SECTION 03 11 16

FORMLINERS FOR ARCHITECTURAL CONCRETE

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\*\* NOTE TO SPECIFIER \*\* US Formliners, Inc.; formliners for architectural concrete and accessories.  
This section is based on the products of US Formliners, Inc. which is located at:  
370 Commerce Blvd.  
Athens GA 30606  
Tel: (706) 549-6787  
Fax: (706) 355-9199  
Email: ray.clark@usformliner.com  
Web: http://www.usformliners.com  
click Herefor additional information  
US Formliner was formed by two leaders in the industry, Nawkaw Corporation and Reckli International. Because today's architects and precasters demand consistent color, as well as diverse pattern selection, it was only natural for them to unite the cutting edge formliner technology from Reckli with the US based sales network of Nawkaw.  
Now, architects, precasters and design professionals have greater selection than ever with regard to concrete textures, patterns and custom formliners. Using the most advanced mold making techniques, superior materials, and backed by 40 years of experience, US Formliner is your best choice for reliability and value. Headquarters and manufacturing facilities are located in Bogart, GA.  
40 years of manufacturing expertise - Technical assistance available - 100x and 10x use formliners  
Formliners: Made from high quality polyurethane, our formliners capture minute detail allowing it to be faithfully reproduced in concrete. Pattern and texture combine to make your architectural statement loud and clear.  
Liquid Rubber: Interested in designing your own patterns? Whether you are sculpting texture from scratch or casting an existing textural element you will find our liquid rubber(s) easy to work with before, during and after the mold making process.  
Additional Products: US Formliner also offers a complete line of de-molding materials, adhesives, cleansers, fillers, thickeners--everything you need to complete your mold making project.

1. GENERAL
   1. SECTION INCLUDES

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

* + 1. Reusable, elastomeric formliners for texturing architectural concrete with standard patterns.
    2. Reusable, elastomeric formliners for texturing architectural concrete with photo engraving.
    3. Reusable, elastomeric formliners for texturing architectural concrete with CNC graphic patterns.
    4. Reusable, elastomeric formliners for texturing architectural concrete with custom designed patterns.
    5. Single-use, elastomeric formliners for texturing architectural concrete with standard patterns.
    6. Formliner accessories as required for complete installation.
  1. RELATED SECTIONS

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

* + 1. Section 03 11 19 - Insulating Concrete Forming.
    2. Section 03 11 16 - Architectural Cast-in-Place Concrete Forming.
    3. Section 03 37 13 - Shotcrete.
    4. Section 03 35 00 - Concrete Finishing.
    5. Section 03 41 16 - Precast Concrete Slabs.
    6. Section 03 45 13 - Faced Architectural Precast Concrete.
    7. Section 03 47 00 - Site-Cast Concrete.
    8. Section 03 47 13 - Tilt-Up Concrete.
    9. Section 09 97 23 - Concrete and Masonry Coatings.
  1. REFERENCES

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

* + 1. American Concrete Institute (ACI): ACI 117 Tolerances for Concrete Construction and Materials.
    2. ASTM International (ASTM):
       1. ASTM D624: 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. German institute for standardization (DIN):
       1. DIN 53505: Testing of rubber - Shore A and Shore D hardness test.
       2. DIN 53504: Testing of rubber - determination of tensile strength at break, tensile stress at yield, elongation at break and stress values in a tensile test (Foreign Standard).
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. 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.
     3. Shop Drawings: Complete details of materials and installation, including but not limited to the following.
        1. Formliner sheet sizes.
        2. Joint locations.
        3. Installation sequence.
        4. Panel elevations.

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

* + 1. 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. Sample of release agents available for releasing of formliners from concrete.
    2. 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.
    3. 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.
    4. Warranty: A copy of the manufacturer's product warranty shall be provided upon request.
  1. QUALITY ASSURANCE
     1. 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. Stop-off paste.
     2. Manufacturer Qualifications: Manufacturer shall have a minimum of five years experience manufacturing formliners.
     3. Installer Qualifications:
        1. If project is in-situ cast, installer shall have a minimum of three years experience working with formliners.
        2. If project is precast, precast manufacturer shall have a minimum of thee years experience with fabricating with formliners.
     4. 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.

