



## SCOTT SYSTEM

### SUGGESTED MASTER SPECIFICATION

#### SECTION 03 11 16 ARCHITECTURAL CONCRETE FORMLINERS

##### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

**\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.**

- A. Reusable, elastomeric formliners for texturing architectural concrete with standard patterns.
- B. Reusable, elastomeric formliners for texturing architectural concrete with photo engraving.
- C. Reusable, elastomeric formliners for texturing architectural concrete with custom designed patterns.
- D. Reusable, ABS plastic formliners for texturing architectural concrete with standard patterns.
- E. Single-use, HIPS plastic formliners for texturing architectural concrete with standard patterns.
- F. Form liner accessories of fasteners, sealants, rustication and backup strips, form release agents and sealers as scheduled or required.

##### 1.2 RELATED SECTIONS

**\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.**

- A. Section 03 10 00 - Concrete Forming and Accessories.
- B. Section 03 11 16 - Architectural Cast-in Place Concrete Forming.
- C. Section 03 45 13 - Faced Architectural Precast Concrete.
- D. Section 03 45 00 - Precast Architectural Concrete.
- E. Section 03 47 13 - Tilt-Up Concrete.
- F. Section 09 97 23 - Concrete and Masonry Coatings.

##### 1.3 REFERENCES

**\*\* NOTE TO SPECIFIER \*\* Delete any references below not relevant to this project; add others as required.**

- A. American Concrete Institute (ACI):
  - 1. ACI 117 - Standard Tolerances for Concrete Construction and Materials.

2. ACI 301 - Specifications for Structural Concrete.
  3. ACI 303R - Guide to Cast-in-Place Architectural Concrete.
  4. ACI 309 - CH. 7, Recommended Practice for Consolidation of Concrete.
  5. ACI 347 - CH. 5, Recommended Practice for Concrete Formwork
- B. ASTM International (ASTM):
1. ASTM D256: Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
  2. ASTM D412: Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
  3. ASTM D570: Standard Test Method for Water Absorption of Plastics.
  4. ASTM D624: Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
  5. ASTM D638: Standard Test Method for Tensile Properties of Plastics.
  6. ASTM D648: Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
  7. ASTM D790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
  8. ASTM D792: Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
  9. ASTM D785: Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials.
  10. ASTM D1238: Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer.
  11. ASTM D1938: Standard Test Method for Tear-Propagation Resistance (Trouser Tear) of Plastic Film and Thin Sheeting by a Single-Tear Method.
  12. ASTM D2240: Standard Test Method for Rubber Property - Durometer Hardness.

#### 1.4 SUBMITTALS

**\*\* NOTE TO SPECIFIER \*\* Delete any requirements below not relevant to this project; add others as required.**

- A. Submit under provisions of Section 01 30 00 – Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  1. Short form specification sheet showing formliner name and pattern number.
  2. Storage and handling requirements and recommendations.
  3. Preparation instructions and recommendations.
  4. Installation procedures.
- C. Shop Drawings: Complete details of materials and installation, including but not limited to the following.
  - a. Patterns.
  - b. Formliner sheet sizes.
  - c. Joint locations.
- D. Samples: 24 inches by 24 inches of each pattern depicting textures and patterns.
- E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

- F. Compliance Certification by form release agent manufacturer for local regulations controlling VOC's.

## 1.5 QUALITY ASSURANCE

**\*\* NOTE TO SPECIFIER \*\* Delete any requirements below not relevant to this project; add others as required. Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.**

- A. Manufacturer Qualifications: A minimum of 3 years' manufacturing experience with form liners like those required for this Project.
- B. Installer Qualifications: A minimum of 3 years' experience with form liners like those required for this Project.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. The mock-up panel shall accurately demonstrate the specified formliner textures, patterns, and conditions (corners, false joints, etc.) expected in the completed work.
  - 2. Include concrete mix, forming system, form release agents, placement rate, form pressures, joint sealing, vibrating, and stripping practices. The exact procedures used in the full-scale construction of the concrete must also be used during the construction of the mock-up.
  - 3. Demonstrate patching and repair procedures for spawled concrete, and voids caused by honeycombing or bug holes.
  - 4. Architect/Engineer must approve the texture, pattern, color, and workmanship of the mock-up panel prior to the beginning of concrete construction. Do not proceed with remaining work until workmanship, installation and operation are approved by Architect/Engineer.
  - 5. Mock-up panel must remain on-site for comparison during concrete construction or erection.
  - 6. The installer or precast manufacturer shall be responsible for the removal and disposal of the mock-up panel following completion of the project.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Inspect the materials upon delivery to ensure that specified products have been received. If there are any discrepancies upon inspection, the manufacturer must be immediately notified. Do not use damaged products.
- B. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations.
- C. When not in use, store products indoors or in a cool dry place covered with black polyethylene sheeting until ready for installation. Cover form liners to protect from water, oil, dirt and UV exposure.
- D. Store materials within absolute limits for temperature and humidity recommended by manufacturer. Liquid materials shall be stored in temperatures not exceeding 140 degrees F (60 degrees C) or falling below 32 degrees F (0 degrees C). Protect from damage.

## 1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Scott System, which is located at:

109 General Fellows Road, Greenwich, NY 12834.

Tel: (518) 383-0500 Fax: (518) 992-5140

Email: [info@scottsystem.com](mailto:info@scottsystem.com)

Web: [www.scottsystem.com](http://www.scottsystem.com)

**\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs: coordinate with requirements on product options and substitutions.**

- B. Substitutions: Not permitted.

