

SCAFFOLDING SYSTEM

TECHNICAL FIELD

The present invention relates to scaffolding for supporting platforms, walkways, and formwork, and in particular the present invention relates to scaffolding for the building and construction industry.

BACKGROUND

Traditionally scaffolding systems are used during the construction and/or maintenance of large structures, for example buildings, silos, ships, monuments and dams etc. Scaffolding is erected generally on the outside of such structures, however, internal use is not uncommon. The scaffolding, once erected, provides practical access to areas of the structure that would otherwise be difficult, if not impossible to reach. Generally, such areas are at a height beyond the reach of practical ladder and platform access. Such systems allow tradespeople to work at heights above a ground or base construction level safely and effectively, and also allow the safe storage and placement of trades materials. The traditional systems are commonly erected from the ground upwards, whereby upright poles are supported on the ground and interconnected via a network of cross-members and/or platforms to give stability and rigidity to the framework arrangement. As the lower levels of a structure are completed or as maintenance work moves upwards, it is commonly necessary to extend the scaffolding accordingly. This often requires connecting further uprights to the original ground supported uprights, with further interconnecting cross-members etc to add stability. As the system gains height it may be necessary to tie or fix the scaffolding into the structure for further safety and stability. Once assembled, the traditional form of scaffolding is fixed to the structure and cannot be moved without substantial, if not total disassembly. Thus, as work on the structure extends continues upwards, the lower levels of the scaffolding can become redundant, wasting materials that are not in use and requiring further materials to be brought in to continue extending the scaffolding and thus work at higher levels.

Solutions to these problems have been previously proposed by so-called 'second generation' systems. One system known in the art is a detachable 'jump' or 'hanging' scaffolding system. In such a system the scaffolding is erected to a limited height extent and anchored in situ to the structure. As work proceeds

upwards to higher construction or maintenance levels, the scaffolding can be detached from the structure and hoisted one unit at a time by crane to the required new height. Each scaffolding unit is then reset and re-attached to the structure at the new height. However, such systems are only able to

5 accommodate scaffolding units of an area approximately 3 to 4 metres square due to the limiting practicalities in lifting and moving large sections of unitary scaffolding by crane. Commonly, by their very nature, such systems are employed in urban or built up areas having limited clearance or safety zones. Also, any lifting, moving and refixing operations necessarily need to take into

10 account the prevailing weather conditions up until the scaffolding is safely refixed. During poor weather conditions, for example high winds or limited visibility it is impractical and unsafe to have a large scaffolding unit suspended in free space from a crane. Re-attachment would also prove difficult and may be considered dangerous in such circumstances. Due to the aforementioned impracticalities in

15 moving sections of such a system, the units need to be smaller than would otherwise be desirable, therefore requiring a larger number of the units, and correspondingly a greater number of crane movements or additional cranes to move them. A high number of scaffolding units, along with the associated problems in moving such units has implications of increased construction time

20 and costs along with an additional safety risk associated with moving the units in free space by crane.

An alternative system proposed is the automated or 'self-climbing' system. Such systems are commonly a self-climbing assembly used primarily as a vertical wall formwork for forming concrete surfaces. United States Patent 5,000,287

25 issued to Schwörer discloses such a system of "self climbing" formwork for erecting a concrete wall. The system includes a scaffolding platform that is moved by hydraulic linear drives along upright carrier rails mounted to a section of the wall, one linear drive per rail. Once the platform is driven to the top of its respective rails, it is maintained in that position whilst the rails are subsequently

30 moved upwardly and fixed to the next section of wall. Thus, to advance the platform upwards the system requires a relatively complex two step process of alternately moving the platform, then the rails, then the platform etc.

United States Patent 4,060,358 issued to Fougéa is a further known system of self climbing formwork. This system discloses the use of hydraulic actuators to advance and position a formwork frame along a wall under construction. The frame is provided with multiple hydraulic actuators, each
5 attached at one end thereof to move the frame along the wall, the other end of each actuator being adapted to hook onto brackets mounted to the wall. During movement of the frame, cams in the form of ramps engage with the brackets to maintain the frame in a required position. Sliding bearing arms are then needed to be placed in position to support the frame and thereafter need to be removed to
10 permit the frame to be advanced upwardly relative to the wall.

