METHOD OF FABRICATING A SELF-BRACED CONCRETE FORM

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This invention relates to a new and improved method for the construction of single-use concrete forms employed in molding concrete columns of square, rectangular, and other polygonal cross-sectional configurations, the principal structural elements of the forms being fabricated from paper, plastic, or other inexpensive materials that may be prefabricated in the required configurations. The invention further relates to a new and improved method of fabricating such forms for molding concrete columns.

Traditional practice in the construction of forms for molding concrete columns entails the fabrication and erection of wooden forms on the job site. The wooden forms must be provided with external bracing, where the column is of substantial height, to maintain the forms in the required configuration against the pressure of the concrete. The greater the height of the column, the more critical the requirement for bracing. Moreover, each wooden concrete form must be held to relatively close dimensional tolerances to match the column accurately with other parts of the structure in which the column is incorporated. Accordingly, it may be seen that a substantial part of the expense of erecting concrete load-bearing columns goes into the erection of the forms.

Within recent years, a different construction technique has frequently been employed for the erection of forms utilized in molding round concrete columns. It has become common practice to employ cylindrical paper forms for this purpose, the forms being utilized only one time and being destroyed after that one use. Tubular paper forms are, in general, quite satisfactory for round columns because their cross-sectional configuration distributes the pressure evenly; there is little tendency for the form to become distorted in shape in response to the pressure of the concrete.

It has also been proposed to employ paper forms for the molding of square concrete columns. The proposed construction, as set forth in Patent No. 2,873,503 to A. E. Davis and Patent No. 2,991,533 to E. S. Reid et al., entails the use of a rectangular inner form into which the concrete is poured. A support member of circular configuration fits around the rectangular inner form, the corners of the inner form engaging the external tubular support. In the construction shown in each of these patents, supplemental braces are provided, longitudinally of the form, between the inner form and the external tubular support. This type of form structure has not been as satisfactory as the round paper form, however. Fabrication of such single-use paper forms of molding rectangular columns has proved extremely difficult, particularly with respect to incorporating the supplemental bracing between the inner form and the tubular support member. In addition, these forms are prone to distortion in the configuration of the completed column.

It is a principal object of the present invention, therefore, to provide a new and improved method for the construction of a single-use form for molding square, rectangular, or other polygonal concrete columns, which inherently and consistently maintains the desired cross-sectional configuration for the molded columns.

Another principal object of the invention is to provide a new, improved, and commercially practical method of fabricating single-use concrete forms for molding concrete columns of polygonal cross-sectional configuration, in which the principal structural elements of the forms comprise paper, plastic, or other material that may be molded, wound, or otherwise prefabricated to desired shape.

Another object of the invention is to provide a new and improved method for the construction of a single-use form for molding a polygonal concrete column that is light in weight and inexpensive to manufacture, yet which maintains dimensional integrity for the column throughout its length.

An additional object of the invention is to provide a novel method of inserting or otherwise incorporating internal bracing in a two-piece single-use concrete form comprising a central polygonal molding form and an external support shell of circular or elliptical configuration.

An additional object of the invention is to provide a new and improved method of forming an external support shell on a single-use concrete column form of paper, plastic or other prefabricated material.

Another object of the invention is to provide a method of manufacturing a continuous bracing between an inner polygonal form and an external tubular support shell, in a self-braced form structure for molding a polygonal concrete column, to afford improved rigidity in the composite form structure.

Another object of the invention is to provide a method of manufacturing a full continuous bracing between an inner form and an external tubular support shell, in a form structure for molding concrete columns, for a wide variety of different polygonal shapes in the completed concrete column.

A specific object of the invention is to afford a new and improved method of fabricating continuous long self-braced support structures for molding polygonal concrete columns, assembled from relatively short lengths of prefabricated polygonal form elements.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show preferred embodiments of the present invention and the principles thereof and what is now considered to be the best mode contemplated for applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be made as desired by those skilled in the art without departing from the present invention.