* + 1. 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 textures and patterns 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. DELIVERY, STORAGE, AND HANDLING
     1. 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.
     2. 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.
     3. 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.
  2. PROJECT CONDITIONS
     1. 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.
  3. SEQUENCING
     1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

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

* + 1. Pre-Installation Meeting: Convene minimum two weeks prior to starting work of this section.
  1. WARRANTY
     1. Manufacturer warranties formliners for specified usage as listed below.

\*\* NOTE TO SPECIFIER \*\* US Formliner warranties its formliners for the specified usage (100-use, 50-use, 10-use) only when US Formliner Stripping Wax is used. Delete options below not required.

* + - 1. C Series: 100 uses.
      2. A Series: 50 uses.
      3. E Series: 10 uses.
      4. RECKLI-One-Timer Series: Single use.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: US Formliner , which is located at: 380 Commerce Blvd.; Athens, GA 30606; Tel: 706-549-6787; Fax: 706-355-9199 ; Email: [request info (ray.clark@usformliner.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=US+Formliner+&coid=48644&rep=&fax=706-355-9199); Web: <https://www.reckli.com/us/usformliner>

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

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* US Formliner offers more than 300 concrete formliner patterns, meticulously crafted by Reckli, world renowned for unmatched quality. These 100X use formliners deliver superior detail and performance. With so many patterns, textures, and custom formliners, the possibilities are endless. Enhance your next architectural project with aesthetic textures that add a whole new dimension to design. Delete if not required.

* 1. RESUABLE FORMLINERS FOR ARCHITECTURAL CONCRETE
     1. Reusable Formliners: C-Series as manufactured by US Formliners, Inc.
        1. Description: Minimum of 100 uses. Reusable elastomeric polyurethane formliners for creating textured surfaces on in-situ or precast concrete.
        2. Material Properties: As tested according to ASTM D2240.
           1. Specific Gravity: 1.46.
           2. Elongation at Break: 270 percent.
           3. Shore A Hardness (DIN 53505): 48.
           4. Tensile Strength (DIN 53504): 1.7 N/mm^2.
           5. Tear Resistance (ASTM D624): 6-7 N/mm.
        3. Manufacturing Tolerances:
           1. +/- 1/8 inch (3 mm) in height.
           2. +/- 1 inch (25.4 mm) in length or width.
        4. Color: Grey.

\*\* NOTE TO SPECIFIER \*\* There is a selection of timber and plaster/stucco designs. We have ribbed patterns, broken and smooth. Masonry, brick, stone and rock designs, many taken from actual rock formations. Abstract and anti-slip patterns and many others. Delete options for pattern not required.

