



General Instructions

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CONSTRUCTION, FINISHING AND CURING OF CONCRETE SURFACES FOR ELASTOMERIC COATING APPLICATION

PART I – GENERAL

- A. Concrete surfaces to receive GacoFlex liquid applied elastomeric 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, lightweight structural and lightweight insulative concrete.

GacoFlex elastomeric systems are engineered to withstand movement in structural concrete surfaces 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 elastomeric coating joint treatment.
- C. Concrete surfaces designated to receive liquid Gaco Western 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 GacoDeck systems can lead to leaks at low thresholds, puddles, and surface staining for which the GacoDeck applicator does not assume responsibility. The GacoDeck system cannot be used to provide such a slope.
- D. Most concrete surfaces contain porosity capable of transmitting gases. Gas transmission can cause blisters in elastomeric coatings. The Gaco Western primer-sealer system (see GW-2-2, formerly GW-1, Section II) functions to close off surface pores and allow installation of tight

elastomeric films. The sealer system is recommended for all concrete surfaces and considered essential on lightweight structural concrete as defined under Section 3.

Gaco Western Liquid Elastomeric 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 Gaco Western liquid systems should not be specified without discussion with Gaco Western. Pre-stressed or post-tension panels are a suitable substrate.

2.2 Ventilation:

- A. Metal decking used as concrete form shall be 'ventilation type' to relieve water vapor pressure underneath the fill. Concrete slabs used as ceiling should not be painted or sealed under side until the slab is dry and accepted by the roof 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 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 shall be non-staining and the composition approved by the architect for application. Dusting the surface with Portland cement or a mixture of sand and cement shall not be permitted.

- C. Curing: A 28-day cure is recommended to obtain maximum compressive strength. The water cure method is preferable. Since wax, oils, silicones and some resins prevent adhesion of the roofing material and may cause staining, the curing compound should have the prior approval of Gaco Western.
- D. Drying: After the curing period, deck shall be allowed to dry for two or four weeks before coating. If rain occurs after the drying period and prior to application of the primer, allow at least two days of good drying weather.

Concrete slabs on grade or where there is a concern about excess moisture, conduct a calcium chloride test to determine the amount of extractable water. Tests where extractable water exceeds 4 pounds per 1000 sq. ft. per 24 hours need additional drying time.

- E. Joints: The location and identification of expansion-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 Gaco Western coating system. Through-building expansion joints also help to control cracking. Staining joint filters, such as bitumastic and some polysulfides or urethanes, 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 aggregate tends to absorb excess water that requires additional drying time. After curing period, deck shall be allowed to dry **4** to 12 weeks before coating. **If** rain occurs after drying period and prior to application of primer - sealer, allow at least two days of good drying weather.
- E. Joints: Same as paragraph 2.3 E.

PART 4 LIGHTWEIGHT INSULATIVE CONCRETE FILLS

Lightweight insulative concrete generally utilizes vermiculite or perlite aggregate. Insulative concrete shall be placed to manufacturer's specification.

Insulative concrete fills are not suitable Substrates for GacoDeck. However, they are acceptable for non-traffic areas.

4.1 Acceptable Construction

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

4.2 Ventilation

- A. Whenever there is a possibility that decks under lightweight aggregate will trap water, venting shall be provided. Gaco Western elastomeric roofing is a vapor barrier and can be blistered, as can conventional roofing, by vapor from trapped water. If interior vapor pressure due to air conditioning or heating will build up against the deck from the under-side, surface venting to relieve the pressure should be considered.

4.3 Requirements

- A. Mix: Mixes using vermiculite or perlite should not be leaner than one part cement to four parts aggregate. Any lightweight aggregate concrete should have a compression strength of approximately 1000psi (6.9 MPa). Water content should be kept to a minimum.

- B. Finishing: After screening insulative aggregate concrete, 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.
- C. Curing: moistening the surface with mist or fine spray twice a day for three days should cure Concrete. In hot, dry or windy weather, three times a day is desirable.
- D. Drying: Same as paragraph 3.3D.

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

- E. Joints: The provisions of paragraph 2.3 E applies. In addition, a 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 decks and at such places as are necessary to divide the deck into rectangular sections not over 2,000 square feet (186 m²) in area, nor 50 feet (15.2 m) in greatest dimension.