In the drawings:

FIG. 1 is a perspective elevation view of a self-braced form assembly constructed in accordance with one embodiment of the present invention, after the concrete has been poured and with a superstructure supported on the completed column;

FIG. 2 is a perspective elevation view, similar to FIG. 1, illustrating the column after removal of the form assembly;

FIG. 3 is a cross-sectional view of the column and form assembly taken along the line 3—3 in FIG. 1;

FIG. 4 is a cross-sectional view of the column taken along line 4—4 in FIG. 2;

FIG. 5 is an exploded perspective view employed to explain one method of fabricating a polygonal concrete column assembly of the kind shown in FIGS. 1 and 3;

FIG. 6 illustrates a technique for incorporating continuous bracing in the column form assembly;
FIG. 7 illustrates the completed form assembly fabricated in accordance with the method illustrated by FIGS. 5 and 6;

FIG. 8 is a sectional elevation view of a self-braced form assembly for molding a polygonal concrete column constructed in accordance with another embodiment of the invention;

FIG. 9 is a cross-sectional view taken approximately along line 9—9 in FIG. 8;

FIG. 10 is a sectional elevation view, similar to FIG. 8, of a further embodiment of the invention;

FIG. 11 is a cross-sectional view taken approximately along line 11—11 in FIG. 10;

FIGS. 12A, 12B and 12C illustrate successive steps in the fabrication of a self-braced form assembly for molding a polygonal concrete column in accordance with a further embodiment of the invention;

FIG. 13 is a perspective view illustrating an intermediate step in the fabrication of a self-braced form assembly in accordance with another method embodiment of the invention;

FIG. 14 is a cross-sectional view of a completed form assembly constructed in accordance with the technique illustrated in FIG. 13;

FIG. 15 is a cross-sectional view illustrating a further method of fabrication of a self-braced form assembly in accordance with the present invention; and

FIG. 16 is a cross-sectional view of the completed form structure of FIG. 15.

FIGS. 1 through 4 illustrate a first embodiment of a self-braced form assembly 20 for molding a polygonal concrete column 21. In these figures, column 21 is shown to be of rectangular cross-sectional configuration and, in fact, is square in cross-section. It should be understood, however, that a rectangular, triangular, hexagonal, or other polygonal shape may be provided for column 21, using the same basic construction as described in detail hereinafter. It is also important to note that the cross-sectional configuration for column 21 need not be a regular polygon; irregular shapes of various kinds can easily be accommodated in accordance with the present invention.

Assembly 20 includes an elongated hollow form member or core 22 having an internal cross-sectional configuration that conforms to the cross-sectional configuration desired for column 21. Core 22 may be made of paper, plastic, or any other inexpensive material that may be prefabricated to the desired shape. Core 22 is not strong enough, by itself, to serve as an unbraced form for the desired column 21. To hold the required configuration for the column, the form member 22 must be externally braced.

A tubular support shell 23 is disposed in encompassing relation to the internal square form member 22. Preferably, support shell 23 is a heavy laminated paper tube of circular cross-sectional configuration essentially similar to the tubular members used for molding round concrete columns. The tubular shell 23 is shown as being of circular cross-sectional configuration and this construction is preferred where column 21 is to be of square cross-section. However, shell 23 need not be a perfect circle; the shell may be of elliptical configuration if desired. Throughout this specification, and in the ensuing claims, the term “elliptical” as applied to shell 23 and to corresponding elements in other embodiments of the invention, refers to any elliptical configuration having sufficient strength to permit the external shell to perform its support function, as described hereinafter. Inasmuch as a circle is a special case of an ellipse, with the two foci of the ellipse coincident with each other, it will be recognized that this usage of the term is consistent with the circular configuration shown in FIG. 3.

As shown in FIG. 3, the corner portions 24 of the internal form member 22 may engage the inner surface of the support shell 23. Contact at these four points, however, is not sufficient to support the internal core 22 against distortion when the concrete 25 is poured into the form. If no further bracing were provided, the internal form member would be distorted to a shape such as that shown by dash line 25 (FIG. 3) upon filling of the form with concrete. This distortion probably would not occur evenly along the length of the column; greater distortion would occur at the base 26 of the column than at the top 27 (FIG. 1).

