATION
          1. Verify that the surfaces are clean and open texture.
          2. Substrates must be clean, sound, dry, and absorbent free of surface contaminants or other contaminants deleterious to the penetration of the SACI. Remove dust, laitance, and grease, oils, curing compounds, form release agents existing coatings and all foreign particles by mechanical means. Substrate shall be in accordance with ICRI Guideline No. 03732 for sealers and fall within CSP1 to CSP3.
       3. APPLICATION OF CONCRETE REPAIR AND PATCHING MATERIALS
          1. Fill all visible hairline cracks and surface defects with appropriate Sika repair mortar, leveling mortar or surface filler prior to applying coating primer. Bugholes or irregularities of substrate shall be leveled with specified leveling mortar or surface fillers as appropriate.
       4. CRACK TREATMENT FOR CONCRETE
          1. For non-structural cracks, 12 mils or less apply the SACI in accordance with the Product Data Sheet.
          2. For non-structural cracks greater than 12 mils rout and seal the crack to a 1/4 inch by 1/4 inch profile and properly seal with a flexible, specified elastomeric joint sealant.
          3. For structural static cracks, inject with a suitable epoxy.
       5. APPLICATION OF SACI
          1. The SACI is delivered ready to be used. No mixing is required and do not dilute on site.

B. Coverage is entirely dependent on the porosity of the substrate. Normally the consumption is achieved with 2 coats. Extremely porous substrates may only require 1 coat, very dense substrates may require 3 coats. To ensure proper penetration, a field mock up is recommended.

C. Placement Procedure: The SACI shall be applied liberally and allowed to soak into the substrate. This shall be accomplished by the use of brushes, rollers, low pressure gun or airless spray equipment.

D. On vertical surfaces, apply the product from the top down in successive passes until the targeted consumption for the first coat is achieved.

F. Successive passes are done when the concrete surface still has a matt appearance from the product, but is no longer wet (e.g. when placing the bare hand on the surface and removing it, no wetness on the hand is observed). The concrete surface is assumed to be saturated with the SACI when it remains “wet” in appearance for at least 5 seconds.

G. The following coat can then be applied when the concrete is completely dry.

H. On horizontal surfaces, saturate the substrate by continuous spray (airless or low pressure gun) or flooding technique and allow to have “wet” look for at least 5 seconds.

I. On soffit areas, apply the material with a continuous spray and saturate the substrate until surface keeps its “wet” look for at least 5 seconds.

J. Adhere to all limitations and cautions for the SACI product as stated in the manufacturers printed literature.

K. Do not apply the SACI in case of imminent rain (within the next few hours), strong wind exceeding 30 mph or in strong direct sun light.

* + - 1. APPLICATION OF SEALANTS
         1. Provide the approved sealant system where shown on the Drawings, and in strict accord with the manufacturer's recommendations as approved by the Architect.
         2. Install sealants immediately after joint preparation. Mix and apply multi-component sealants in accord with manufacturer's printed instructions.
         3. Install sealants to fill joints completely from the back, without voids or entrapped air, using proven techniques, proper nozzles and sufficient force that result in sealants directly contacting and fully wetting joint surfaces.
         4. Install sealants to uniform cross-sectional shapes with depths relative to joint widths that allow optimum sealant movement capability as recommended by sealant manufacturer.
         5. Tool sealants in manner that forces sealant against back of joint, ensures firm, full contact at joint interfaces and leaves a finish that is smooth, uniform and free of ridges, wrinkles, sags, air pockets and embedded impurities.
         6. Remove sealant from adjacent surfaces in accord with sealant and substrate manufacturer recommendations as work progresses.
         7. Protect joint sealants from contact with contaminating substances and from damages. Cut out, remove and replace contaminated or damaged sealants, immediately, so that they are without contamination or damage at time of substantial completion.
      2. FIELD QUALITY CONTROL
         1. Notify Architect when sections of work are complete to allow review prior to covering completed Work.
         2. Cooperate with Owner’s inspection agency as applicable, who will observe substrate and coating installation and provide written documentation of observations.
      3. CLEANING
         1. Remove uncured materials from tools or other surfaces with an approved solvent.
         2. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.
      4. PROTECTION
         1. Cap and protect exposed back-up walls against moisture and wet weather conditions during and after application of membrane. Protect Work against wet weather conditions for a minimum of 24 hours.

END OF SECTION

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