

Gaco Western

S I N C E 1 9 5 5

General Instructions:

GW-2-1

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Supersedes 08/04

CONSTRUCTION, FINISHING AND CURING OF CONCRETE SURFACES FOR GACOFLEX LIQUID APPLIED ELASTOMERIC COATING SYSTEMS

PART I – GENERAL

- A. Concrete surfaces to receive GacoFlex liquid applied elastomeric coating systems must be properly designed and constructed in order to assure effective installation and long-term performance. This document discusses proper practices relating to placement, curing and drying of structural and lightweight structural concrete. Lightweight insulating concrete is not a suitable substrate for GacoFlex liquid applied elastomeric coating systems.

GacoFlex liquid applied elastomeric coating systems are engineered to withstand movement in structural concrete surfaces that are caused by deflection and expansion/contraction.

- B. In general, properly designed structures, where concrete is under compression, has adequate reinforcement and is properly cured, will have only hairline cracks. When the surface of the concrete slab is under tension, structural cracks can be expected. Controlling the location of cracks by placement of steel reinforcement, saw cuts and expansion/contraction joints allows for proper installation of a joint treatment and an elastomeric coating.
- C. Concrete surfaces designated to receive GacoFlex liquid applied elastomeric coating systems must be sloped to freely drain. Adequate drainage will reduce the accumulation of sediments that may cause discoloration, reduce thermal reflectivity or create a foot traffic hazard. Lack of good drainage with GacoFlex Deck Systems can lead to leaks at low thresholds, puddles, and surface staining for which the GacoFlex Deck Applicator does not assume responsibility. GacoFlex Deck Systems cannot be used to provide such a slope.
- D. Most concrete surfaces contain a porosity capable of transmitting gases. Gas transmission can cause blisters in elastomeric coatings. The GacoFlex Sealer/Primer System (see GW-2-2, formerly GW-1, Section II) functions to close off surface pores and allows for the installation of tight elastomeric films. The GacoFlex Sealer/Primer System is recommended for all concrete surfaces and considered essential on lightweight structural concrete as defined under Section 3.

GacoFlex Liquid Applied Elastomeric Coating Systems are recommended only when the following guide specification provisions are followed.

PART 2 – STRUCTURAL CONCRETE

2.1 Acceptable Construction:

- A. Most thin shell shapes are under compression and thus are acceptable. Since planar roofs, flat or sloping, usually include areas under tension, special attention to crack control should be given as described above. Pre-cast panels can impose special problems of differential vertical movement between panels and GacoFlex Liquid Applied Elastomeric Coating Systems should

not be specified without consulting with a Gaco Western Technical Representative. Pre-stressed or-post-tension panels are a suitable substrate.

2.2 Ventilation:

- A. Metal decking used as a concrete form shall be of a 'ventilation type' to relieve water vapor pressure underneath the concrete fill. Concrete slabs used as a ceiling should not be painted or sealed underneath until the slab is dry and accepted by the roofing contractor.

2.3 Concrete Requirements:

- A. Mix: Design and controls, material mixing and placing should follow ASTM-C94. Water-cement ratios should be as low as practicable. An air-entraining admixture may be used to improve workability of the concrete and freeze/thaw resistance.
- B. Finishing: Finishing should be delayed until the concrete has hardened sufficiently to prevent excess fine material from working to the surface. A slightly sand-textured surface is desired. The end result should be neither slick nor burnished, (which impairs adhesion) nor rough with fins, sharp projections, voids or rock pockets

Suggested Finishing Specifications of Concrete Section

Finish shall be steel troweled. The surface shall be uniform without being slick or burnished and shall have a slight sand texture or light broom finish. It shall be free from voids or sharp projections. Voids, rock pockets and excessively rough surfaces shall be finished with a grout or ground to match the unrepaired areas. The grout and bonding agent must be non-staining and the composition approved by the architect for the application. Dusting the surface with Portland Cement or a mixture of sand and cement will not be permitted.