Form assembly 20 is protected against deformation of the kind illustrated by dash line 25 by solid, continuous bracing material that fills substantially all of the space between form member 22 and support shell 23. The bracing material 28 must be a material having sufficient strength, in compression, to resist the outward pressure of the concrete that is poured into the form to mold column 21. For a column having a height of ten feet, this pressure would be a little over ten pounds per square inch at the base 26 of the column. In the form illustrated in FIG. 3, bracing material 28 is a foam material, such as foam polystyrene or foam polycrylene. These materials, although light in weight, are capable of withstanding compression up to levels of the order of twenty pounds per square inch and are quite practical for columns of most heights.

In the use of form assembly 20, the assembly is first located at the desired position on a support base 29 (FIG. 1). It is usually necessary to anchor the form assembly to the base; no anchoring means are illustrated, since these may be the same as was used with conventional round paper column forms. An upper pyramidal or conical form 31 may be affixed to the top portion 27 of the form assembly 20. The usual reinforcements 32 are mounted within the form (see FIG. 3) and the concrete for the column is then poured into the form. External bracing (not shown), may be required to maintain the form structure 20 in position but no external bracing is required to withstand the pressure of the concrete.

When the concrete has been poured and set, the form assembly 20 is cut away from column 21, using conventional hand tools such as a carpenter's saw, power saw or the like. Because form assembly 20 is quite inexpensive in construction, consisting essentially of paper and foam plastic bracing, the total cost of use of the column form is substantially less than for construction of traditional wood forms, even though the wood may be re-used in at least some instances.

In a typical form construction for a ten inch square column with rounded corners, as illustrated in FIG. 3, the internal form member 22 may be fabricated from a rolled, laminated paper material having a wall thickness of approximately three-sixteenth inch. Support shell 23 may be fabricated from a similar paper of about the same thickness. The bracing material 28, as noted above, may comprise foamed polystyrene or foamed polyurethane, either prefabricated to fit the irregular spacing between the inner form and the outer shell or formed in situ in that spacing, as described more fully hereinafter.

FIGS. 5 through 7 illustrate one method of the present invention that may be effectively employed to fabricate the form assembly 20 of FIGS. 1 and 3. With reference to FIG. 5, it is seen that the square internal form member 22 is first positioned within the external tubular support shell 23. The internal form member 22 is continuous and imperforate and is provided with a smooth internal surface to afford a column of good surface appearance. It may be of sectional construction as described hereinafter in connection with FIG. 13. The external support shell 23, however, is provided with a first series of apertures 33. Apertures 33 are located at regular intervals longitudinally of shell 23 and are spaced around the periphery of the shell so that some of the holes 33 are aligned with each side of the internal form member 22.
Interspersed with apertures 33 are a plurality of small air holes 34. Foam-polyurethane may be formed by combining their chemical ingredients, the ingredients being mixed under pressure in the presence of air. The apparatus illustrated in FIG. 6 comprises a pair of chemical supply tanks 35 and 36 connected to a compressor 37 which, in turn, is connected to a series of outlet nozzles, exemplified by the nozzle 38. When the ingredients from tanks 35 and 36 are mixed together and discharged under pressure into the mixing chamber, they form a gel-like expanding foam material which will fill all available space, provided sufficient foam ingredients are present. To confine the foam, during its formation, a pair of end caps 39 and 41 are mounted on opposite ends of the form assembly shown in FIG. 5; the end caps are illustrated as displaced from the ends of the assembly but are abutted against the ends of the assembly during formation of the bracing material.

To form the bracing material in the spaces between the form member 22 and support shell 23, nozzles 38 are applied to the apertures 33 (FIG. 6) in a first quadrant of the space 42 between the inner form and the outer support shell. The operator or operators then actuate the nozzles to introduce the foam chemicals and fill the first quadrant of the space 42 completely with the foamed plastic bracing material. The expanding foam material is quite adhesive in character and tends to fill the space continuously and to adhere firmly both to the outer surface of form member 22 and to the inner surface of shell 23. The small apertures 34 relieve the air pressure within the space between the two principal structural elements of the form assembly 20 and avoid excessive packing of the foam plastic material as well as precluding the formation of air voids within space 42.

