

## JOB SITE GUIDE AND SPECIFICATION DATA

Greenstreak Elastomeric Form Liners are ideal for texturing cast-in-place or precast architectural concrete. Panels of the elastomeric liner attach to the form work or casting bed prior to placing the concrete.

Following placement and normal curing time (usually 24 hours or less), the form work and liner are stripped, leaving a textured concrete surface.

- Nominal 4 ft. x 10 ft panels, widths to 8 ft., lengths to 30 ft. available
- Most standard GREENSTREAK vacuum formed form liner patterns (60 plus) are available as elastomeric liners.
- Custom liners also available
- ULTRA-CAST® liners are composed of 100% polyurethane material with excellent tear resistant and release properties.
- Available with or without plywood backing. Factory bonding of 3/4" BC plywood promotes easy installation onto the form work at the job site and is highly recommended. Job site bonding of the unbacked liner can be accomplished with GREENSTREAK's 7300 Epoxy.
- Edges of plywood backed liners are encapsulated in urethane to protect the edge and to create an effective seal to prevent grout leakage.

### Typical Applications Include:

- Residential and commercial buildings
- Water / waste water treatment plants
- Prisons
- Schools
- Airports
- Parking garages
- Exposed foundations
- Bridges
- Retaining walls
- Sound walls
- Planters
- Corporate signs

### CUSTOM FORM LINER DESIGNS

GREENSTREAK manufactures custom form liners to supplement a wide selection of standard patterns and textures.

- Specify a unique pattern or texture that best suits the structure.
- Custom patterns enable architects to closely match existing structures. Typical applications include precast additions to existing brick or stone buildings.
- All new tooling has a standard lead- time of four to six weeks. Tooling costs can have wide variances depending on the complexity of the pattern. Contact GREENSTREAK for more information.
- Custom rustication strips are also available to add accents and detail to the overall design.

### INSTALLATION GUIDELINES

#### GENERAL

- Greenstreak requires a full scale pre-construction mock-up to test specific concrete mix, slump, placement rate, form pressures, joint sealing, vibrating and stripping practices. The mock-up must duplicate the materials, methods, workmanship, placement rates and form pressures that will actually be used on the job. Failure to complete the pre-construction mockup will void all warranties.
- GREENSTREAK elastomeric form liners should be protected from long-term exposure to direct sunlight.
- Concrete temperatures in excess of 140° F will adversely affect the material properties of the form liner. Greenstreak does not recommend the use of form liners in these applications.

### TRIMMING

- Form liners will need to be custom trimmed to fit the form work on many jobs.
- A circular handsaw with a 40-tooth carbide tipped blade is recommended for trimming liner backed with plywood.
- Where slight touchup is required, a small hand grinder with a coarse wheel can be used to remove material.
- When butting a liner against a chamfer or reveal strip, miter the edge of the liner at the same angle for a proper fit.

### MOUNTING

- Keep vertical joints plumb and on the same line. Horizontal joints should be kept level and in line at the same elevation.
- Rustication or reveal strips are recommended at liner joints that do not blend with the pattern. A properly sized rustication will compliment the pattern and can enhance the overall appearance of the structure.
- Hex head self-drilling, self tapping screws should be used to fasten plywood backed liner from the back of the form work. Care should be taken in selecting the proper length screw so that the screw does not extend through the liner.
- When necessary, the liner may be attached through the form liner face. Screws should be driven in through the urethane material and seated against the plywood backing. The small hole left by the fastener head should be sealed with a neutral cure silicone sealant.
- Fasteners should be placed on 12" to 24" centers that are evenly distributed over the sheet. When attaching the liner through the liner face, place fastener through the valley of the form liner. Patterns with more relief and texture require more fasteners.

- Unbacked liners may be adhered to steel or plywood forms with GREENSTREAK 7300 Epoxy. Both form and form liner must be thoroughly cleaned with acetone or denatured alcohol prior to installation. Roughening the surface with a 40-grit grinding pad will aid the adhesive. Trowel a thin uniform coat of 7300 onto the form. Place unbacked liner onto form starting at one end and rolling the liner into position. When liner is properly positioned, install clamps and let cure for 24 hours before erecting forms.

### SEALING

- Although elastomeric form liners form a natural seal at their edges, all form liner joints and tie holes should be sealed to prevent localized water loss and subsequent discoloration of the concrete. Grout leakage will make stripping difficult and may damage the liner.
- Neutral cure silicone sealant is recommended for cast in place jobs. Once cured, it is flexible, has good adhesion and won't discolor or stick to the concrete.

### FORM BOLTS, TIES AND BAR SUPPORTS

- Tie spacing should be a multiple of the form liner pattern repeat.
- Tight fitting holes may be drilled or cut with a hole saw.
- Reinforced fiberglass rod ties work well with architectural form liners. After stripping, the rods are snapped off and ground flush with the concrete. Patching and filling of holes is eliminated.
- Ties located in the "valley" of the concrete may be less obvious. Patching tie holes located in the "peak" of the concrete is easier.
- Supports and spacers should be plastic or plastic tipped to minimize rust stains on the finished concrete.