Thus, unlike the previously described systems, self climb systems, which are required to make relatively small, incremental movements along a wall under construction to enable accurate positioning of the formwork, are not moved by crane, rather they are shifted automatically by in-built hydraulic jacks or rams.
15 Although such systems avoid the aforementioned problems associated with hoisting units in free space by crane, they are comparatively expensive and also complex and difficult to install. Commonly, such systems require multiple hydraulic actuators which also need to be synchronised in order to maintain consistent, unhindered movement of the frame without jamming on the rails.

It that would therefore be advantageous to provide a scaffolding system that reduces the aforementioned problems and limitations associated with the prior art systems.
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It would further be advantageous to provide a method for positioning a scaffolding system that reduces the aforementioned problems associated with the
25 prior art systems.

SUMMARY OF THE INVENTION

Thus it would be advantageous to provide a simplified scaffolding system wherein a scaffolding assembly is simultaneously guided during raising and/or lowering and removably retained to a structure, and also supported following
30 repositioning.

Therefore in one aspect the present invention provides a scaffolding system including;

a scaffold assembly including a plurality of connected elongate members, said members including support portions, and said assembly having an upper and a lower end;

5 a plurality of brackets for mounting directly or indirectly to a structure, said brackets including retaining means for releasably retaining said elongate members in a lengthwise upright orientation when mounted to a structure, said brackets including support means for supporting at least part of the weight of said elongate members;

10 guides for guiding the assembly during raising and/or lowering of the assembly relative to the structure; and

a moving means separate from the scaffold assembly, the moving means attaching to the scaffold assembly via a tie element such that said assembly is suspended from said moving means and said moving means is arranged to pull said assembly upwards via said tie element during raising and to position the assembly at a predetermined position on said support means;

and wherein the support means of said brackets are arranged to allow passage of said support portions during raising of the assembly but prevent passage of said support portions during lowering of the assembly to thereby support said assembly at the predetermined position.

20 Thus, the present invention advantageously provides a scaffolding system that reduces the problems of positioning and fixing movable scaffolding assemblies associated with the aforementioned prior art systems.

Preferably the moving means attaches proximate the upper end of the scaffold assembly via the tie element.

25 In a further aspect of the present invention there is provided a scaffolding system including;

a scaffold assembly including a plurality of connected elongate members, said members including support portion, and said assembly having an upper and lower end;

30 a plurality of brackets for mounting directly or indirectly to a structure, said brackets including retaining means for releasably retaining said elongate members in a lengthwise upright orientation when mounted to a structure, said brackets including support means for supporting at least part of the weight of said

elongate members, each support means including a receiving bracket extending therefrom; and

guides for guiding the assembly during raising and/or lowering of the assembly relative to the structure;

5 and wherein, the support means are adapted to independently allow passage of said support portions when acted upon by the support portions during raising of the assembly, and the support means are adapted to independently prevent passage of said support portions during lowering of the assembly to thereby support said assembly and said receiving brackets are arranged to each
10 guide and receive one of said support portions of an elongate member into a predetermined position on the support means during positioning of the assembly

Thus advantageously the present invention provides a scaffolding system that reduces the problems of positioning and fixing movable scaffolding assemblies associated with the aforementioned prior art systems.

15 In a still further aspect of the present invention there is provided a scaffolding system including;

a scaffold assembly including a plurality of connected elongate members, said members including support portions;

a plurality of brackets for mounting directly or indirectly to a structure, said
20 brackets including retaining and guiding means for releasably retaining and guiding said elongate members in a lengthwise upright orientation when mounted to a structure, said brackets including support means for supporting at least part of the weight of said elongate members;

and wherein, the support means are arranged to allow passage of said
25 support portions during raising of the assembly but prevent passage of said support portions during lowering of the assembly to thereby support said assembly;

and wherein each retaining and guide means includes at least one pair of cooperating opposed pivotable arms, each arm including a slot portion for
30 receiving a portion of the elongate member whereby each pair of cooperating arms retain there between a portion of an elongate member and allow the assembly to be slidably guided during raising and/or lowering and each pair of

said pivotable arms are arranged to pivot apart relative to one another to release said elongate members.

Thus advantageously the present invention provides a scaffolding system that reduces the problems of positioning and fixing movable scaffolding assemblies associated with the aforementioned prior art systems.

Preferably each elongate member is a beam or rail of regular cross section, for example U, I, H, square, or round etc. thus facilitating smooth positioning of the assembly.

