



Specifications

**** NOTE TO SPECIFIER **** Architectural Polymers; formliners for architectural concrete and accessories.

This section is based on the products of Architectural Polymers, which is located at:

1220 Little Gap Road

Palmerton, PA 18071

Tel: (610) 824-3322

Fax: (610) 824 3777

Email: info@apformliner.com

Web: www.apformliner.com

[click Here for additional information](#)

Architectural Polymers has been a leader and innovator in the concrete form fabrication industry for over 20 years, offering concrete solutions to meet the individual needs of your pre-cast, tilt-up and cast-in-place construction projects. We developed a vast array of innovative methods that offer a superior solution to traditional brickwork and masonry and benefits the architectural community. Applications range from high quality concrete form liner molds for decorative concrete art on North America's highways, to custom manufacturing thin brick inlay systems to clad schools, hospitals, commercial office buildings, condominiums, and parking decks. At Architectural Polymers, we thrive on finding cost-effective solutions resulting in beautiful, decorative concrete structures.

By way of continued excellence, Architectural Polymers supplies architects, owners, general contractors, and pre-cast concrete manufacturers with the top choices of quality thin brick approved by the Pre-Cast/Pre-Stressed Concrete Institute. We partnered with respected thin brick manufacturers such as Metro®, Summitville® Tile, Endicott® Clay and Röben to offer their product line along with the Versa-Brix® family and other veneer panel systems for non-concrete materials. As a system of thin brick, single and multi-use thin brick concrete form liners, service and accessories, this partnership utilized in its entirety reduces the cost to the consumer.

Architectural Polymers is now pleased to announce the availability of Photo Engraved Form Liners that create unique and beautiful photo engraved concrete panels.

From the Versa-Brix® Brick Inlay System and concrete form liners, to customized concrete art and concrete photo engravings, Architectural Polymers offers a wide-range of solutions for your concrete construction needs. Benefit from the experience, advanced technology and high-quality concrete products Architectural Polymers has to offer. Find out more about our wide variety of products: Versa-Brix® Thin Brick Inlay System; Thin Bricks; Concrete Form Liners and Photo Engraved Form Liners; Concrete Art; Architectural Stain.

Architectural Polymers, Inc.

1220 Little Gap Road

Palmerton, PA 18235

610-824-3777

AP Thermoforming, LLC

1035 Little Gap Road

Palmerton, PA 18235

610-826-4579

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 CNC graphic bas-relief patterns.
- D. Reusable, elastomeric formliners for texturing architectural concrete with custom designed patterns.
- E. Reusable, ABS plastic formliners for texturing architectural concrete with standard patterns.
- F. Single-use, HIPS plastic formliners for texturing architectural concrete with standard patterns.
- G. Architectural Stain for coloring concrete.
- H. Formliner accessories as required for complete installation.

1.2 RELATED SECTIONS

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

- A. Section 03100 - Concrete Formwork.
- B. Section 03120 - Architectural Cast-in-Place Concrete Formwork.
- C. Section 03450 - Faced Architectural Precast Concrete.
- D. Section 03460 - Site-Cast Concrete.
- E. Section 03470 - Tilt-Up Concrete.
- F. Section 09980 - Concrete and Masonry Coatings.

1.3 REFERENCES

** NOTE TO SPECIFIER ** Delete references from the list below that are not actually required by the text of the edited section.

- A. American Concrete Institute (ACI): ACI 117 Tolerances for Concrete Construction and Materials.
- B. ASTM International (ASTM):
 - 1. ASTM D412: Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
 - 2. ASTM D2240: Standard Test Method for Rubber Property - Durometer Hardness.
 - 3. ASTM D1456: Standard Test Method for Rubber Property - Elongation

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Product sheets showing formliner name and model number.
 - 2. Formliner system preparation and installation procedures.
 - 3. Formliner application guide.
 - 4. Maintenance procedures.
 - 5. Storage and handling guidelines.
- C. Shop Drawings: Complete details of materials and installation, including but not limited to the following.
 - 1. Patterns.
 - 2. Formliner sheet sizes/accessory details.
 - 3. Joint locations.
 - 4. Installation sequence.

** NOTE TO SPECIFIER ** Delete options for sample that are not required for project.

- D. Samples for Selection: For range of formliner types and patterns requested by Architect.
 - 1. Formliner sample, maximum 24 inches x 24 inches (610 mm x 610 mm) depicting textures and patterns.
 - 2. Renderings.
 - 3. Sample of release agents available for releasing of formliners from concrete.
- E. Verification Samples: For each formliner type and pattern specified.
 - 1. Formliner sample, maximum 24 inches x 24 inches (610 mm x 610 mm) depicting texture and pattern.
 - 2. Sample of release agent to be used for releasing of formliners from concrete.
- F. Quality Assurance Submittals: Copies of test reports conducted by independent laboratories verifying the characteristics of the formliner shall be submitted to the Architect upon request.
- G. Warranty: A copy of the manufacturer's product warranty shall be provided upon request.

1.5 QUALITY ASSURANCE

- A. Single Source Requirements: Formliners, primary and secondary components necessary for the installation of the formliner shall be supplied from a single manufacturer, including but not limited to the following.
 - 1. Release agent.
 - 2. Formliner adhesive.
 - 3. Block outs/custom accessories.
- B. Manufacturer Qualifications: Manufacturer shall have a minimum of ten years experience manufacturing formliners.