- C. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00 – Product Requirements.

### 2.2 MATERIALS

**\*\* NOTE TO SPECIFIER \*\* Select the formliner materials required from the following paragraphs and delete those not required. Please contact Scott System to validate texture / pattern numbers for your application.**

- A. Reusable, elastomeric formliners for texturing architectural concrete with standard patterns.

- 1. Pattern and Texture: Scott System #(provide number here)

- 2. Properties:

- i. Hardness, Shore A ASTM D2240: 65 – 70 A
- ii. Tensile Strength, ASTM D412: 1525 psi
- iii. Tear Strength, ASTM D624: 143 pli
- iv. Ter Strength, ASTM D1938: 40 pli
- v. Elongation, ASTM D412 - percent: 330%
- vi. Color: Mid-Gray

- B. Reusable, elastomeric formliners for texturing architectural concrete with photo engraving.

- 1. Pattern and Texture: Custom photo engraving as indicated on drawing.

- 2. Properties:

- i. Hardness, Shore A ASTM D2240: 65 – 70 A
- ii. Tensile Strength, ASTM D412: 1525 psi

- iii. Tear Strength, ASTM D624: 143 pli
  - iv. Ter Strength, ASTM D1938: 40 pli
  - v. Elongation, ASTM D412 - percent: 330%
  - vi. Color: Mid-Gray
- C. Reusable, elastomeric formliners for texturing architectural concrete with custom designed patterns.
  - 1. Pattern and Texture: Custom pattern as indicated on drawing.
  - 2. Properties:
    - i. Hardness, Shore A ASTM D2240: 65 – 70 A
    - ii. Tensile Strength, ASTM D412: 1525 psi
    - iii. Tear Strength, ASTM D624: 143 pli
    - iv. Tear Strength, ASTM D1938: 40 pli
    - v. Elongation, ASTM D412 - percent: 330%
    - vi. Color: Mid-Gray
- D. Reusable, ABS plastic formliners for texturing architectural concrete with standard patterns.
  - 1. Pattern and Texture: Scott System # \_\_\_\_\_
  - 2. Properties:
    - i. Melt Flow Index, ASTM D1238: 1-7 g/10 min
    - ii. IZOD Impact Strength, ASTM D256: 4+ ft-lb/in
    - iii. Tensile Strength, ASTM D638: 5.0-6.5 PSI x 103
    - iv. Flexural Strength, ASTM D790: 7.0-8.0 PSI x 103
    - v. Flexural Modulus, ASTM D790: 7.0-8.0 PSI x 105
    - vi. Elongation at Break, ASTM D638: 15-30 %
    - vii. Specific Gravity (density), ASTM D792: 1.02-1.09 g/cm<sup>2</sup>
    - viii. Rockwell Hardness, ASTM D785 (R-Scale): R 95-105
    - ix. Heat Distortion, ASTM D648: 95-105°F at 264 PSI; 175-195°F at 66 PSI
    - x. Water Absorption at 73°F/24 hour, ASTM D570: 0.30%
- E. Single-use, HIPS plastic formliners for texturing architectural concrete with standard patterns.
  - 1. Pattern and Texture: Scott System # \_\_\_\_\_
  - 2. Properties:
    - i. Melt Flow Index, ASTM D1238: 1.0-3.0 g/10 min
    - ii. IZOD Impact Strenth, ASTM D256: 2.0 ft lb/in min

## 2.3 ACCESSORIES

- A. Form Release Agents:
  - 1. Scott Lease 440.
  - 2. Cressett 880.

## PART 3 EXECUTION

**\*\* NOTE TO SPECIFIER \*\* Consult Scott System to best understand design and material limitations.**

### 3.1 FORM LINER PREPARATION

- A. Verify lines and levels of formwork and form liner patterns are within allowable tolerances.
- B. On multiple use liners, clean liner before each use. Do not use damaged liner when continued use or repair would diminish the aesthetics of the work.
- C. Apply release agent according to manufacturer's directions. Schedule concrete pour immediately after application of release agent to avoid precipitation, dust, and debris.

### 3.2 FORM LINER INSTALLATION

**\*\* NOTE TO SPECIFIER \*\* Form liners expand and contract with changes in temperature.**

- A. Install units within manufacturer's recommended tolerances. Comply with manufacturer's installation instructions and approved submittals. Refer to manufacturer's Application Guide for proper procedures for installing formliners.
- B. Store and use form liner panels at temperatures between 40 degrees F and 140 degrees F.
- C. Seal formliner joints, rustication/chamfer joints, and tie holes to prevent cement paste from bleeding.
- D. Provide solid backing at formliner joints where unsupported by formwork to prevent deflection.
- E. Provide openings, offsets, keyways, recesses, chamfers, blocking, and screeds as required to achieve architectural concrete textured finish.
- F. Install backing as required to prevent deflection of the formliner due to form pressures.

### 3.3 FORM LINER MAINTENANCE

**\*\* NOTE TO SPECIFIER \*\* Delete any requirements below not relevant to this project; add others as required.**

- A. For applications with reusable formliners, comply with requirements of paragraph Delivery Storage and Handling when handling and storing units between uses. Prevent matrix build-up on the formliner surface. Excess release agent shall be removed before the form and liner is put back into service.
- B. Storage of form liner shall be out of direct sunlight and in temperatures below 140 degrees F. Store flat (not rolled) to avoid elastomeric sheet "set".

**END OF SECTION**