Preferably, the guide means are integral of the brackets. More preferably the guide means and retaining means of each bracket are also integrated. Thereby reducing the number of components required, and thus saving materials and production, assembly costs. Also, the construction of the brackets is simplified.

More preferably, the integrated guide and retaining means are provided as one or more pairs of pivotable arms arranged to pivot to a locked position for retaining each elongate member and an unlocked position for releasing said elongate member, thus providing a simple yet effective clamping arrangement.

Preferably the supporting means includes an arm pivotably attached to the bracket and a stop means, such that the arm may pivot to allow passage of a support portion during raising of the assembly, but prevent return of the support portion by interaction of the stop means with a portion of the bracket. Thus the supporting means advantageously provides a convenient 'one way' valve or ratchet type arrangement.

Still more preferably, the support portion of each elongate member may be provided by one or more pins, bolts, or combinations thereof, which can be arranged to pass through and be retained in apertures formed in each elongate member. However, more preferably such pins, bolts, bars or combinations thereof may be removable or permanently fixed, thus providing simple yet effective support for the assembly.

Preferably, the brackets are constructed for mounting to a structure by one or more bolts, adhesives, anchor means, or combinations thereof, for example by through slab, through beam or embedded beam/slab anchoring, thus providing

convenient and practical means for mounting to a structure, and thereby retaining the assembly.

Preferably, the system includes a means for raising and/or lowering the assembly, for example, a crane, hydraulic or electrically driven actuators, which
5 may be jacks or rams etc.

More preferably, the system may further include formwork means, for example, bracket and panel assemblies for mounting to the system such that concrete or other related construction materials can be utilised to form walls or other constructional arrangements in situ. Thus the system of the present
10 invention is advantageously adaptable to also permit formwork to be constructed.

Preferably the scaffolding assembly is modular and can be preassembled before being attached to any of the brackets.

Preferably the scaffolding assembly extends to cover an area 10 metres wide by 12 metres high. More preferably 5 metres wide by 12 metres high. Thus
15 significantly large areas of a structure or construction can be covered with any one assembly.

Preferably the upright elongate members of the scaffolding assembly include connected U section beams, preferably connected 'back to back', and the scaffolding assembly further includes cross-members interconnecting said beams
20 to form a framework.

Preferably the scaffolding assembly further includes one or more platform members for supporting persons and/or materials. Thus the scaffolding assembly advantageously provides a safe working/storage position supported on the brackets.

25 It is a further object of the present invention to provide a method of positioning a scaffolding assembly having an upper and lower end, including a plurality of elongate members, said members including support portions, wherein said method includes the steps of:

a) attaching a moving means to the scaffold assembly via a tie
30 element;

b) pulling the scaffolding assembly upwards by said moving means whilst said assembly is suspended from said moving means,

c) guiding the assembly through guides connected to the structure simultaneous with said raising,

d) permitting support portions of the scaffolding assembly passage past support positions therefor,

5 e) positioning support means for the support portions at the corresponding respective support positions, and
supporting the support portions with the support means.

Thus the present invention advantageously provides a method which permits positioning of a scaffolding assembly that alleviates the aforementioned
10 problems associated with the prior art, for example, due to poor weather conditions e.g. strong winds.

Preferably step a) includes attaching the moving means proximate the upper end of the scaffold assembly.

Preferably, the method further includes the step of releasably mounting the
15 scaffolding assembly to brackets provided on a structure prior to method step (a), thus allowing flexibility during erection of the system and therefore movement of the assembly.

More preferably the method further includes the step of pre-assembling the scaffolding assembly prior to mounting to the structure such that the present
20 invention envisages the positioning of modular or unitary scaffolding systems.

Still more preferably, during positioning of the assembly, the support portions are arranged to act on the support means to move the support means out of their path, and said support means return under the force of gravity to block
said path to allow the support portions thereafter to rest on the support
25 means. Thus advantageously the method includes raising and supporting the assembly via a one way valve or ratchet arrangement, thereby simplifying the steps of supporting the assembly.

Preferably said positioning step, step e) includes receiving each support portion in a receiving bracket of each corresponding support means.

30 **BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1a shows a first bracket according to one embodiment of the present invention mounted to a lower level of a building under construction. The

scaffolding assembly, in this embodiment, is yet to assembled in unitary form and retained by the bracket.

Figure 1b shows a side view of the scaffolding system according to one embodiment of the present invention retained by the bracket of Figure 1a at a lower level of a portion of a building under construction.

