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Cem-Kote FLEX ST - Concrete Tank Restoration, Waterproofing & Protection

PART I: GENERAL

1.1 Description

- A. This specification is for installation of Cem-Kote Flex ST, flexible cementitious waterproofing coating manufactured by **Gemite Products Inc.** The material is suitable for concrete waterproofing, finishing and protection. This specification should be read in conjunction with Cem-Kote Flex ST Product Data Sheets and Cem-Kote Flex ST Installation Instructions. **Gemite Products Inc.** offers comprehensive technical assistance to consultants when specifying the products and systems.
- B. The general conditions, supplementary conditions and general requirements of this document apply to General Contractors, Sub-Contractors, Material Suppliers and all other persons furnishing labor and materials under this section.
- C. This specification combines Metric measurements and US. Brackets () indicate choice, alternative, data required or need for the specifier to make a decision.

1.2 Work Included

Provide all labor, material and equipment necessary to apply Cem-Kote Flex ST in application over concrete surfaces as shown on the contract drawings and specified herein.

1.3 Related Work

Insert list of divisions and sections where related or allied work is specified, such as concrete slab, wall, tank balconies and other types of concrete waterproofing, finishing and protection. See Cem-Kote Flex ST Product Data Sheets.

1.4 Quality Assurance

- A. The contractor will provide the proper equipment, manpower and supervision at the job site to install Cem-Kote Flex ST in compliance with the project plans and specifications.
- B. Prepare a site sample approximately 1200mm x 1200mm (4' x 4'). This sample will be regarded as the minimum standard of workmanship acceptable for this project.
- C. The applicator must be an approved applicator by Gemite Products Inc. Key tradesmen on the site must be factory trained in the product mixing and application procedures prior to commencing work.
- D. Maintain a record of the batch numbers of all materials supplied for this project.

1.5 Submittals

- A. Provide owner with manufacturer's literature, including Specification Guides, Product Data Sheets and installation instructions, for all products used to complete project
- B. Submit documentation that Quality Assurance criteria have been met

1.6 Product Delivery, Storage and Handling

- A. Deliver materials to the site in original, unopened and undamaged packaging with manufacturer's identification and labels intact.
- B. Store Cem-Kote Flex ST in a clean, dry area protected from direct sunlight, weather and other damage. Store all wet materials at a temperature of not less than 5°C (44°F) at all times.
- C. Material Safety Data Sheets (MSDS) will be available at the job site.

1.7 Alternates

Obtain written permission from the owner's representative at least ten days prior to close of tender. The alternate material must have been in use for a minimum of eight years.

1.8 Standards

All reference standards will be the most current version of these specifications:

- a. Rubber Properties in Tension (ASTM D 412 – modified)
- b. Water Vapor Transmission (ASTM E 96 “Wet Cup” procedure)
- c. Salt Scaling Resistance (ASTM C 672)
- d. Hydraulic Impermeability (TT-P-1411)
- e. Tensile Properties of Thin Cement Composites (Gemite ISO TP (Test Procedure) 005-97)

1.9 Job Site Conditions

- A. Cem-Kote Flex ST materials must never be applied if ambient temperatures cannot be kept above 4°C (40°F) during application and for 48 hours thereafter. Avoid applications at temperatures above 28°C (82°F)
- B. Protect surrounding surfaces from damage due to work of this trade.

1.10 Co-ordination/Scheduling

The work in this section requires close co-ordination with related sections and trades.

2 PART II PRODUCTS

2.1 Manufacturers

- A. Manufacturer's materials are specified by brand name to establish a standard quality, by general description of product and by performance requirements. The Engineer will consider substitutions for brand name products specified, if the procedures set out for substitutions are followed. The Engineer reserves the right to reject any material, which, in his opinion, will not produce the quality of work, specified herein.
- B. The following are acceptable manufacturers: **Gemite Products Inc.** or approved equal.

2.2 Materials - General

- A. Cem-Kote Flex ST - supplied as a Kit comprising of dry Component A + Liquid Component B, as manufactured by Gemite Products Inc.
- B. Reinforcing Fabric NW, supplied by Gemite Products Inc. – supplied in 10 cm (4 in), 50 m (164 linear ft.) for crack treatment
- C. Reinforcing Fabric HD - supplied in rolls 48" (122 cm) wide for application on the entire surface, when applicable, supplied by Gemite Products Inc.
- D. Gem-Plast TC - thin set concrete restoration mortar, manufactured by Gemite Products Inc.
- E. Fibre-Patch OV (ST) - restoration mortar for coving of corners, thin to thick repairs, OV (overhead, vertical) and ST (horizontal), manufactured by Gemite Products Inc.

3 PART III: EXECUTION

3.1 Inspection

- A. Inspect surfaces to which Cem-Kote Flex ST will be applied.
- B. Report to owner's representative, in writing, any defects in previously prepared work, or unsatisfactory site conditions. Proceed with work under this section only when such defects have been entirely corrected.
- C. Starting work under this section means acceptance of the surface and previously prepared work.