* + - 1. Pattern: As selected by Architect from manufacturer's standard range of available products.
      2. Pattern: From manufacturer's standard range of available products, as indicated on Drawings.
      3. Pattern: Rough cast and texture pattern 2/102 Parana.
      4. Pattern: Rough cast and texture pattern 2/103 Lena.
      5. Pattern: Rough cast and texture pattern 2/104 Sambesi.
      6. Pattern: Rough cast and texture pattern 2/105 Euphrat.
      7. Pattern: Rough cast and texture pattern 2/131 Lausitz.
      8. Pattern: Rough cast and texture pattern 2/132 Taunus.
      9. Pattern: Rough cast and texture pattern 2/133 Toscana.
      10. Pattern: Rough cast and texture pattern 2/33 Isar.
      11. Pattern: Rough cast and texture pattern 2/34 Lahn.
      12. Pattern: Rough cast and texture pattern 2/62 Tevere.
      13. Pattern: Rough cast and texture pattern 2/68 Arno.
      14. Pattern: Rough cast and texture pattern 2/69 Marne.
      15. Pattern: Rough cast and texture pattern 2/76 Nil.
      16. Pattern: Rough cast and texture pattern 2/91 Rio Grande.
      17. Pattern: Rough cast and texture pattern 2/92 Rio Bravo.
      18. Pattern: Rough cast and texture pattern 2/93 Red River.
      19. Pattern: Broken-rib pattern 2/106 B Amur.
      20. Pattern: Broken-rib pattern 2/107 B Mekong.
      21. Pattern: Broken-rib pattern 2/108 B Indus.
      22. Pattern: Broken-rib pattern 2/150 B Vosges.
      23. Pattern: Broken-rib pattern 2/30 B Havel.
      24. Pattern: Broken-rib pattern 2/56 B Garonne.
      25. Pattern: Broken-rib pattern 2/87 B Ohio.
      26. Pattern: Wood pattern 2/116 Ardeche.
      27. Pattern: Wood pattern 2/144 Spessart.
      28. Pattern: Wood pattern 2/152 Martinique.
      29. Pattern: Wood pattern 2/153 Martinique invers.
      30. Pattern: Wood pattern 2/154 Venta.
      31. Pattern: Wood pattern 2/155 Venta invers.
      32. Pattern: Wood pattern 2/163 Fraser.
      33. Pattern: Wood pattern 2/167 Trent.
      34. Pattern: Wood pattern 2/168 Somme.
      35. Pattern: Wood pattern 2/20 Ahr.
      36. Pattern: Wood pattern 2/21 Aller.
      37. Pattern: Wood pattern 2/22 Altmuhl.
      38. Pattern: Wood pattern 2/23 Alster.
      39. Pattern: Wood pattern 2/23 Alster mit gestobenen Brettern.
      40. Pattern: Wood pattern 2/24 Donau.
      41. Pattern: Wood pattern 2/24 Donau mit gestobenen Brettern.
      42. Pattern: Wood pattern 2/25 Eder.
      43. Pattern: Wood pattern 2/26 Elbe.
      44. Pattern: Wood pattern 2/27 Ems.
      45. Pattern: Wood pattern 2/28 Emscher.
      46. Pattern: Wood pattern 2/31 Iller.
      47. Pattern: Wood pattern 2/32 Inn.
      48. Pattern: Wood pattern 2/337 Miramas.
      49. Pattern: Wood pattern 2/47 Rhein.
      50. Pattern: Wood pattern 2/48 Ruhr.
      51. Pattern: Wood pattern 2/51 Spree.
      52. Pattern: Wood pattern 2/73 Tisa (Theib).
      53. Pattern: Wood pattern 2/74 Ural.
      54. Pattern: Wood pattern 2/82 Colorado.
      55. Pattern: Wood pattern 2/83 Tejo.
      56. Pattern: Wood pattern 2/84 Missouri.
      57. Pattern: Wood pattern 2/96 Niger.
      58. Pattern: Wood pattern 2/97 Kongo.
      59. Pattern: Abstract pattern 2/125 Dordogne.
      60. Pattern: Abstract pattern 2/151 Gironde.
      61. Pattern: Abstract pattern 2/169 Columbia.
      62. Pattern: Abstract pattern 2/174 Breisgau.
      63. Pattern: Abstract pattern 2/183 Gelderland.
      64. Pattern: Abstract pattern 2/185 Simmental.
      65. Pattern: Abstract pattern 2/186 Dalarna.
      66. Pattern: Abstract pattern 2/187 Abruzzo.
      67. Pattern: Abstract pattern 2/190 Ardenne.
      68. Pattern: Abstract pattern 2/191 Burgenland.
      69. Pattern: Abstract pattern 2/318 Pierre de Sable.
      70. Pattern: Abstract pattern 2/37 Lenne.
      71. Pattern: Abstract pattern 2/42 Naab.
      72. Pattern: Abstract pattern 2/43 Nahe.
      73. Pattern: Abstract pattern 2/44 Neckar.
      74. Pattern: Abstract pattern 2/45 Oder.
      75. Pattern: Abstract pattern 2/49 Saale.
      76. Pattern: Abstract pattern 2/50 Sieg.
      77. Pattern: Abstract pattern 2/53 Weser
      78. Pattern: Abstract pattern 2/57 Loire.
      79. Pattern: Abstract pattern 2/59 Rhone.
      80. Pattern: Abstract pattern 2/61 Thames.
      81. Pattern: Abstract pattern 2/98 Vltava (Moldau).
      82. Pattern: CNC-graphic pattern 2/601 Charente.