After the operator has filled the first quadrant of space 42, shell 23 is rotated 90°. The second quadrant of space 42 is then filled through the apertures 33 in this portion of the shell. This technique is repeated two additional times, resulting in the finished composite form assembly shown in FIG. 7. Some of the foamed plastic may flow out of the apertures 33 and 34, but this is usually a minor loss.

FIGS. 8 and 9 illustrate a self-braced form assembly 50 similar in many respects to the form assembly 20 described hereinabove, and that may be fabricated in essentially the same manner. In this instance, the internal elongated hollow concrete form member or core 52 is not of constant configuration throughout its length. Instead, the form member is of truncated pyramidal configuration, the base portion 52A being substantially larger than the top portion 52B. In the fabrication of form structure 50, a separate locating brace (not shown) may be utilized at the top of the form structure to hold the upper end 52B of form member 52 in a centered location within the external tubular shell 53 during fabrication. In all other respects, however, the method of fabrication of the form structure is the same as described above. Thus, the irregular space between form member 51 and support shell 53 is filled completely with bracing material 58 so that there is continuous bracing between the inner form and the outer shell. As before, the bracing material 58 preferably comprises foam-polyurethane, or other lightweight foamed plastic material that can be formed in situ and that is effective to fill the entire space between the core and the shell.

FIGS. 10 and 11 illustrate another variation of the present invention comprising a concrete column form assembly 60 including four aligningly 60 integrally webbed form member 62 comprising an upper section 62B and a lower section 62A joined together at the center of the column. Each of the form sections 62A and 62B is of truncated pyramidal configuration, the base of the pyramid being square. Thus, the center portion of the column to be molded is of greater cross-sectional dimension than the upper or lower portions of the same column. A tubular support shell 63 is disposed in encompassing relation to the internal form 62. Preferably, shell 63 is of circular cross-sectional configuration and is just large enough so that it engages the corners of form 62 at the maximum dimension of the form, as best shown in FIG. 11. Typically, both form 62 and shell 63 may be fabricated from relatively heavy paper, resin impregnated fabric, or similar shape-retaining material. As in the previous arrangements, the space between shell 63 and form 62 is completely and continuously filled with solid bracing material, preferably a foamed plastic formed in situ to assure good adhesion to both the core and the shell to insure complete filling of the space.

FIGS. 12A through 12C illustrate the sequence of steps that may be followed to assemble the form structure 20 of FIGS. 1 through 7 in accordance with a different method from that described in connection with FIGS. 5 through 7. Initially, and as shown in FIG. 12A, a seamless rectangular tube 22A is formed from laminated paper. Relatively large rectangular tubing members of this kind are commercially available. Also as shown in FIG. 12A, four bracing members 28A, 28B, 28C and 28D are formed. The four bracing members 28A–28D are molded of a lightweight cellular material such as foam-polyurethane. The external surface of each of the bracing members 28A–28D is a segment of a circle. The inner surface of each bracing member has a width corresponding to the width of one side of the rectangular form 22A. This inner surface, however, such as surface 69 of bracing member 28A, is not necessarily planar. Instead, the surface 69 is preferably given a very slight radius to afford a camber to the inner form of the composite form structure, when assembled, as described hereinafter.

The next stage in the assembly is illustrated in FIG. 12B. Each of the four bracing members 28A through 28D is glued or otherwise suitably bonded or mounted on the inner form member 22A. At this point, there need be no particular effort to force core 22A to conform entirely to the surface configuration of the bracing members; all that must be achieved is to mount the bracing members on the core in aligned positions.

The final step in the assembly is shown in FIG. 12C. A paper or fabric shell 23A is wound around the external surface of bracing members 28A–28D, using the bracing members as a mandrel. The material for shell 23A is preferably wound in several layers, building up a support shell of the necessary strength. In the process of winding the shell 23A around the bracing members, the bracing members are forced inwardly to a limited extent and cause the internal form member 22A to conform to the camber afforded by the slightly curved internal surfaces of the bracing members.