- B. Curing: A minimum 7 day cure with a moisture content of 6.8% is recommended to obtain maximum compressive strength. The water cure method is preferable. Since wax, oils, silicones and some resins prevent adhesion and may cause staining of the Gacoflex liquid applied elastomeric coating systems, the curing compound recommended for use should be of a vegetable oil type form release agent.
- D. Drying: The concrete should be dry before coating. If rain occurs after the drying period and prior to the application of the sealer, allow at least two days of good drying weather.

Concrete slabs on grade are not viable candidates for GacoFlex Liquid Applied Elastomeric Coating Systems.

- E. Joints: The location and identification of expansion and contraction joints referred to in paragraph 2.1 above is the responsibility of the architect or engineer. Joints may be made by terminating pours to provide 'cold joints' or by sawing partially cured concrete. In addition to considering stresses expected in areas under tension, consideration should be given to the possibility of cracks at changes in plane or section, as well as over supporting walls or columns. Designed joints establish planes of weakness, which are specially treated in the GacoFlex elastomeric liquid applied coating systems. Even though building expansion joints also helps to control cracking, staining joint fillers of the asphaltic and polysulfide sealant type should not be used.

PART 3 – LIGHTWEIGHT STRUCTURAL CONCRETE

3.1 Acceptable Construction

- A. Same information as paragraph 2.1 A.

3.2 Ventilation

- A. Same as paragraph 2.2 A.

3.3 Concrete Requirements:

- A. Mix: Same as paragraph 2.3 A.
- B. Finishing: Same as paragraph 2.3 B.
- C. Curing: Same as paragraph 2.3 C.
- D. Drying: Lightweight structural concrete tends to absorb excess water that requires additional drying time. After the curing period, the deck should be allowed to dry 4 to 12 weeks before coating. If rain occurs after the drying period and prior to the application of the sealer, allow at least two days of good drying weather.
- E. Joints: Same as paragraph 2.3 E.

PART 4 -- LIGHTWEIGHT INSULATING CONCRETE FILLS

Lightweight insulating concrete generally utilizes vermiculite or perlite aggregate.

Lightweight insulating concrete is not a suitable substrate for GacoFlex Pedestrian and Auto Deck Systems.

4.1 Acceptable Construction

- A. Lightweight structural concrete of adequate thickness and strength, mesh reinforced and provided with expansion and contraction joints, makes an acceptable surface for roofing when placed over a corrugated metal deck, cast-in-place structural concrete or pre-cast concrete slabs. Lightweight structural concrete should be at least 2" (5 cm) thick. Other substrates being considered should be checked with Gaco Western.

4.2 Ventilation

- A. Whenever there is a possibility that decks under lightweight structural concrete will trap water, venting must be provided. GacoFlex Elastomeric Roofing is a vapor barrier and can be blistered, as can conventional roofing, by vapor from trapped water. If the interior vapor pressure due to air conditioning or heating will build up against the under-side of the deck, surface venting to relieve the pressure must be considered.

4.3 Requirements

- A. Any lightweight structural concrete should have a compressive strength of approximately 1000psi (6.9 MPa). The water content should be kept to a minimum.

Finishing: After screeding lightweight structural concrete, the finishing should be delayed until the surface is barely workable and then finished with the equivalent of a firm steel troweling. The surface should be smooth and free from voids without excess fine material at the surface.

- B. Curing: Moistening the surface with a water mist or fine spray twice a day for three days should cure lightweight structural concrete. In hot, dry or windy weather, three times a day is recommended.
- C. Drying: Same as paragraph 3.3D.

NOTE: Lightweight structural concrete fills are more sensitive to drying conditions and re-absorption of water. These surfaces should be checked for conditions of excessive moisture content prior to the applications of elastomeric coatings.

Joints: The provisions of paragraph 2.3 E applies. In addition, a concrete fill over metal decks should include designed joints over the end joints of the deck units. There should also be joints at the perimeter of the decks and at other places that are necessary to divide the deck into rectangular sections so as not to be greater than 2,000 square feet (186 m²) in area nor 50 feet (15.2 m) in its greatest dimension.