      83. Pattern: CNC-graphic pattern 2/602 Saone.
      84. Pattern: CNC-graphic pattern 2/603 Vienne.
      85. Pattern: Brick and masonry pattern 2/128 Hudson.
      86. Pattern: Brick and masonry pattern 2/130 Pommern.
      87. Pattern: Brick and masonry pattern 2/135 Provence.
      88. Pattern: Brick and masonry pattern 2/137 Bourgogne.
      89. Pattern: Brick and masonry pattern 2/139 Auvergne.
      90. Pattern: Brick and masonry pattern 2/140 Carmague.
      91. Pattern: Brick and masonry pattern 2/141 Dachstein.
      92. Pattern: Brick and masonry pattern 2/143 Solling.
      93. Pattern: Brick and masonry pattern 2/146 Andalucia.
      94. Pattern: Brick and masonry pattern 2/147 AllgAu.
      95. Pattern: Brick and masonry pattern 2/149 Tirol.
      96. Pattern: Brick and masonry pattern 2/160 Via Appia.
      97. Pattern: Brick and masonry pattern 2/161 Esterel.
      98. Pattern: Brick and masonry pattern 2/164 Brabant.
      99. Pattern: Brick and masonry pattern 2/177 Westfalia.
      100. Pattern: Brick and masonry pattern 2/196 Wallonie.
      101. Pattern: Brick and masonry pattern 2/311 Zyklop.
      102. Pattern: Brick and masonry pattern 2/312 Engadin.
      103. Pattern: Brick and masonry pattern 2/353 Tarn.
      104. Pattern: Brick and masonry pattern 2/374 La Reunion.
      105. Pattern: Brick and masonry pattern 2/39 Main.
      106. Pattern: Brick and masonry pattern 2/40 Mahne.
      107. Pattern: Brick and masonry pattern 2/65 Drau.
      108. Pattern: Brick and masonry pattern 2/70 Po.
      109. Pattern: Brick and masonry pattern 2/71 Don.
      110. Pattern: Brick and masonry pattern 2/72 Ob.
      111. Pattern: Brick and masonry pattern 2/78 Ganges.
      112. Pattern: Brick and masonry pattern 2/79 Mayenne.
      113. Pattern: Brick and masonry pattern 2/88 Trave.
      114. Pattern: Brick and masonry pattern 2/89 Duero.
      115. Pattern: Brick and masonry pattern 2/99 Salzach.
      116. Pattern: Stone and rock pattern 1/352 Embrun.
      117. Pattern: Stone and rock pattern 2/121 Cheyenne 1-5.
      118. Pattern: Stone and rock pattern 2/122 Yukon.
      119. Pattern: Stone and rock pattern 2/123 Tennessee.
      120. Pattern: Stone and rock pattern 2/136 Bretagne.
      121. Pattern: Stone and rock pattern 2/142 Tessin.
      122. Pattern: Stone and rock pattern 2/145 Schiefer 1-4.
      123. Pattern: Stone and rock pattern 2/145 Schiefer 5-8.
      124. Pattern: Stone and rock pattern 2/156 Steinwald.
      125. Pattern: Stone and rock pattern 2/157 Fichtelberg.
      126. Pattern: Stone and rock pattern 2/158 Bavaria.
      127. Pattern: Stone and rock pattern 2/159 Lugano.
      128. Pattern: Stone and rock pattern 2/166 Cilento.
      129. Pattern: Stone and rock pattern 2/170 Romanche.
      130. Pattern: Stone and rock pattern 2/173 Santa Cruz.
      131. Pattern: Stone and rock pattern 2/180 Steiermark.
      132. Pattern: Stone and rock pattern 2/181 Asturias.
      133. Pattern: Stone and rock pattern 2/188 Champagne.
      134. Pattern: Stone and rock pattern 2/41 Mosel.
      135. Pattern: Stone and rock pattern 2/90 Travertin.
      136. Pattern: Rib and wave pattern 2/175 Friesland.
      137. Pattern: Rib and wave pattern 2/197 Holledau.
      138. Pattern: Rib and wave pattern 2/29 Fulda.
      139. Pattern: Rib and wave pattern 2/75 Kacher.
      140. Pattern: Rib and wave pattern 2/77 Tigris.
      141. Pattern: Rib and wave pattern 2/94 Orinoco.
      142. Pattern: Rib and wave pattern 2/95 Amazonas.
      143. Pattern: Geometric pattern 2/195 Gysenberg.
      144. Pattern: Geometric pattern 2/327 Aurillac.
      145. Pattern: Geometric pattern 2/340 Miribel.
      146. Pattern: Oriental pattern 2/109 Oriental 9.
      147. Pattern: Oriental pattern 2/110 Oriental 10.
      148. Pattern: Oriental pattern 2/111 Oriental 11.
      149. Pattern: Oriental pattern 2/112 Oriental 12.
      150. Pattern: Oriental pattern 2/113 Oriental 13.
      151. Pattern: Oriental pattern 2/114 Oriental 14.
      152. Pattern: Anti-Slip pattern 2/115 Pastillen.
      153. Pattern: Anti-Slip pattern 2/117 Riffel 5-fach.
      154. Pattern: Anti-Slip pattern 2/118 Riffel 2-fach.
      155. Pattern: Anti-Slip pattern 2/119 Pikes.
      156. Pattern: Anti-Slip pattern 2/120 Rhombus.
      157. Pattern: Anti-Slip pattern 2/194 Antislip.