- C. Installer Qualifications:
 - 1. If project is cast-in-place, installer shall have a minimum of three years experience working with formliners.
 - 2. If project is precast, precast manufacturer shall have a minimum of three years experience with fabricating with formliners.

- D. Project References: Upon request by Architect, manufacturer and installer shall submit a list of projects where formliners were used in the construction of concrete.

** NOTE TO SPECIFIER ** 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. Delete or alter any requirements listed below as applicable to project requirements.

- E. Mock-Up: A mock-up panel shall be constructed to demonstrate the texture and pattern of formliners selected as well as the surface preparation techniques and craftsmanship of the installer and precast manufacturer.
 - 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. Provide representative mock-up panel in area designated by Architect.
 - 3. The exact procedures used in the full-scale construction of the concrete must also be used during the construction of the mock-up.
 - 4. Architect 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.
 - 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 assure 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. Cover form liners when not in use to protect from water, oil, dirt and UV exposure. If building storage is not available, formliners shall be raised from the ground and covered securely with non-transparent, non-translucent, waterproof covers.

- C. Store materials within absolute limits for temperature and humidity recommended by manufacturer. Liquid materials shall be stored in temperatures not exceeding 110 degrees F (43 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.

1.8 SEQUENCING

- A. Ensure that products of this section are approved and supplied to affected trades in time to prevent interruption of construction progress.

** NOTE TO SPECIFIER ** Delete options for sample that are not required for project.

- B. Pre-Installation/Pre-Manufacture Meeting: Convene minimum two weeks prior to starting work of this section.

1.9 WARRANTY

- A. Manufacturer warranties for liners for specified usage as listed below.
 1. High Re-Use Elastomeric Formliners; Up to 100 uses.
 2. Low Use ABS Plastic Formliners: 2-5 uses.
 3. Single Use HIPS Plastic Formliners: single use.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Architectural Polymers, which is located at: 1220 Little Gap Road; Palmerton, PA 18071; ASD. Tel: 610-824-3322; Email: info@apformliner.com. Web: www.apformliner.com

** NOTE TO SPECIFIER ** Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

- B. Substitutions: Not permitted.

- C. Requests for substitutions will be considered in accordance with provisions of Section 01600 - Product Requirements.

** NOTE TO SPECIFIER ** Delete if not required.

2.2 REUSABLE FORMLINERS FOR ARCHITECTURAL CONCRETE

- A. Reusable Formliners: High Re-Use Elastomeric Formliners
1. Description: 100 prorated uses. Reusable elastomeric polyurethane formliners for creating textured surfaces on cast-in-place or precast concrete.
 2. Material Properties: As tested according to ASTM D2240.
 - a. Specific Gravity: 1.05
 - b. Elongation at Break: 550
 - c. Shore A Hardness (DIN 53505): 65
 - d. Tensile Strength (DIN 53504): 520 PSI or 3.59 N/mm².
 - e. Tear Resistance (ASTM D624): 145 PLI or 25.44 kN/m.
 3. Manufacturing Tolerances:
 - a. +/- 1/8 inch (3 mm) in height.
 - b. +/- 3/16 inch (5 mm) in length or width.
 4. Color: Grey.
 5. Pattern: As selected by Architect from manufacturer's standard range of available products.
 6. Pattern: From manufacturer's standard range of available products, as indicated on Drawings.
 7. Pattern: Brick Pattern 101A Modular Brick Velour (concave)
 8. Pattern: Brick Pattern 101B Modular Brick Velour (raked)
 9. Pattern: Brick Pattern 102A Utility Brick Wirecut (concave)
 10. Pattern: Brick Pattern 102B Utility Brick Wirecut (raked)
 11. Pattern: Brick Pattern 103A 1/3 Running Bond (concave)
 12. Pattern: Brick Pattern 103B 1/3 Running Bond (raked)
 13. Pattern: Brick Pattern 104 18th Century Brick
 14. Pattern: Brick Pattern 105A Smooth Utility Brick (concave)
 15. Pattern: Brick Pattern 105B Smooth Utility Brick (raked)
 16. Pattern: Brick Pattern 107A Modular Brick Smooth (concave)
 17. Pattern: Brick Pattern 107B Modular Brick Smooth (raked)
 18. Pattern: Brick Pattern 108A Modular Brick Sand Finish (concave)
 19. Pattern: Brick Pattern 108B Modular Brick Sand Finish (raked)
 20. Pattern: Brick Pattern 109 Weathered Metric Brick
 21. Pattern: Brick Pattern 110 8x8 1/2" Running Bond Tile (concave)
 22. Pattern: Brick Pattern 111 Ohio Sand Brick
 23. Pattern: Brick Pattern 112 Modular Brick Wirecut (concave)
 24. Pattern: Brick Pattern 113 Closure Tumbled Brick (raked)
 25. Pattern: Fractured Pattern 201 M&R Modified
 26. Pattern: Fractured Pattern 202 Tree Bark
 27. Pattern: Fractured Pattern 203 1" Standard Fractured Fin
 28. Pattern: Fractured Pattern 204 1.5" Architectural Rib
 29. Pattern: Fractured Pattern 205 Flat Fractured Rib
 30. Pattern: Fractured Pattern 206 3/4" Standard Fractured Fin
 31. Pattern: Fractured Pattern 207 1" Fractured Rope
 32. Pattern: Fractured Pattern 208 Wavy Carolina Fractured Rib
 33. Pattern: Fractured Pattern 209 1/2" Fractured Fin

