



**SUGGESTED PROPRIETARY MASTER SPECIFICATION
ARCHITECTURAL CONCRETE FORM LINER
SECTION 03 11 16.13**

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Provision of rigid plastic and elastomeric form liners for texturing architectural concrete.
- B. Provision of Form Liner accessories including, but not limited to, fasteners, sealants, rustication and backup strips, form release agents, and sealers.

1.02 RELATED SECTIONS

- A. Section 03100 - Concrete Formwork
- B. Section 03120 - Architectural Cast-In-Place Concrete Formwork
- C. Section 03330 - Architectural Concrete
- D. Section 03350 - Concrete Finishes
- E. Section 03400 - Precast Concrete
- F. Section 03450 - Architectural Precast Concrete - Plant Cast [03460 Site Cast]
- G. Section 03470 - Tilt-Up Concrete

1.03 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 117 Specifications for Tolerances for Concrete Construction and Materials and Commentary
 - 2. ACI 301 CH. 6 Specifications for Structural Concrete.
 - 3. ACI 303R Guide to Cast-in-Place Architectural Concrete Practice.
 - 4. ACI 309 CH. 7 Guide for Consolidation of Concrete.
 - 5. ACI 347 CH. 5 Guide to Formwork for Concrete

1.04 SUBMITTALS

- A. Manufacturer's installation instructions and Product Data which indicates compliance with specifications.
- B. Shop Drawings indicating form liner layout and termination details. Indicate backup, rustication, reveal, and chamfer strip locations. Include jointing, form tie location and pattern of placement.
- C. Architect/Engineer's review for aesthetic criteria. Contractor responsible for design of formwork and back-up of form liner for structural stability and sufficiency.
- D. Samples 12 inch by 12 inch of each pattern indicated.
- E. Compliance Certification by release agent manufacturer for local regulations controlling VOC's.

1.05 QUALITY ASSURANCE

- A. Provide full scale mock-up using actual job specific materials, methods and workmanship. These include concrete mix [cement type, aggregate gradation, slump, water/cement ratios, plasticizers and additives], forming system [ties, liner, and formwork], form release agents, placement rate, form pressures, joint sealing, vibrating and stripping practices. In addition, demonstrate patching and repair procedures for spalled concrete, and voids caused by honeycombing or bugholes. Incorporate formwork accessories and minimum one vertical and one horizontal form liner joint.
- B. Accepted mock-up will be standard by which remaining work will be evaluated for technical and aesthetic merit. Accepted mock-up is a prerequisite to beginning job formwork. Submit variations from mock-up materials or techniques for approval prior to use.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Cover form liners to protect from oil, dirt and UV exposure.
- B. Handle rigid form liner panels with care at temperatures below 25°F.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Greenstreak Goup, Inc., St. Louis, MO. 1-800-325-9504: Pattern Number [].

2.02 FORM LINER MATERIALS

- A. GREENSTREAK Uni-Cast[®], Multi-Cast[®], or Dura-Cast[®] thermoformed rigid polymer alloy sheets.
- B. GREENSTREAK Ultra-Cast[®] urethane elastomer form liners
- C. Form liners for Textured Finish Concrete: Provide special forming materials to produce form surfaces with face design, texture, arrangement, and configuration as shown on drawings.
- D. Liners to accommodate form pressures to a maximum 1000 psf. Comply with manufacturer's recommendations for support of large or deep patterns which may deform under pressure.

2.03 FORM LINER ACCESSORIES

- A. Provide GREENSTREAK 7000 Release Agent or equal, verified to be compatible with the form liner material.
- B. GREENSTREAK Rustication Strip with [1 1/2], [1 3/8], [2 1/8] inch face: Reusable ABS plastic.
- C. GREENSTREAK Chamfer[Radius][Triangle]continuous PVC Strip w/[1/2],[3/4],[1],[1 1/2]inch leg
- D. GREENSTREAK Reveal StiX profile # [], single-use plastic and foam composite.

PART 3 EXECUTION

3.01 FORM LINER PREPARATION

- A. Before placing concrete, verify lines and levels of formwork and form liner patterns are within allowable tolerances.
- B. On multiple use liners, clean liner before each use. Replace damaged liner whose continued use or repair would negatively impact the aesthetics of the concrete finish
- C. Apply form liner compatible release agent at rate recommended by manufacturer. Attempt to schedule concrete pour soon after application of release agent to avoid precipitation, dust, and debris. Protect reinforcing steel from exposure to release agents.

3.02 FORM LINER INSTALLATION

- A. Seal form liner joints, form liner accessories' joints, and tie holes to prevent cement paste from bleeding.
- B. Provide solid backing at form liner butt joints to prevent deflection.
- C. Construct form liner and accessories to sizes, shapes, lines and dimensions shown.
- D. Provide openings, offsets, keyways, recesses, chamfers, blocking, and screeds as required to achieve architectural concrete textured finish.
- E. Drill or pierce liner to accommodate form ties.
- F. Anchor liner to form on centers not to exceed 18 inches. Decrease centers as necessary to accommodate form stripping pressures without damaging liner intended for multiple use.
- G. Install backup strips as required to prevent deflection of the liner due to form pressures.

3.03 CONCRETE PLACEMENT

- A. Form pressures not to exceed 1000 psf.
- B. Keep concrete lifts less than 24 inches. Thoroughly vibrate concrete to achieve good consolidation, and eliminate entrapped air thereby minimizing voids. Internally vibrate through to previous lift to avoid lift lines. Avoid vibrator contact with the form liner.
- C. Concrete temperatures in excess of 140°F will adversely affect the material properties of the form liners. Greenstreak does not recommend the use of form liners in these applications.

3.04 FORM LINER ACCESSORY INSTALLATION

- A. Form rustication lines located as indicated by nailing Greenstreak Rustication Strips to formwork within tolerances indicated by the ACI.
- B. Tightly form corners indicated to be chamfered with Greenstreak [rounded][triangular] PVC chamfer. Chamfered corners to be smooth, solid, unbroken, continuous lines, which are uniformly straight.

END OF SECTION