Figure 1c shows a side view of the scaffolding system as shown in Figure 1b with the assembly retained at a second level bracket prior to raising the assembly.

Figure 1d shows another side view of the scaffolding system as shown in Figure 1b though raised to the next higher level of construction using one embodiment of the method according to the present invention.

Figures 2a to 2f show the sequence of moving and repositioning the scaffolding assembly relative to one of the brackets according to an embodiment of the present invention.

Figure 3a shows a bracket according to one embodiment of the present invention with retaining means for retaining a portion of the scaffold assembly.

Figure 3b shows the bracket of Figure 3a with a portion of the scaffolding assembly supported thereon.

DESCRIPTION OF PREFERRED EMBODIMENT

The scaffolding system according to a particular embodiment of the present invention will hereinafter be described with reference to the drawings.

The phrase 'scaffolding assembly' refers to the arrangement of upright elongate rail members that are interconnected by cross-members, platforms and/or formwork etc forming a framework for mounting to a structure. A side view of one form of the assembly is shown in Figures 1b to 1d. It will be appreciated that the elongate members may be joined end to end depending on the overall length, and thus height of the assembly, required. Multiple elongate members are interconnected laterally with respect to one another cross-members etc to form a unitary or modular scaffolding assembly of a pre-selected width or to suit a particular situation e.g. a structure having unusual exterior wall angles.

Figure 1a shows a first bracket 3 of the scaffolding system 1 of the present invention mounted to a lower level 4 of a building under construction. The bracket is shown in a through beam anchoring arrangement, though through slab

and embedded beam/slab anchoring arrangements are also envisaged. Figure 1b shows an assembled scaffolding assembly 2 extending upwards of the ground surface 5 and spanning the height of the first, lower level 4 and a second, higher level 6, of a structure. The assembly is retained at the first level 4 by the bracket 3. Since the second higher level is shown under construction no bracket is yet provided. The scaffold assembly consists of a multiple of upright elongate members 7 joined together and interconnected to form a unitary framework. Working platforms 8 and cross-members 9 help to give rigidity and strength to the framework of the assembly 2.

Figure 1c shows a second, higher level bracket 3 mounted to the building at the second higher level 6 of construction. The assembly 2 is shown here also retained by the bracket 3 at the second level 6. The third and highest level 10 depicted in the drawings is shown under construction. This is the level to which the topmost platform 8 needs to be raised to in order for the scaffold assembly 2 to be useful without requiring extension.

The assembly is shown in Figure 1d raised to the third higher level 10. The base of the assembly has subsequently been raised off of the ground surface 5 and the assembly clamped in place by retaining means. The retaining means are in this instance incorporated into the brackets 3. Work may now be carried out at the higher level 10 currently under construction. No scaffolding materials are wasted at ground level and access may still be gained to the lower 4 and second level 6 by trades-people. Thereafter a further bracket may be added to the highest level and the assembly 2 raised further. The extent to which the scaffolding system can reach is in practice only limited by the highest level of construction and the lifting capacity of the lifting means employed, for example the reach or weight limit of a crane. Although Figures 1a to 1d show the brackets 3 mounted on levels one above the other, it should be understood that additional brackets 3 will in practice be provided adjacent these on the same levels effectively forming a grid or array of brackets 3 by which the assembly 2 will be retained. A modular or unitary section of the assembly 2

Figures 2a to 2f show the sequence of operation of one embodiment of the brackets 3 and assembly support means. The bracket 3 is shown in each view 2a to 2f mounted to a level of the structure. Mounting is in this instance is by the

through-beam anchor arrangement 24. The bracket 3 includes a support means in the form of a pivotably mounted arm 25. The arm 25 is shown pivotably connected at an inboard end thereof to the bracket 23. The outboard end is adapted to include a bracket for engagement with a support pin of the elongate member 22. The arm also includes a stop means (not shown) for engagement with the body of the bracket 23 when in a horizontal position. The stop means prevents the outboard end of the arm from pivoting below the horizontal position. It will be appreciated however, that although in this instance the arm is not intended to pivot below horizontal, other arrangements and configurations of the bracket 23 may include support means for the elongate member 22 which may do so depending on the particular arrangement required. The outboard end of the arm 25 is arranged to support a rail pin 27a inserted through an aperture 26 of the elongate member 22, thereby the elongate member 22 is supported by the bracket via the arm and pin 27a. Should one pin 27a fail, one or more additional pins 27b may be positioned above the first so as to provide saving support for the elongate member 22.