34. Pattern: Fractured Pattern 210 NY Fractured Fin
35. Pattern: Fractured Pattern 210A Broome County Fin
36. Pattern: Fractured Pattern 211 Sound Absorptive Broken 1' Ribs
37. Pattern: Fractured Pattern 213 3" Fractured Flute
38. Pattern: Fractured Pattern 214 1/4" Standard Fractured Fin
39. Pattern: Rhythmic Pattern 301 1/2" Sinewave
40. Pattern: Rhythmic Pattern 302 3/4" Fin
41. Pattern: Rhythmic Pattern 303 3" Fin
42. Pattern: Rhythmic Pattern 304 Wyeth Aherst Rib
43. Pattern: Rhythmic Pattern 305 3/8" Smooth Flute 1 O.C.
44. Pattern: Rhythmic Pattern 306 1 1/2" Deep Smooth Rib
45. Pattern: Rhythmic Pattern 307 1 3/4" Smooth Flute 2 1/4" O.C.
46. Pattern: Rhythmic Pattern 308 2" Deep Smooth Flute 2" O.C.
47. Pattern: Rhythmic Pattern 309 1" Light Textured Flute 2" O.C.
48. Pattern: Rhythmic Pattern 310 Pyramid Flute 8" O.C.
49. Pattern: Rhythmic Pattern 311A Random Striated Rib
50. Pattern: Rhythmic Pattern 311B Random Striated Rib
51. Pattern: Rhythmic Pattern 311C Random Striated Rib
52. Pattern: Rhythmic Pattern 313 Salem
53. Pattern: Rhythmic Pattern 314 Geo Diamonds
54. Pattern: Rhythmic Pattern 315 Braintree
55. Pattern: Rhythmic Pattern 316 Random Board
56. Pattern: Rhythmic Pattern 317 1.25" Random Peak/Valley
57. Pattern: Rhythmic Pattern 319 3/4" Sinewave
58. Pattern: Rhythmic Pattern 321 Chelmsford
59. Pattern: Flat Pattern 401 Exposed Aggregate
60. Pattern: Flat Pattern 403 Light Sand Finish
61. Pattern: Flat Pattern 404 Medium Sand Finish
62. Pattern: Flat Pattern 405 Smooth Finish
63. Pattern: Flat Pattern 406 Worm Stucco
64. Pattern: Flat Pattern 407 Broom
65. Pattern: Flat Pattern 408 Bush Hammered
66. Pattern: Flat Pattern 410 EIFS
67. Pattern: Flat Pattern 411 Heavy Sand Blast
68. Pattern: Flat Pattern 412 Venetian Stucco
69. Pattern: Wood Pattern 501 Barn Boards
70. Pattern: Wood Pattern 502 5" and 3" Cedar
71. Pattern: Wood Pattern 503 Cedar Stakes
72. Pattern: Wood Pattern 504 6" Shiplap
73. Pattern: Wood Pattern 505 Exaggerated Stakes
74. Pattern: Wood Pattern 506 Staggered Oak
75. Pattern: Wood Pattern 507 Staggered Oak Heavy
76. Pattern: Wood Pattern 508 1" Split Cedar Stakes

77. Pattern: Wood Pattern 509 5" Weathered Wood
78. Pattern: Wood Pattern 512 Hand Hewn Hemlock
79. Pattern: Wood Pattern 513 Bamboo Strips – Small
80. Pattern: Wood Pattern 514 2 1/2" Split Stakes
81. Pattern: Wood Pattern 515 Old Timber Form
82. Pattern: Wood Pattern 516 Medium Grain 7 5/8" Board
83. Pattern: Wood Pattern 517 Board and Batten
84. Pattern: Wood Pattern 518 6" Smooth Shiplap
85. Pattern: Wood Pattern 519 Cedar Shakes
86. Pattern: Wood Pattern 520 Weathered Fir
87. Pattern: Wood Pattern 521 7 1/2" Weathered Fir
88. Pattern: Contemporary Pattern 701 Lowell
89. Pattern: Contemporary Pattern 702 Billerica
90. Pattern: Contemporary Pattern 703 Natick
91. Pattern: Contemporary Pattern 704 Dracut
92. Pattern: Contemporary Pattern 705 Haverhill
93. Pattern: Contemporary Pattern 706 Tewksbury
94. Pattern: Contemporary Pattern 707 Ipswich
95. Pattern: Contemporary Pattern 708 Saugus
96. Pattern: Contemporary Pattern 709 Sagaponack
97. Pattern: Contemporary Pattern 710 Pepperell
98. Pattern: Contemporary Pattern 711 Cambridge
99. Pattern: Contemporary Pattern 712 Marshfield
100. Pattern: Contemporary Pattern 713 Clicquot
101. Pattern: Contemporary Pattern 714 Lenox
102. Pattern: Contemporary Pattern 715 Roxbury
103. Pattern: Contemporary Pattern 716 Marblehead
104. Pattern: Contemporary Pattern 717 Peabody
105. Pattern: Contemporary Pattern 718 Reynold
106. Pattern: Contemporary Pattern 719 Longmeadow
107. Pattern: Contemporary Pattern 720 Chicopee
108. Pattern: Contemporary Pattern 721 Duxberry
109. Pattern: Stone and Block Pattern 888 9" Quarry Stone
110. Pattern: Stone and Block Pattern 889 8" Quarry Stone
111. Pattern: Stone and Block Pattern 890 14 3/4" Horseheads Quarry Stone
112. Pattern: Stone and Block Pattern 891A Riverstone
113. Pattern: Stone and Block Pattern 891C Riverstone
114. Pattern: Stone and Block Pattern 892 12" Quarry Stone
115. Pattern: Stone and Block Pattern 893 14" Quarry Stone
116. Pattern: Stone and Block Pattern 893A 15" Custom Quarry Stone
117. Pattern: Stone and Block Pattern 894 16" Quarry Stone
118. Pattern: Stone and Block Pattern 895 21" Quarry Stone
119. Pattern: Stone and Block Pattern 896 24" Quarry Stone