FIGS. 13 and 14 illustrate yet another embodiment of the self-braced form assembly of the present invention and also serve to illustrate a different method of fabricating the form structure. In this instance, the supporting elements, for assembling the form structure, comprise three individual rectangular paper tubes 72A, 72B and 72C. The rectangular paper tubes 72A–72C constitute the inner core or form member for the composite form structure. These form members are assembled in abutting relation upon a mandrel frame comprising four rods 74, 75, 76 and 77 which engage in the corners of each of the form sections 72A–72C. Means (not shown) are provided to maintain the mandrel rods in a rigid configuration, bracing each corner of the paper tubes for the form core, 72A–72C and external form shell 73, which are mounted upon the exterior sides of the form sections 72A–72C. As shown in FIG. 13, strip 81 is glued or otherwise suitably attached to the top side of each of the form sections and extends longitudinally down the center of each of the form sections. The same arrangement is
followed for each side of the assembly, with respect to each of the aligning strips.

The next step in fabrication of the assembly is to wind a laminated fabric or paper shell 73 around form section 72A–72C and aligning strips 82–84. In FIG. 13, the winding process is shown at its beginning, a strip of paper or fabric 73A being started around the assembled aligning strips and form sections and being wound in a helical overlapping manner thereon. Usually, a number of layers of fabric or paper are required to build up the desired strength in the shell 73, with the layers being glued to each other to afford a strong composite structure. During winding, the inward pressure on strips 81–84 tends to bend the walls of core 72 inwardly at their centers. The resulting minor camber of the core walls is quite acceptable and usually desirable. Subsequently, the irregular spaces between the internal form 72 and the external shell 73 are filled with a lightweight filler material such as foamed polyurethane using the technique of FIGS. 5 and 6, to afford the bracing elements 78 in FIG. 14. FIGS. 15 and 16 illustrate a further embodiment of the present invention comprising a self-braced form assembly 90 for molding a rectangular concrete column. In this instance, the internal form member 92 is first sprayed on its external surface with a suitable adhesive, following which a series of matched braces or filler members 98 are mounted upon the exterior of the form member. The configuration of bracing members 98 is such that they afford a relatively smooth continuous exterior surface around the outside of the form member. Thereafter, an external support shell 93 is wound around the bracing members 98. Shell 93 may be built up from paper or from a fabric; a sheet plastic material could also be used for this portion of the form structure. However, paper or fabric materials are usually preferred for greater tensile strength. The bracing members 98 can be fabricated from relatively light wood or from a foamed plastic material pre-molded to desired shape.

In each form of the invention, as described hereinabove, the completed form assembly is self-bracing with respect to internal pressure from the concrete and needs only to be anchored in place to afford an effective working form for molding a concrete column. The basic structure can be utilized to mold square, rectangular, triangular, or other polygonal concrete columns. Each form of the invention is easy to cut with an ordinary carpenter's saw so that the column form can be shaped to fit joining beams, slabs, or the like. By the same token, it is a relatively simple matter to cut through the column form to insert suitable blocks for minor modifications of the column configuration where required. It is usually desirable to fabricate the form assemblies to somewhat greater length than normal column requirements and to cut them to size at the job.

The form assemblies are light in weight and relatively inexpensive, both highly desirable attributes for single-use forms that are destroyed once the column has been poured and set. Nevertheless, the form structures maintain the dimensional integrity of the column throughout its length with no distortions resulting from the outward pressure of the concrete. The novel methods of the invention facilitate the completion of continuous bracing around the internal form member, strengthening the form as compared with a construction using intermittent bracing and at the same time avoiding any necessity for longitudinal insertion of bracing members which could easily break and tear the outer shell or the inner core and thus weaken the form structure.

Hence, while preferred embodiments of the invention have been described and illustrated, it is to be understood that they are capable of variation and modification.