\*\* NOTE TO SPECIFIER \*\* US Formliner offers more than 300 concrete formliner patterns, meticulously crafted by Reckli, world renowned for unmatched quality. These 50X and 10X use formliners deliver superior detail and performance. With so many patterns, textures, and custom formliners, the possibilities are endless. Enhance your next architectural project with aesthetic textures that add a whole new dimension to design. Delete if not required.

* 1. RESUABLE FORMLINERS FOR ARCHITECTURAL CONCRETE
     1. Reusable Formliners:
        1. Series: A-Series as manufactured by US Formliners, Inc.
           1. Description: Minimum of 50 uses. Reusable elastomeric polyurethane formliners for creating textured surfaces on in-situ or precast concrete.
        2. Series: E-Series as manufactured by US Formliners, Inc.
           1. Description: Minimum of 10 uses. Reusable elastomeric polyurethane formliners for creating textured surfaces on in-situ or precast concrete.
        3. Material Properties: As tested according to ASTM D2240.
           1. Specific Gravity: 1.46.
           2. Elongation at Break: 270 percent.
           3. Shore A Hardness (DIN 53505): 48.
           4. Tensile Strength (DIN 53504): 1.7 N/mm^2.
           5. Tear Resistance (ASTM D624): 6-7 N/mm.
        4. Manufacturing Tolerances:
           1. +/- 1/8 inch (3 mm) in height.
           2. +/- 1 inch (25.4 mm) in length or width.
        5. Color: Grey.