120. Pattern: Stone and Block Pattern 897A 14 3/4" Rustic Quarried 1 5/8"
121. Pattern: Stone and Block Pattern 897B 14 3/4" Rustic Quarried 3"
122. Pattern: Stone and Block Pattern 898 Rustic Ashlar Stone
123. Pattern: Stone and Block Pattern 898A Rustic Ashlar Stone
124. Pattern: Stone and Block Pattern 899 Northeast River Stone
125. Pattern: Stone and Block Pattern 900 2x8 Split Block
126. Pattern: Stone and Block Pattern 901A 8x16 Split Block Concave
127. Pattern: Stone and Block Pattern 901B 8x16 Split Block Raked
128. Pattern: Stone and Block Pattern 901C 8x16 Split Block Heavy Relief Concave
129. Pattern: Stone and Block Pattern 902 9x18 Split Block with Deep Mortar
130. Pattern: Stone and Block Pattern 903 8x8 Split Block
131. Pattern: Stone and Block Pattern 904 Ashlar Stone
132. Pattern: Stone and Block Pattern 904A Ashlar Stone
133. Pattern: Stone and Block Pattern 905 Small Aged Ashlar Stone
134. Pattern: Stone and Block Pattern 906 Ashlar Stone Heavy Cut
135. Pattern: Stone and Block Pattern 907 Coral Ashlar Stone
136. Pattern: Stone and Block Pattern 908 BQE Old Cut Ashlar Stone
137. Pattern: Stone and Block Pattern 909 Westmoreland Drystack
138. Pattern: Stone and Block Pattern 910 Median Barrier Drystack
139. Pattern: Stone and Block Pattern 910B Median Barrier Drystack
140. Pattern: Stone and Block Pattern 911 Large Stone Drystack
141. Pattern: Stone and Block Pattern 911A Large Stone Drystack
142. Pattern: Stone and Block Pattern 911B Large Stone Drystack
143. Pattern: Stone and Block Pattern 911O Large Stone Ohio Drystack
144. Pattern: Stone and Block Pattern 912 Valley Forge Fieldstone
145. Pattern: Stone and Block Pattern 912A Valley Forge Fieldstone 3/4" Relief
146. Pattern: Stone and Block Pattern 913 New York DOT Ashlar
147. Pattern: Stone and Block Pattern 914 Small Aged Ashlar with Thin Joints
148. Pattern: Stone and Block Pattern 916 Small Rustic Ashlar
149. Pattern: Stone and Block Pattern 917 8x8 Split Block Running Bond
150. Pattern: Stone and Block Pattern 918 12x24 Split Limestone Running Bond
151. Pattern: Stone and Block Pattern 919 Weathered Cut Ashlar
152. Pattern: Stone and Block Pattern 921 Split Slate
153. Pattern: Stone and Block Pattern 922 Cleaved Limestone
154. Pattern: Stone and Block Pattern 927 Atomic Ashlar
155. Pattern: Stone and Block Pattern 928 Slump Stone
156. Pattern: Stone and Block Pattern 929 8x16 Hand Chiseled Block
157. Pattern: Stone and Block Pattern 931 Dry Fit Ashlar
158. Pattern: Stone and Block Pattern 932 Random Coursed Ashlar
159. Pattern: Stone and Block Pattern 933 LedgeStone Drystack
160. Pattern: Stone and Block Pattern 934 Dry-Fit Paver
161. Pattern: Stone and Block Pattern 935 Castle Stone
162. Pattern: Stone and Block Pattern 936 3/8" Split Limestone

- 163. Pattern: Stone and Block Pattern 936B 3/4" Split Limestone
- 164. Pattern: Stone and Block Pattern 937 Mauch Chunk Drystack
- 165. Pattern: Stone and Block Pattern 938 Canal Lock Drystack