I claim:

1. A method of fabricating a self-braced form assembly to be used in molding a polygonal concrete column, said method comprising:

- forming a tubular elliptical support shell of laminated paper or like readily destructible material with a plurality of apertures therein distributed longitudinally and radially of the shell;
- forming an elongated hollow polygonal form member of laminated paper or like destructible material having an internal cross-sectional configuration conforming to the required column configuration;
- mounting said form member within said support shell so that the support shell is disposed in encompassing relation to the form member with an asymmetrical space therebetween, some of said apertures being aligned with each wall of said form member;
- and filling substantially all of said space through said apertures, with a light weight cellular bracing material having substantial strength in compression, formed in situ in the space, to afford continuous bracing between the form member and the shell and complete a readily destructible form assembly having the strength to hold and mold a column of concrete extending the full height of the form.

2. A method of fabricating a self-bracing form assembly to be used in molding a polygonal concrete column, said method comprising:

- assembling a plurality of hollow polygonal laminated paper form sections in end abutting relation to afford an elongated form member having an internal cross-sectional configuration conforming to the required column configuration;
- mounting said form member within an elliptical tubular support shell of laminated paper or like destructible material so that the support shell is disposed in encompassing relation to the form member with an asymmetrical space therebetween;
- and filling substantially all of said space with light-weight cellular material formed in situ and having substantial strength in compression, to afford continuous bracing between the form member and the shell and complete a readily destructible form assembly having the strength to hold and mold a column of concrete extending the full height of the form.

3. A method of fabricating a self-braced form assembly to be used in molding a polygonal concrete column, said method comprising:

- fabricating a plurality of elongated brace members, each substantially narrower than the width of a given side of the concrete column required;
- fixedly mounting the form member longitudinally of an elongated hollow polygonal form member of readily destructible material having an internal cross-sectional configuration conforming to the required column configuration, at least one brace member being mounted on the outer surface of each side of said form member, to afford a sub-assembly;
- wrapping the sub-assembly with a plurality of layers of a web of strong, flexible, readily destructible sheet material to form a tubular support shell encompassing the sub-assembly with a plurality of asymmetrical longitudinal spaces between said shell and said form member;
- and filling each of said spaces with a foamed plastic bracing material, formed in situ, to afford continuous bracing between the form member and the shell and complete a readily destructible form assembly having the strength to hold and mold a column of concrete extending the full height of the form.

4. A method of fabricating a self-braced form assembly according to claim 3, in which sufficient force in tension is applied to said web of flexible sheet material, during the wrapping step in which said tubular support shell is formed, to deflect the walls of said form member inwardly to a limited extent to afford a member in the initial individual walls of the form member.
5. A method of fabricating a self-braced form assembly to be used in molding a polygonal concrete column, said method comprising:

- fabricating a plurality of elongated brace members;  
- fabricating a plurality of elongated wheat frames members longitudinally of an elongated hollow polygonal form member of readily destructible material having an internal cross-sectional configuration conforming to the required column configuration, at least one brace member being mounted on the outer surface of each side of said form member, to afford a sub-assembly having a generally elliptical external configuration;  
- and wrapping the sub-assembly with a plurality of layers of a web of strong, flexible, readily destructible sheet material to form a tubular support shell encompassing the sub-assembly and complete a readily destructible form assembly having the strength to hold and mold a column of concrete extending the full height of the form.

6. A method of fabricating a self-braced form assembly to be used in molding a polygonal concrete column, said method comprising:

- fabricating a plurality of elongated cellular plastic brace members, each having a convex outer surface corresponding to a segment of an ellipse and a substantially planar inner surface;  
- fixedly mounting said brace members longitudinally of an elongated hollow polygonal form member of readily destructible material having an internal cross-sectional configuration conforming to the required column configuration, each brace member having its inner surface mounted on the outer surface of one side of said form member, to afford a sub-assembly having a substantially continuous elliptical outer surface;  
- and wrapping the sub-assembly with a plurality of layers of a web of strong, flexible, readily destructible sheet material to form an elliptical tubular support shell encompassing the sub-assembly and complete a readily destructible form assembly having the strength to hold and mold a column of concrete extending the full height of the form, said brace members affording continuous bracing between the form member and the shell.