\*\* NOTE TO SPECIFIER \*\* There is a selection of timber and plaster/stucco designs. We have ribbed patterns, broken and smooth. Masonry, brick, stone and rock designs, many taken from actual rock formations. Abstract and anti-slip patterns and many others. Also available in all patterns listed in paragraph above for 100X formliners. Delete options for pattern not required.

* + - 1. Pattern: As selected by Architect from manufacturer's standard range of available products.
      2. Pattern: From manufacturer's standard range of available products, as indicated on Drawings.
      3. Pattern: Broken-rib pattern 1/09 B Norderney.
      4. Pattern: Broken-rib pattern 1/124 B Taro.
      5. Pattern: Broken-rib pattern 1/126 B Larnaka.
      6. Pattern: Broken-rib pattern 1/21 B Malta.
      7. Pattern: Broken-rib pattern 1/29 Krete.
      8. Pattern: Broken-rib pattern 1/316 B Pennsilva.
      9. Pattern: Broken-rib pattern 1/347 B Fort-de-France.
      10. Pattern: Broken-rib pattern 1/37 B Rippe Type J.
      11. Pattern: Broken-rib pattern 1/38 B Rippe Type K.
      12. Pattern: Broken-rib pattern 1/41 B Ibiza.
      13. Pattern: Broken-rib pattern 1/45 B Sicilia.
      14. Pattern: Wood pattern 1/02 Borkum.
      15. Pattern: Wood pattern 1/03 Fehmarn.
      16. Pattern: Wood pattern 1/04 Fahr.
      17. Pattern: Wood pattern 1/05 Helgoland.
      18. Pattern: Wood pattern 1/06 Juist.
      19. Pattern: Wood pattern 1/07 Langeoog.
      20. Pattern: Wood pattern 1/08 Mainau.
      21. Pattern: Wood pattern 1/10 Pellworm.
      22. Pattern: Wood pattern 1/11 Reichenau.
      23. Pattern: Wood pattern 1/11 Reichenau.
      24. Pattern: Wood pattern 1/17 Wollin.
      25. Pattern: Wood pattern 1/18 Bornholm.
      26. Pattern: Wood pattern 1/24 Gotland.
      27. Pattern: Wood pattern 1/27 Seeland.
      28. Pattern: Wood pattern 1/28 Lolland.
      29. Pattern: Wood pattern 1/317 Rustic.
      30. Pattern: Wood pattern 1/331 Etampes.
      31. Pattern: Abstract pattern 1/01 Amrum.
      32. Pattern: Abstract pattern 1/12 Rugen.
      33. Pattern: Abstract pattern 1/14 Sylt.
      34. Pattern: Abstract pattern 1/15 Usedom.
      35. Pattern: Abstract pattern 1/20 Kerkyra (Korfu).
      36. Pattern: Abstract pattern 1/25 Baltrum.
      37. Pattern: Abstract pattern 1/26 Ameland.
      38. Pattern: Abstract pattern 1/43 Corse.
      39. Pattern: Abstract pattern 1/44 B Sardegna.
      40. Pattern: Brick and masonry pattern 1/127 Shannon.
      41. Pattern: Brick and masonry pattern 1/165 B Reno.
      42. Pattern: Brick and masonry pattern 1/354 Durance.
      43. Pattern: Stone and rock pattern 1/352 Embrun.
      44. Pattern: Rib and wave pattern 1/134 Riviera.
      45. Pattern: Rib and wave pattern 1/148 Lanzarote.
      46. Pattern: Rib and wave pattern 1/171 Sinus 18/76.
      47. Pattern: Rib and wave pattern 1/172 Sinus 27/100.
      48. Pattern: Rib and wave pattern 1/176 Roba.
      49. Pattern: Rib and wave pattern 1/198 Traun.
      50. Pattern: Rib and wave pattern 1/199 Bohemia.
      51. Pattern: Rib and wave pattern 1/30 Rippe Type A.
      52. Pattern: Rib and wave pattern 1/31 Rippe Type C.
      53. Pattern: Rib and wave pattern 1/32 Rippe Type D.
      54. Pattern: Rib and wave pattern 1/33 Rippe Type E.
      55. Pattern: Rib and wave pattern 1/34 Rippe Type F.
      56. Pattern: Rib and wave pattern 1/35 Rippe Type G.
      57. Pattern: Rib and wave pattern 1/36 Rippe Type H.
      58. Pattern: Rib and wave pattern 1/39 Rippe Type L.
      59. Pattern: Rib and wave pattern 1/40 Rippe Type M.
      60. Pattern: Rib and wave pattern 1/42 Madeira.
      61. Pattern: Rib and wave pattern 1/46 Rippe Type N.
      62. Pattern: Rib and wave pattern 1/47 Rippe Type P.
      63. Pattern: Geometric pattern 1/138 Alsace (Elsass).