### CONCRETE MIX DESIGN

- For uniformity of color and texture, use one concrete supplier, making sure that all ingredients come from the same sources.
- Recommended slump is 4 to 6 inches. The higher slump allows easier filling of pattern details.

- Avoid overly sandy or high air entrained mixes as they tend to be "sticky" and can promote bugholes.
- For ribbed textures the aggregate should be smaller than the width of the rib. Oversize aggregate can cause honeycombing and chipping on the ribs.
- Use an elephant trunk or tremie for placing concrete to minimize aggregate separation.
- The proper use of a plasticizer in the mix will minimize air voids. The placement rate may have to be reduced to keep form pressures at an acceptable level.
- High pour rates may cause more air voids.
- Keep concrete lifts less than 24 inches. Thoroughly vibrate concrete to achieve good consolidation, eliminate lift lines and to minimize air voids. External vibrators can loosen the liner from the formwork; internal vibrators are normally used. Under and over vibration may also cause defects in the surface of the concrete.

### RELEASE AGENTS AND BOND BREAKERS

- Use only a GREENSTREAK approved release agent to ensure a clean release from the concrete without any ill-effect on the liner material. GREENSTREAK 7000 RELEASE AGENT is available for this purpose. Some release agents may cause swelling of the liner material with subsequent release problems.
- Apply release agent at recommended rates. Over application may produce surface voids.
- Reapply release agent before each use.

### STRIPPING AND CLEAN-UP

- The force required in stripping forms with architectural liners is greater than smooth form work. When applying the extra force needed, care should be taken so that the textured surface is not damaged

- Form work should be broken back after a minimum of 12 hours and stripped preferably within 24 hours of concrete placement. Extending the time from placement to stripping can increase the force required.
- Begin stripping at the top of the formwork. Separate the form from the concrete slightly. Hold in this position for several minutes to allow the induced stress in the form to diminish. Continue to separate the form work from the concrete in stages until final separation.
- Elastomeric form liners should be cleaned with household detergent and a stiff brush between uses.

### FINAL FINISHING

- Rubbing: Seams and forming defects may be removed with a stone while the concrete is green.
- Sandblasting: Many jobs call for sandblasting to roughen the surface and bring out the color of aggregate. Sandblasting may also hide seams and forming defects but will not hide discoloration caused by grout leakage.
- Patching: When patching tie holes or more serious forming defects, a close color match is critical. Use the same materials used in the original mix and perform several trial runs before beginning work on the structure. If in doubt, hire a consultant. Bad patches look worse than the original problem.

### AVAILABILITY AND COST

- **Availability:** GREENSTREAK form liners are distributed worldwide through an extensive network of concrete forming and accessory dealers. Contact GREENSTREAK for the name of a dealer in the area.
- **Lead Time:** Lead times will vary with order quantity, pattern and production backlog. Smaller orders for popular patterns can usually ship in one to two weeks. Allow a minimum of four weeks for larger orders and six weeks for custom patterns.
- **Cost:** Contractor cost will vary with order quantity and pattern.

## TECHNICAL SERVICES

- GREENSTREAK DISTRIBUTORS have the knowledge and ability to answer most questions. GREENSTREAK engineers are also available for consultation during design, specification and product installation.
- Additional information, product brochures, 3 part CSI formatted specification, and technical notes, is available upon request.
- The following ACI Committee reports are recommended:

ACI 117; "Specifications for Tolerances for Concrete Construction and Materials and Commentary"

ACI 301 CH.6; "Specifications for Structural Concrete"

ACI 303R; "Guide to Cast-in-Place Architectural Concrete Practice"

ACI 309 CH.7; "Guide for Consolidation of Concrete"

ACI 347 CH.5; "Guide to Formwork for Concrete"

## MATERIAL PROPERTIES: (Typical)

Ultra-Cast®

Tensile Strength (PSI), D412	1485
Shore A Hardness	55-60
Elongation (%), D412	500
Tear Resistance (lb/in), D624	160-170

## WARRANTY

GREENSTREAK® warrants its products will be free from defects and will perform as stated in this literature, provided the application and construction practices used are per our recommendations and Job Site Guide instructions and provided the actual job construction duplicates mock-up materials, methods workmanship, placement rates, form pressures, joint sealing and stripping practices. If our product does not meet the published product specifications and our customer gives notice to us before installing the product, we will replace the product without charge or refund the purchase price.

Product replacement or refund are the buyer's sole remedy for breach of warranty or negligence and we will not be liable for any indirect, consequential, special or resultant damages. To the best of our knowledge, the information contained herein is accurate and reflects average test values. Final suitability of any information or material is the sole responsibility of the user.



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