3.2 Surface Preparation

- A. **Surface Preparation:** High-pressure wash, 4-6,000 psi (27.6 - 42 MPa), or wet or dry sandblast to thoroughly clean the surface and remove soft concrete surface and any bond inhibiting material, such as form oil. Wash the surface thoroughly with water prior to the application and allow to dry off to achieve a SSD (Saturated Surface Dry) condition. When in doubt do a bond test to assure proper surface preparation is being done, or if any additional cleaning is required.
- B. **Surface Repair:** Use Gem-Plast TC Premix to patch the "honeycombing" and air pockets. Use Fibre-Patch Premix, OV (overhead & vertical) or ST (horizontal) for deeper patching. Uneven concrete due to concrete form misplacement must be chipped away and surface patched smooth. Uneven concrete due to form misplacement must be chipped away and surface patched smooth. Build corner coves, 2" x 2" (5 x 5 cm) minimum, using Fibre-Patch OV.

- C. **Treatment of Existing Non-Structural Cracks & Joints:** Identify the existing Non-Structural cracks and joints and apply a layer of Cem-Kote Flex ST, approx. 25 cm (10") wide and 1-1.5 mm (3/64"-1/16") thick, by trowel or squeegee. Embed the strip of the Reinforcing Fabric NW and work it into the Cem-Kote Flex ST, using a trowel. Cem-Kote Flex ST must totally cover the Reinforcing Fabric NW. Apply second coat of Cem-Kote Flex ST, to build up a total minimum thickness of 1.6 mm (63 mils). To avoid "sharp" corners build corner coves, 2" x 2" (5 x 5 cm) minimum, using Fibre-Patch OV. It is essential that the Reinforcing Fabric NW be well embedded in Cem-Kote Flex material to prevent "fish holes" in the corners, which may cause water leaking.
- D. When applying the Reinforcing Fabric HD over the entire surface, overlap the fabric by a minimum of 1 in (2.54 cm). Avoid "sharp" corners. Apply Fibre-Patch OV material into the corner to form a "cove" (gradual transfer from one side to the other side of the corner).

Note 1: In new construction the Reinforcing Fabric HD may be used throughout, if there is not a sufficient time for drying shrinkage cracking in concrete to take place. The fabric is there to allow the maximum crack spanning during the formation of a crack after installation of the membrane. Please contact Gemite Technical Service for further information, when considering the use of the Reinforcing Fabric HD on the entire surface of the tank

Note 2: In existing facilities the Reinforcing Fabric NW is used only over the existing (non-structural) cracks, cold joints (structural or expansion joints must be respected), and over any coved corners. Contact Gemite Technical Service for assistance.

3.3 Mixing

- A. Mix the content of the bag, Component A with the liquid component B. Use a heavy-duty drill (400-600 RPM) with a helix screw, or paddle mixer to achieve a thorough mixing.
- B. Pour approximately 80% of the liquid component B into the mixing container (mixer) and **gradually add the dry Component A into the liquid** and mix until a smooth and lump free mix is obtained. Lumps will form if the dry material is added suddenly into the liquid. Depending on application, add the remaining liquid as required for a given application consistency. A small amount (1/2 coffee cup) of water can be added, if required, at high ambient temperatures.

3.4 Application

- A. **Application:** Brush, or spray apply the first coat of Cem-Kote Flex ST. When using spraying, it is necessary to brush the first coat to eliminate the "pin holes". As soon as the first layer allows the next application, apply the second coat. This can take 15 to 30 minutes depending on the environmental conditions such as temperature, relative humidity, sun, wind, etc. The thickness of the first coat should be approximately 1/32 in (0.8 mm). The second coat is applied at the same thickness as the first coat to a total thickness of approximately 1.6 mm. It is also "brushed" when spraying is used. Cem-Kote Flex ST, if necessary, can be applied at the total maximum thickness of 6 mm. Protect against surface water evaporation. Under hot, sunny and windy conditions, extreme care must be given to protect the surface against rapid evaporation of water.
- B. **Finishing:** Cem-Kote Flex ST can be left with "brushed" surface. In application where a smooth surface is required, e.g. waste water treatment facilities, swimming pools the surface must be "closed" using a steel trowel.
- C. **Curing:** Air-dry cure Cem-Kote Flex ST for 48 hours.
- D. **Hot Weather Application:** Protect the surface against rapid evaporation of water between the finishing and the final set time. Use water misting, or apply a surface evaporation retarder.
- E. **Cold Weather Application:** Apply in temperatures above the freezing point and protect the material against freezing for a minimum of 48 hours. Use electrical, (**NOT propane**) heaters to avoid carbonation and carbonation cracking.

3.5 Site Cleanup

All excess and waste materials are to be removed from the job site by the contractor in accordance with contract provisions. Surrounding areas where the material has been applied will be left free of debris.