\*\* NOTE TO SPECIFIER \*\* Beside our large standard range, we can also manufacture special moulds and formliners to the customer's own designs. Delete if not required.

* 1. REUSABLE CUSTOM FORMLINERS FOR ARCHITECTURAL CONCRETE
     1. Custom Reusable Formliners: As manufactured by US Formliners, Inc.
        1. Description: Custom designed, reusable elastomeric polyurethane formliners for creating textured surfaces on in-situ or precast concrete.

\*\* NOTE TO SPECIFIER \*\* . Due to manufacturing-related and structural reasons, not all designs can be supplied in all 3 series. There are also limits with regard to the dimensions. Please contact manufacturer or visit their website for information concerning which structure can be manufactured in which series and for maximum dimension. Delete options for series not required.

* + - 1. C-Series: Minimum of 100 uses.
      2. A-Series: Minimum of 50 uses.
      3. E-Series: Minimum of 10 uses.

\*\* NOTE TO SPECIFIER \*\* Enter the custom formliner style name and model number in blank below or delete. Duplicate as applicable for projects with multiple styles. Delete options for pattern not required.

* + - 1. Pattern: Custom style, \_\_\_\_\_\_\_\_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* The new generation of RECKLI Photo-Engraving Formliners expands these possibilities in a previously unknown way. Delete if not required.

* + - 1. Pattern: Photo-engraving, \_\_\_\_\_\_\_\_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Design principle CNC technology allows graphical representations to be produced using line structures of different local density and depth. Textures are transformed according to defined mathematical algorithms, i.e. they are differentiated from the background structure by changes in the distance between the lines and in the direction of lines (nicks, curves). Please contact manufacturer for examples and details. Delete if not required.

* + - 1. Pattern: CNC graphic patterns, \_\_\_\_\_\_\_\_\_\_\_.
      2. Pattern: As selected by Architect from manufacturer's custom range of available formliners.
      3. Pattern: From manufacturer's custom range of available formliners, as indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* RECKLI® One-Timer Formliners are designed with an elastic front wearing part that has the pattern/texture which is bonded to a hardboard as the backing. The high elasticity of this material combination guarantees an easy release of the formliners from the concrete ensuring a blemish and snag free finish. The formliner has a degree of flexibility, which will allow the contractor to use it on cambered, and radius work. Delete if not required.

* 1. SINGLE-USE FORMLINERS FOR ARCHITECTURAL CONCRETE
     1. Single Use Formliners: RECKLI-One-Timer Series as manufactured by US Formliners, Inc.
        1. Description: Custom designed, reusable elastomeric polyurethane formliners for creating textured surfaces on in-situ or precast concrete.