** NOTE TO SPECIFIER ** Delete if not required.

2.3 LOW RE-USE ABS FORMLINERS FOR ARCHITECTURAL CAST-IN-PLACE CONCRETE

- A. Reusable Formliners:
 - 1. Description: Up to 5 uses. ABS formliners for creating textured surfaces on cast-in-place or precast concrete.
 - 2. Material Properties: As tested according to ASTM D2240.
 - a. Specific Gravity: 1.08 g/cm³
 - b. Shore A Hardness (DIN 53505): 98/65
 - c. Tensile Strength (DIN 53504): 30-40 MPa
 - 3. Color: White.
 - 4. Pattern: As selected by Architect from manufacturer's standard range of available products.
 - 5. Pattern: From manufacturer's standard range of available products, as indicated on Drawings.
 - 6. Pattern: Brick Pattern 101A Modular Brick Velour (concave)
 - 7. Pattern: Brick Pattern 101B Modular Brick Velour (raked)
 - 8. Pattern: Brick Pattern 102A Utility Brick Wirecut (concave)
 - 9. Pattern: Brick Pattern 102B Utility Brick Wirecut (raked)
 - 10. Pattern: Brick Pattern 103A 1/3 Running Bond (concave)
 - 11. Pattern: Brick Pattern 103B 1/3 Running Bond (raked)
 - 12. Pattern: Brick Pattern 104 18th Century Brick
 - 13. Pattern: Brick Pattern 105A Smooth Utility Brick (concave)
 - 14. Pattern: Brick Pattern 105B Smooth Utility Brick (raked)
 - 15. Pattern: Brick Pattern 107A Modular Brick Smooth (concave)
 - 16. Pattern: Brick Pattern 107B Modular Brick Smooth (raked)
 - 17. Pattern: Brick Pattern 108A Modular Brick Sand Finish (concave)
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 - 23. Pattern: Brick Pattern 113 Closure Tumbled Brick (raked)
 - 24. Pattern: Fractured Pattern 201 M&R Modified
 - 25. Pattern: Fractured Pattern 202 Tree Bark
 - 26. Pattern: Fractured Pattern 203 1" Standard Fractured Fin
 - 27. Pattern: Fractured Pattern 204 1.5" Architectural Rib
 - 28. Pattern: Fractured Pattern 205 Flat Fractured Rib
 - 29. Pattern: Fractured Pattern 206 3/4" Standard Fractured Fin
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34. Pattern: Fractured Pattern 211 Sound Absorptive Broken 1' Ribs
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66. Pattern: Wood Pattern 506 Staggered Oak
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68. Pattern: Wood Pattern 508 1" Split Cedar Stakes
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70. Pattern: Wood Pattern 512 Hand Hewn Hemlock
71. Pattern: Wood Pattern 513 Bamboo Strips – Small
72. Pattern: Wood Pattern 514 2 1/2" Split Stakes
73. Pattern: Wood Pattern 515 Old Timber Form
74. Pattern: Wood Pattern 516 Medium Grain 7 5/8" Board
75. Pattern: Wood Pattern 517 Board and Batten

76. Pattern: Wood Pattern 518 6" Smooth Shiplap
77. Pattern: Wood Pattern 519 Cedar Shakes
78. Pattern: Wood Pattern 520 Weathered Fir
79. Pattern: Wood Pattern 521 7 1/2" Weathered Fir
80. Pattern: Contemporary Pattern 701 Lowell
81. Pattern: Contemporary Pattern 702 Billerica
82. Pattern: Contemporary Pattern 707 Ipswich
83. Pattern: Contemporary Pattern 708 Saugus
84. Pattern: Contemporary Pattern 709 Sagaponack
85. Pattern: Contemporary Pattern 710 Pepperell
86. Pattern: Contemporary Pattern 711 Cambridge
87. Pattern: Contemporary Pattern 712 Marshfield
88. Pattern: Contemporary Pattern 713 Clicquot
89. Pattern: Contemporary Pattern 716 Marblehead
90. Pattern: Contemporary Pattern 718 Reynold
91. Pattern: Contemporary Pattern 719 Longmeadow
92. Pattern: Stone and Block Pattern 888 9" Quarry Stone
93. Pattern: Stone and Block Pattern 889 8" Quarry Stone
94. Pattern: Stone and Block Pattern 891C Riverstone
95. Pattern: Stone and Block Pattern 892 12" Quarry Stone
96. Pattern: Stone and Block Pattern 893 14" Quarry Stone
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98. Pattern: Stone and Block Pattern 894 16" Quarry Stone
99. Pattern: Stone and Block Pattern 897A 14 3/4" Rustic Quarried 1 5/8"
100. Pattern: Stone and Block Pattern 898 Rustic Ashlar Stone
101. Pattern: Stone and Block Pattern 898A Rustic Ashlar Stone
102. Pattern: Stone and Block Pattern 900 2x8 Split Block
103. Pattern: Stone and Block Pattern 901A 8x16 Split Block Concave
104. Pattern: Stone and Block Pattern 901B 8x16 Split Block Raked
105. Pattern: Stone and Block Pattern 901C 8x16 Split Block Heavy Relief Concave
106. Pattern: Stone and Block Pattern 902 9x18 Split Block with Deep Mortar
107. Pattern: Stone and Block Pattern 903 8x8 Split Block
108. Pattern: Stone and Block Pattern 904 Ashlar Stone
109. Pattern: Stone and Block Pattern 904A Ashlar Stone
110. Pattern: Stone and Block Pattern 905 Small Aged Ashlar Stone
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114. Pattern: Stone and Block Pattern 909 Westmoreland Drystack
115. Pattern: Stone and Block Pattern 910 Median Barrier Drystack
116. Pattern: Stone and Block Pattern 910B Median Barrier Drystack
117. Pattern: Stone and Block Pattern 911A Large Stone Drystack
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119. Pattern: Stone and Block Pattern 911O Large Stone Ohio Drystack
120. Pattern: Stone and Block Pattern 912 Valley Forge Fieldstone
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122. Pattern: Stone and Block Pattern 913 New York DOT Ashlar
123. Pattern: Stone and Block Pattern 916 Small Rustic Ashlar
124. Pattern: Stone and Block Pattern 917 8x8 Split Block Running Bond
125. Pattern: Stone and Block Pattern 918 12x24 Split Limestone Running Bond
126. Pattern: Stone and Block Pattern 919 Weathered Cut Ashlar
127. Pattern: Stone and Block Pattern 921 Split Slate
128. Pattern: Stone and Block Pattern 922 Cleaved Limestone
129. Pattern: Stone and Block Pattern 927 Atomic Ashlar
130. Pattern: Stone and Block Pattern 928 Slump Stone
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132. Pattern: Stone and Block Pattern 931 Dry Fit Ashlar
133. Pattern: Stone and Block Pattern 932 Random Coursed Ashlar
134. Pattern: Stone and Block Pattern 933 LedgeStone Drystack
135. Pattern: Stone and Block Pattern 934 Dry-Fit Paver
136. Pattern: Stone and Block Pattern 935 Castle Stone
137. Pattern: Stone and Block Pattern 936 3/8" Split Limestone
138. Pattern: Stone and Block Pattern 936B 3/4" Split Limestone
139. Pattern: Stone and Block Pattern 937 Mauch Chunk Drystack
140. Pattern: Stone and Block Pattern 938 Canal Lock Drystack