With reference to Figures 2a to 2f, Figure 2a shows an elongate lengthwise upright member in the form of a rail of regular section 22 of the scaffold assembly 2. The rail 22 includes a plurality of apertures 26 along its length. Support portions in the form of rail pins 27 are shown. The lowermost pin 27 rests on and is supported by contact with the arm 25. Figures 2a to 2f show only one of the support arrangements, however, it should be understood that in practice there would be multiple brackets supporting the scaffold assembly over a substantial area of the exterior or interior of a structure. It will be apparent to the skilled addressee that the term construction may refer to a complete building, or a building under construction. Also, whereas the scaffolding system of the present invention is applicable to buildings and constructions, it may also be used in relation to any large structure, for example, ships, dams, monuments, pylons etc. In fact wherever a known system may be used the system of the present invention may also find application. Furthermore, the 'drag and drop' nature of the present invention permits access to various difficult structure arrangements, for example offset building levels or cantilever beams.

The sequence of moving and repositioning the scaffold assembly 2 will now be described with reference to Figures 2a to 2f. A means for raising the assembly 2 (not shown) is attached to the assembly 2 and the assembly is raised to the next level of construction. Each pin 27 is caused to engage the underside
5 of the arm 25 of the next highest bracket, preferably at the next level of the structure, though brackets may be mounted at any point on the structure which provides convenient location for supporting the assembly. As the pin 27 continues upwards during the raising action, contact with the outboard end of the arm causes the arm 25 to pivot about the pivot point at the inboard end of the arm
10 25. The arm thereby permits the support portion of the elongate member 22 i.e. the pin 27 passage to continue upwards (see figure 2d). As shown in Figure 2e, when the pin 27 has passed the point of furthest extent of the outboard end of the arm, the arm returns to its original horizontal position by gravity. As shown in Figure 2f, the assembly is then lowered so that the pin 27 rests on the outboard
15 end of the arm 25. The arm does not pivot below its original horizontal position due to the stop means (not shown). Each bracket 25 thereby takes a portion of the weight of an elongate member 22 and thus of the whole assembly. Thus, the assembly is repositioned at a new higher level than previous (as shown in Figure 1d). The bracket 25 shown in Figures 2a to 2f will now be described with
20 reference to Figures 3a and 3b.

Figure 3a shows a bracket of one embodiment of the present invention with an arm supporting means interposed between one pair of pivotably mounted opposed cooperating jaws 32a, 32b.

Figure 3b shows one particular embodiment of the bracket 23 for retaining
25 a portion of the scaffolding assembly of the system of the present invention. The bracket 35 shown is arranged for mounting to a structure via a backplate 36. The bracket includes two pairs of cooperating pivotable arms 32a, 32b and 33a (not shown), 33b. The uppermost set of arms 32a, 32b are shown in an open, unlocked position, whilst the lowermost set 33a, 33b are shown in a closed,
30 retaining position. Each pivotable arm includes a slot for engagement with a flange portion of a longitudinally upright elongate member 31 of the scaffolding assembly. The elongate member 31 shown includes a pair of U shaped beams joined in a spaced relationship by joining plates 35. However, it is envisaged that

beams of various other sections may be used, for example H or I beams. The supporting means 39, for example, the arm 25 of Figures 2a to 2f is interposed between the two U channel members 34a, 34b of the elongate member 31. The support portion is shown in the form of a pin 44 inserted through aligned apertures of the two channels 34a, 34b. The pin 44 rests on, and is supported by, the arm 39, thereby supporting the elongate member 31 of the assembly 2. An additional pin 38 provides supplementary support in the event of failure of the first pin 44. The arm and pin arrangement thereby provides a convenient one way valve or ratchet mechanism for supporting the assembly. The arm 39 includes a receiving bracket 43 towards the outer end thereof and which is aligned to receive the pin 44 during positioning of the elongate member 31. The receiving bracket 43 helps to guide the pin 44 into position during resetting or positioning of the assembly. As shown in Figure 3b, the receiving bracket 43 has a flared or flanged open end to assist in guiding the pin 44 of the member 31 into the correct position on the support arm 39. This helps to ensure that the assembly is in the correct position and that the pivotable arms can be clamped around the respective flanges of the elongate member 31. Such receiving brackets help to reduce the risk of the assembly tilting, either towards the building or away from the building due to a cantilever effect. If the tilt is too large, it may not be possible to clamp the pivotable arms into position.