7. A method of fabricating a self-braced form assembly according to claim 6, in which said brace members are molded with a slight convex curvature on their inner surfaces to afford a camber in the inner walls of the form member when the assembly is completed.

8. A method of fabricating a self-braced form assembly to be used in molding a polygonal concrete column, said method comprising:

- fabricating a plurality of elongated wood brace members of continuously varying thickness in matched sets, one for each wall of the polygonal column;  
- fixedly mounting said sets of brace members longitudinally of an elongated hollow polygonal form member of readily destructible material having an internal cross-sectional configuration conforming to the required column configuration, each set of brace members being mounted on the outer surface of each side of said form member, to afford a sub-assembly of generally elliptical external configuration;  
- and wrapping the sub-assembly with a plurality of layers of a web of strong flexible sheet material to form a laminated tubular support shell encompassing the sub-assembly and complete a readily destructible form assembly having the strength to hold and mold a column of concrete extending the full height of the form member, said brace members completely filling the space between the support shell and the form member.

9. A method of fabricating a self-braced form assembly to be used in molding a polygonal concrete column, said method comprising:

- fabricating a plurality of elongated brace members;  
- fixedly mounting said brace members longitudinally of an elongated hollow polygonal form member of readily destructible material having an internal cross-sectional configuration conforming to the required column configuration, at least one brace member being mounted on the outer surface of each side of said form member, to afford a sub-assembly having a generally elliptical overall external configuration;  
- and wrapping the sub-assembly with a plurality of layers of a web of strong flexible sheet material to form a tubular laminated support shell encompassing the sub-assembly and complete a readily destructible form assembly having the strength to hold and mold a column of concrete extending the full height of the form.

10. A method of fabricating a self-braced form assembly to be used in molding a polygonal concrete column, said method comprising:

- fabricating a plurality of elongated brace members;  
- fixedly mounting said brace members longitudinally of an elongated hollow polygonal form member of readily destructible material having an internal cross-sectional configuration conforming to the required column configuration, at least one brace member being mounted on the outer surface of each side of said form member, to afford a sub-assembly having a generally elliptical overall external configuration;  
- and bonding each fabric layer to the adjacent layers to form a tubular support shell encompassing the sub-assembly and complete a readily destructible form assembly having the strength to hold and mold a column of concrete extending the full height of the form.

11. A method of fabricating a self-braced form assembly to be used in molding a polygonal concrete column, said method comprising:

- fabricating a plurality of elongated aligning members;  
- assembling a plurality of hollow polygonal laminated paper form sections in end abutting relation to afford an elongated hollow polygonal form member having an internal cross-sectional configuration conforming to the required column configuration;  
- fixedly mounting at least one brace member on the outer surface of each side of said form member and extending longitudinally thereof, to afford a sub-assembly having a generally elliptical overall external configuration;  
- and wrapping the sub-assembly with a plurality of layers of a web of strong, flexible, readily destructible sheet material to form a tubular support shell encompassing the sub-assembly and complete a readily destructible form assembly having the strength to hold and mold a column of concrete extending the full height of the form.

12. A method of fabricating a self-braced form assembly to be used in molding a polygonal concrete column, said method comprising:

- fabricating a plurality of elongated brace members;  
- fixedly mounting said brace members longitudinally of an elongated hollow polygonal form member of readily destructible material having an internal cross-sectional configuration conforming to the required column configuration, at least one brace member being mounted on the outer surface of each side of said form member, to afford a sub-assembly having a generally elliptical overall external configuration;  
- mounting said form member on a mandrel frame comprising a plurality of elongated rods, one engaging in each corner of the form member;  
- and wrapping the sub-assembly, while on the mandrel frame, with a plurality of layers of a web of strong,
flexible, readily destructible sheet material to form
a tubular support shell encompassing the sub-assembly
and complete a readily destructible form assembly having the strength to hold and mold a
column of concrete extending the full height of the
form.

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