

Concrete Lifting/Leveling, Void Filling or Undersealing Concrete Slab Sections

DESCRIPTION

Under slab void filling, under sealing or raising/leveling of concrete slabs shall consist of placing a plural component polyurethane/polymer foam mixture beneath existing concrete slab(s) at the locations shown in the plans, or directed by the Engineer or by the NCFI qualified contractor.

The intent of the process is to lift, underseal, and fill the voids under existing concrete slab(s). When raising concrete slabs, care shall be taken to assure that the final elevation of the concrete slab is aligned vertically with the adjacent and surrounding slabs or structures.

MATERIALS

Material for void filling, under sealing and or lifting and raising shall meet the following requirements. NCFI Polyurethanes TerraThane™ systems in 24-010, 24-486, 24-030 and 24-003.

POLYURETHANE PHYSICAL PROPERTIES

TERRATHANE SYSTEM

	Density	Comp	Tensile
24-010	2.8 PCF (FRC)	38 PSI	46 PSI
24-486	4.0 PCF (FRC)	100 PSI	146 PSI
24-003	4.0 PCF (FRC)	90 PSI	110 PSI
24-030	3.3 PCF (FRC)	67 PSI	82 PSI

Test Methods: ASTM D 1622, ASTM D 1623, ASTM D 1621

Note: Dependent on the concrete slab use, load factors and other onsite conditions that a review be investigated to determine if a polyurethane/polymer be specified with more or less strength values or in place density requirements. Should high levels of water be present under the slab(s) a hydrophobic or hydro-insensitive polyurethane polymer system may be required upon review of the subgrade.

POLYURETHANE PHYSICAL PROPERTIES

Material for void filling, under sealing and or raising shall achieve 90% of its compressive strength in 15 minutes. The Contractor shall furnish the Engineer with certificate of conformance test reports from the manufacturer showing that the material meets the requirements of the specification.

CONSTRUCTION REQUIREMENTS

General All void filling, undersealing and or lifting/leveling or raising will be done at the locations specified in the plans, or as directed by the Engineer or qualified contractor. A complete pre-inspection of the slab and site must be completed to mark any electrical, gas, telephone, cable, sewer, drainage, manholes or any other type underground utility. This will be the responsibility of the building or facility owner to notify the contractor of these underground utilities. The equipment shall be that customarily used in the injection of plural component 1 to 1 ratio polyurethane/polymer systems for void filling, under sealing lifting/leveling or raising. It shall consist of no less than the following:

1. A pneumatic or electric drill capable of drilling 5/8 inch diameter holes in the concrete slab. The equipment shall be in satisfactory operating condition and operated in such a manner as to prevent unnecessary damage to the slab.
2. A pump capable of injecting the high density polyurethane/polymer between the concrete slab(s) and the underlying material or subgrade while controlling the rate of rise of the slab.
3. A leveling unit or units to ensure the concrete pavement is raised to the desired elevation.

Drilling Holes Unless otherwise shown in the plans, the injection holes shall be drilled at two to three foot intervals set up in a predetermined grid pattern throughout the area to be injected with polyurethane foam. The holes shall be a maximum of 5/8 inch in diameter.

Injection Process The injection gun at the discharge hose shall be secured to the packer in the drilled hole in a manner that provides an adequate seal between the gun and the packer. As the polyurethane is injected and it reacts, it expands and hardens resulting in a filling or lifting of the slab. The amount of rise shall be controlled by regulating the rate of injection. When the packer is removed, the hole shall be plugged or sealed to the satisfaction of the Engineer. Any excess polyurethane material shall be removed from the slab. A leveling device or combination of (dial indicators, laser level, string line, etc.) shall be used to monitor and verify the elevation of the slab. In areas where excessive voids or cavities are may be located, 4 inches or greater extreme care is to be given to the amount of polyurethane injected at that point. Adequate time, 10-15 minutes is to be given to allow the polyurethane to cool before injecting at that same point. Please consult NCFI Polyurethane with any questions.

Clean up During the concrete slab repair and injection process care must be taken as not to allow either the individual or mixed polyurethane/polymer components to come into contact with the concrete slab surface. This may include laying a suitable plastic sheet around each injection point and or wrapping the injection gun with a suitable plastic cover. After the project completion the work site will be cleaned up removing any trash, cured polyurethane/polymer foam and disposed of accordingly.

Geotechnical Polyurethane/Polymer Foam The polyurethane/polymer must be processed in accordance to the manufacturer's recommendations with technical data sheets and Safety Data Sheets submitted for approval.