** NOTE TO SPECIFIER ** Delete if not required.

2.4 CUSTOM FORMLINERS FOR ARCHITECTURAL PRECAST AND CAST-IN-PLACE CONCRETE

- A. Custom Reusable Formliners: As manufactured by Architectural Polymers, Inc.
1. Description: Custom designed, formliners for creating textured surfaces on cast-in-place or precast concrete.

** NOTE TO SPECIFIER ** Delete type not required.

2. Elastomeric High Re-Use Formliners: Up to 100 uses.
3. Low Use ABS Plastic Formliners: 2-5 uses.
4. Single Use HIPS Plastic Formliners: single use.

** NOTE TO SPECIFIER ** Delete options for patterns not required.

5. Pattern: Custom style, _____.
6. Pattern: Photo-engraving, _____.
7. Pattern: CNC graphic patterns, _____.
8. Pattern: As selected by Architect from manufacturer's custom range of available formliners.
9. Pattern: From manufacturer's custom range of available formliners, as indicated on Drawings.

** NOTE TO SPECIFIER ** Delete if not required.

2.5 SINGLE-USE FORMLINERS FOR ARCHITECTURAL PRECAST OR CAST-IN-PLACE CONCRETE

- A. Single Use Formliners: Single use HIPS plastic formliners as manufactured by Architectural Polymers, Inc.
1. Description: Custom designed, single use formliners for creating textured surfaces on cast-in-place or precast concrete.
 2. Material Properties: As tested according to ASTM D2240.
 - a. Specific Gravity: 1.06 g/cm³
 - b. Tensile Strength (DIN 53504): 20 MPa
 3. Color: White.

** NOTE TO SPECIFIER ** Delete options for pattern not required.

4. Pattern: As selected by Architect from manufacturer's standard range of available single use formliners.
5. Pattern: From manufacturer's standard range of available single use formliners, as indicated on Drawings.
6. Pattern: Brick Pattern 101A Modular Brick Velour (concave)
7. Pattern: Brick Pattern 101B Modular Brick Velour (raked)
8. Pattern: Brick Pattern 102A Utility Brick Wirecut (concave)
9. Pattern: Brick Pattern 102B Utility Brick Wirecut (raked)
10. Pattern: Brick Pattern 103A 1/3 Running Bond (concave)
11. Pattern: Brick Pattern 103B 1/3 Running Bond (raked)
12. Pattern: Brick Pattern 104 18th Century Brick
13. Pattern: Brick Pattern 105A Smooth Utility Brick (concave)
14. Pattern: Brick Pattern 105B Smooth Utility Brick (raked)
15. Pattern: Brick Pattern 107A Modular Brick Smooth (concave)
16. Pattern: Brick Pattern 107B Modular Brick Smooth (raked)
17. Pattern: Brick Pattern 108A Modular Brick Sand Finish (concave)
18. Pattern: Brick Pattern 108B Modular Brick Sand Finish (raked)
19. Pattern: Brick Pattern 109 Weathered Metric Brick
20. Pattern: Brick Pattern 110 8x8 1/2" Running Bond Tile (concave)
21. Pattern: Brick Pattern 111 Ohio Sand Brick
22. Pattern: Brick Pattern 112 Modular Brick Wirecut (concave)
23. Pattern: Brick Pattern 113 Closure Tumbled Brick (raked)
24. Pattern: Fractured Pattern 201 M&R Modified
25. Pattern: Fractured Pattern 202 Tree Bark
26. Pattern: Fractured Pattern 203 1" Standard Fractured Fin
27. Pattern: Fractured Pattern 204 1.5" Architectural Rib
28. Pattern: Fractured Pattern 205 Flat Fractured Rib
29. Pattern: Fractured Pattern 206 3/4" Standard Fractured Fin
30. Pattern: Fractured Pattern 207 1" Fractured Rope
31. Pattern: Fractured Pattern 208 Wavy Carolina Fractured Rib
32. Pattern: Fractured Pattern 209 1/2" Fractured Fin
33. Pattern: Fractured Pattern 210 NY Fractured Fin
34. Pattern: Fractured Pattern 211 Sound Absorptive Broken 1' Ribs
35. Pattern: Fractured Pattern 213 3" Fractured Flute