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

* + - 1. Pattern: As selected by Architect from manufacturer's standard range of available single use formliners.
      2. Pattern: From manufacturer's standard range of available single use formliners, as indicated on Drawings.
      3. Wood Pattern: 3/11 Paola.
      4. Wood Pattern: 3/12 Christina.
      5. Wood Pattern: 3/06 Lisa.
      6. Rough Cast and Texture Pattern: 3/03 Regina.
      7. Rough Cast and Texture Pattern: 3/13 Nicola.
      8. Rib Patterns: 3/07 Sonja.
      9. Rib Patterns: 3/15 Caterina.
      10. Rib Patterns: 3/16 Tanja.
      11. Broken Rib Patterns: 3/01 Patricia.
      12. Broken Rib Patterns: 3/14 Constanza.
      13. Broken Rib Patterns: 3/21 Julia.
      14. Brick and Masonry Patterns: 3/70 Annalena.
      15. Brick and Masonry Patterns: 3/05 Ramona.
      16. Abstract Patterns: 3/02 Anita.
      17. Abstract Patterns: 3/04 Larissa.

\*\* NOTE TO SPECIFIER \*\* So that a high standard of surface quality for the exposed-face concrete is attained, processing can use such proven RECKLI accessory products as formliner adhesives, release agents, stop-off pastes, cleaning agents and special blades. If you are interested in this area, please contact manufacturer to put their extensive experience at your disposal. US Formliner warranties its formliners for the specified usage (100-use, 50-use, 10-use) only when US Formliner Stripping Wax and auxiliary products are used. Delete options listed below not required.

* 1. ACCESSORY MATERIALS
     1. Formliners Accessories: Stripping wax, mould wax and adhesives as required for the complete form liner system as manufactured by US Formliners, Inc.
        1. Release Agent: RECKLI-Mould Wax - Release agent for RECKLI-Mould Paste PU and for steel or timber gauges while equalizing formliner rears.
        2. Release Agent: RECKLI-Stripping Wax TL Release agent for pre-cast concrete, solvent based.
        3. Release Agent: RECKLI-Stripping Wax TL-SO Release agent for in-situ concrete, solvent based.
        4. Release Agent: RECKLI-Stripping Wax TL-W Release agent for pre-cast concrete, water based.
        5. Thinner: RECKLI-EK-PU Thinner for cleaning of tools and equipment.
        6. Filler: RECKLI-Elasto Filler for repair of damaged formliners and equalizing of formliner rears.
        7. Pattern Stop Off Paste: RECKLI-Mould Paste PU for making pattern stop-offs.
        8. Adhesive: RECKLI-Formliner Adhesive SO for fully adhering entire surfaces on steel or timber and equalizing rear of formliner.
        9. Adhesive for Non-Planar Surfaces: RECKLI-Standardiser 100 Thickener for gluing on vaulted or curved surfaces.

1. EXECUTION
   1. EXAMINATION AND PREPARATION
      1. Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
      2. Prepare substrates using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
      3. 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 solvent (US Formliner Stripping Wax TL-SO) or water-based (US Formliner Stripping Wax TL-W) depending upon conditions. Please take care that all sections, angles of the pattern are covered with the release agent. The formliners should have 2 applications of the wax. The first coat of wax should be dry before applying the second coat.
         4. Drying time for the release agents depends on ambient temperatures and air movement. Consumption is approximately 2.3 - 3.6 lb/ft^2 (100 - 150 g/m^2) depending on the type of pattern.
         5. Protect the applied wax film from rain and other damaging weather conditions by covering with polyethylene sheets.
         6. Use manufacturer's stripping wax in order to maintain formliner warranty.
      4. 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.
      5. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions
   2. INSTALLATION
      1. 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.
      2. Store and use formliners at temperatures between 40 degrees F and 140 degrees F (4.4 degrees C and 60 degrees C).
      3. 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.
      4. 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.

\*\* NOTE TO SPECIFIER \*\* Delete if only specifying RECKLI-One-Timer single use formliners.

* 1. MAINTENANCE OF REUABLE FORMLINERS
     1. 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.
  2. CLEANING AND PROTECTION
     1. Clean exposed surfaces. Touch up, refinish, or replace damaged components in a manner acceptable to Architect.
     2. Protect installed products until completion of project.
     3. Repair or replace defective work as directed by Architect upon inspection.

END OF SECTION