36. Pattern: Fractured Pattern 214 1/4" Standard Fractured Fin
37. Pattern: Rhythmic Pattern 301 1/2" Sinewave
38. Pattern: Rhythmic Pattern 302 3/4" Fin
39. Pattern: Rhythmic Pattern 303 3" Fin
40. Pattern: Rhythmic Pattern 304 Wyeth Aherst Rib
41. Pattern: Rhythmic Pattern 305 3/8" Smooth Flute 1 O.C.
42. Pattern: Rhythmic Pattern 307 1 3/4" Smooth Flute 2 1/4" O.C.
43. Pattern: Rhythmic Pattern 309 1" Light Textured Flute 2" O.C.
44. Pattern: Rhythmic Pattern 310 Pyramid Flute 8" O.C.
45. Pattern: Rhythmic Pattern 311A Random Striated Rib
46. Pattern: Rhythmic Pattern 311C Random Striated Rib
47. Pattern: Rhythmic Pattern 313 Salem
48. Pattern: Rhythmic Pattern 314 Geo Diamonds
49. Pattern: Rhythmic Pattern 315 Braintree
50. Pattern: Rhythmic Pattern 317 1.25" Random Peak/Valley
51. Pattern: Rhythmic Pattern 319 3/4" Sinewave
52. Pattern: Flat Pattern 401 Exposed Aggregate
53. Pattern: Flat Pattern 403 Light Sand Finish
54. Pattern: Flat Pattern 404 Medium Sand Finish
55. Pattern: Flat Pattern 405 Smooth Finish
56. Pattern: Flat Pattern 406 Worm Stucco
57. Pattern: Flat Pattern 407 Broom
58. Pattern: Flat Pattern 408 Bush Hammered
59. Pattern: Flat Pattern 410 EIFS
60. Pattern: Flat Pattern 412 Venetian Stucco
61. Pattern: Wood Pattern 501 Barn Boards
62. Pattern: Wood Pattern 502 5" and 3" Cedar
63. Pattern: Wood Pattern 503 Cedar Stakes
64. Pattern: Wood Pattern 504 6" Shiplap
65. Pattern: Wood Pattern 505 Exaggerated Stakes
66. Pattern: Wood Pattern 506 Staggered Oak
67. Pattern: Wood Pattern 507 Staggered Oak Heavy
68. Pattern: Wood Pattern 508 1" Split Cedar Stakes
69. Pattern: Wood Pattern 509 5" Weathered Wood
70. Pattern: Wood Pattern 512 Hand Hewn Hemlock
71. Pattern: Wood Pattern 513 Bamboo Strips – Small
72. Pattern: Wood Pattern 514 2 1/2" Split Stakes
73. Pattern: Wood Pattern 515 Old Timber Form
74. Pattern: Wood Pattern 516 Medium Grain 7 5/8" Board
75. Pattern: Wood Pattern 517 Board and Batten
76. Pattern: Wood Pattern 518 6" Smooth Shiplap
77. Pattern: Wood Pattern 519 Cedar Shakes
78. Pattern: Wood Pattern 520 Weathered Fir

79. Pattern: Wood Pattern 521 7 1/2" Weathered Fir
80. Pattern: Contemporary Pattern 701 Lowell
81. Pattern: Contemporary Pattern 702 Billerica
82. Pattern: Contemporary Pattern 707 Ipswich
83. Pattern: Contemporary Pattern 708 Saugus
84. Pattern: Contemporary Pattern 709 Sagaponack
85. Pattern: Contemporary Pattern 710 Pepperell
86. Pattern: Contemporary Pattern 711 Cambridge
87. Pattern: Contemporary Pattern 712 Marshfield
88. Pattern: Contemporary Pattern 713 Clicquot
89. Pattern: Contemporary Pattern 716 Marblehead
90. Pattern: Contemporary Pattern 718 Reynold
91. Pattern: Contemporary Pattern 719 Longmeadow
92. Pattern: Stone and Block Pattern 888 9" Quarry Stone
93. Pattern: Stone and Block Pattern 889 8" Quarry Stone
94. Pattern: Stone and Block Pattern 891C Riverstone
95. Pattern: Stone and Block Pattern 892 12" Quarry Stone
96. Pattern: Stone and Block Pattern 893 14" Quarry Stone
97. Pattern: Stone and Block Pattern 893A 15" Custom Quarry Stone
98. Pattern: Stone and Block Pattern 894 16" Quarry Stone
99. Pattern: Stone and Block Pattern 897A 14 3/4" Rustic Quarried 1 5/8"
100. Pattern: Stone and Block Pattern 898 Rustic Ashlar Stone
101. Pattern: Stone and Block Pattern 898A Rustic Ashlar Stone
102. Pattern: Stone and Block Pattern 900 2x8 Split Block
103. Pattern: Stone and Block Pattern 901A 8x16 Split Block Concave
104. Pattern: Stone and Block Pattern 901B 8x16 Split Block Raked
105. Pattern: Stone and Block Pattern 901C 8x16 Split Block Heavy Relief Concave
106. Pattern: Stone and Block Pattern 902 9x18 Split Block with Deep Mortar
107. Pattern: Stone and Block Pattern 903 8x8 Split Block
108. Pattern: Stone and Block Pattern 904 Ashlar Stone
109. Pattern: Stone and Block Pattern 904A Ashlar Stone
110. Pattern: Stone and Block Pattern 905 Small Aged Ashlar Stone
111. Pattern: Stone and Block Pattern 906 Ashlar Stone Heavy Cut
112. Pattern: Stone and Block Pattern 907 Coral Ashlar Stone
113. Pattern: Stone and Block Pattern 908 BQE Old Cut Ashlar Stone
114. Pattern: Stone and Block Pattern 909 Westmoreland Drystack
115. Pattern: Stone and Block Pattern 910 Median Barrier Drystack
116. Pattern: Stone and Block Pattern 910B Median Barrier Drystack
117. Pattern: Stone and Block Pattern 911A Large Stone Drystack
118. Pattern: Stone and Block Pattern 911B Large Stone Drystack
119. Pattern: Stone and Block Pattern 911O Large Stone Ohio Drystack
120. Pattern: Stone and Block Pattern 912 Valley Forge Fieldstone
121. Pattern: Stone and Block Pattern 912A Valley Forge Fieldstone 3/4" Relief

122. Pattern: Stone and Block Pattern 913 New York DOT Ashlar
123. Pattern: Stone and Block Pattern 916 Small Rustic Ashlar
124. Pattern: Stone and Block Pattern 917 8x8 Split Block Running Bond
125. Pattern: Stone and Block Pattern 918 12x24 Split Limestone Running Bond
126. Pattern: Stone and Block Pattern 919 Weathered Cut Ashlar
127. Pattern: Stone and Block Pattern 921 Split Slate
128. Pattern: Stone and Block Pattern 922 Cleaved Limestone
129. Pattern: Stone and Block Pattern 927 Atomic Ashlar
130. Pattern: Stone and Block Pattern 928 Slump Stone
131. Pattern: Stone and Block Pattern 929 8x16 Hand Chiseled Block
132. Pattern: Stone and Block Pattern 931 Dry Fit Ashlar
133. Pattern: Stone and Block Pattern 932 Random Coursed Ashlar
134. Pattern: Stone and Block Pattern 933 LedgeStone Drystack
135. Pattern: Stone and Block Pattern 934 Dry-Fit Paver
136. Pattern: Stone and Block Pattern 935 Castle Stone
137. Pattern: Stone and Block Pattern 936 3/8" Split Limestone
138. Pattern: Stone and Block Pattern 936B 3/4" Split Limestone
139. Pattern: Stone and Block Pattern 937 Mauch Chunk Drystack
140. Pattern: Stone and Block Pattern 938 Canal Lock Drystack

** NOTE TO SPECIFIER ** Delete options listed below not required.

2.6 ACCESSORY MATERIALS

- A. Formliners Accessories: Form oil and adhesives as required for the complete form liner system as manufactured by Architectural Polymers, Inc.
 1. Release Agent: 2550 Form Oil release agent for pre-cast and cast-in-place concrete, solvent based.
 2. Filler: 75/65 RTV Urethane for repair of damaged formliners.
 3. Adhesive: Epoxy bond adhesive for fully adhering entire surfaces on steel or timber and equalizing rear of formliner.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
- B. Prepare substrates using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Form Liner Preparation:
 1. Verify lines and levels of formwork and form liner patterns are within allowable tolerances.
 2. Clean liner before each use. Do not use damaged liner when continued use or repair would diminish the aesthetics of the work.
 3. The release agent to be used with the formliners should be Architectural Polymers 2550 Form Oil or Cresset Crete-Lease 880. Please take care that all sections, angles of the pattern are covered with the

- release agent.
4. Drying time for the release agents depends on ambient temperatures and air movement. Consumption is approximately 800-1200 sq/feet per gallon after the initial seasoning.
- D. Do not proceed with installation until substrates have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.
 - E. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

3.2 INSTALLATION

- 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 formliners at temperatures between 40 degrees F and 140 degrees F (4.4 degrees C and 60 degrees C).
- C. For applications where concrete temperatures will exceed 140 degrees F (60 degrees C) at the formliner face, reduce the temperature with methods as recommended by manufacturer.
- D. For applications involving multiple formliners butted together in a horizontal fashion, press the edges of the formliner together tightly to stop concrete bleeding between the formliners.

3.3 MAINTENANCE OF REUSABLE FORMLINERS

- 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.

3.4 CLEANING AND PROTECTION

- A. Clean exposed surfaces. Touch up, refinish, or replace damaged components in a manner acceptable to Architect.
- B. Protect installed products until completion of project.
- C. Repair or replace defective work as directed by Architect upon inspection.

END OF SECTION