During mounting of the assembly to a structure, the pairs of pivotable arms 32a, 32b and 33a, 33b are opened to allow the elongate member to be positioned relative to the bracket 30 with the arm (25, Figure 2a) interposed between the channel rails 34a, 34b. It will be appreciated that the scaffolding system includes a plurality of such brackets 30 and therefore this operation will be repeated at multiple locations during mounting of the assembly 2 to each bracket 30. Once the assembly 2 is positioned relative to the brackets 30, the pivotable arms are pivoted to engage with flanges on respective sides of the elongate rail 31. In the example shown in Figure 3, each pivotable arm pivots on a bolt 37 through a portion of the bracket 30. It will be clear therefore to the skilled reader that the scaffolding assembly 2 cannot be displaced from the brackets during raising/lowering operations due to the retaining means of each bracket 23 holding the assembly 2. Thus, the modular scaffolding assembly 2 can be 'dragged' up to

the next required level of construction of a structure and lowered onto the support pins 44 until the whole assembly 2 is supported at the higher level. Therefore, advantageously there is no delay time in waiting for favourable wind/weather conditions or in assembling costly and complex hydraulic jacks/rams systems.

- 5 Furthermore, the assembly can be provided with high strength wire mesh coverings, heavy duty safety nets, metal deckings, metal toeboards, access staircases and debris platforms to enable work to be carried smoothly, safely and efficiently.

- 10 While particular embodiments of the present invention have been herein described, it would be obvious to those skilled in the art that various changes and modifications can be made without departing from the spirit and scope of the invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A scaffolding system including;

a scaffold assembly including a plurality of connected elongate members, said members including support portions, and said assembly having an upper and
5 a lower end;

a plurality of brackets for mounting directly or indirectly to a structure, said brackets including retaining means for releasably retaining said elongate members in a lengthwise upright orientation when mounted to a structure, said brackets including support means for supporting at least part of the weight of said
10 elongate members;

guides for guiding the assembly during raising and/or lowering of the assembly relative to the structure; and

a moving means separate from the scaffold assembly, the moving means attaching to the scaffold assembly via a tie element such that said assembly is
15 suspended from said moving means and said moving means is arranged to pull said assembly upwards via said tie element during raising and to position the assembly at a predetermined position on said support means;

and wherein the support means of said brackets are arranged to allow passage of said support portions during raising of the assembly but prevent
20 passage of said support portions during lowering of the assembly to thereby support said assembly at the predetermined position.

2. A scaffold assembly according to claim 1, wherein the moving means attaches proximate the upper end of the scaffold assembly via the tie element.

3. A scaffolding system including;

a scaffold assembly including a plurality of connected elongate members, said members including support portion, and said assembly having an upper and
25 lower end;

a plurality of brackets for mounting directly or indirectly to a structure, said brackets including retaining means for releasably retaining said elongate
30 members in a lengthwise upright orientation when mounted to a structure, said

brackets including support means for supporting at least part of the weight of said elongate members, each support means including a receiving bracket extending therefrom; and

5 guides for guiding the assembly during raising and/or lowering of the assembly relative to the structure;

and wherein, the support means are adapted to independently allow passage of said support portions when acted upon by the support portions during raising of the assembly, and the support means are adapted to independently prevent passage of said support portions during lowering of the assembly to thereby support said assembly and said receiving brackets are arranged to each
10 guide and receive one of said support portions of an elongate member into a predetermined position on the support means during positioning of the assembly

4. A scaffolding system including;

15 a scaffold assembly including a plurality of connected elongate members, said members including support portions;

a plurality of brackets for mounting directly or indirectly to a structure, said brackets including retaining and guiding means for releasably retaining and guiding said elongate members in a lengthwise upright orientation when mounted
20 to a structure, said brackets including support means for supporting at least part of the weight of said elongate members;

and wherein, the support means are arranged to allow passage of said support portions during raising of the assembly but prevent passage of said support portions during lowering of the assembly to thereby support said
25 assembly;

and wherein each retaining and guide means includes at least one pair of cooperating opposed pivotable arms, each arm including a slot portion for receiving a portion of the elongate member whereby each pair of cooperating arms retain there between a portion of an elongate member and allow the
30 assembly to be slidably guided during raising and/or lowering and each pair of said pivotable arms are arranged to pivot apart relative to one another to release said elongate members.

5. The system according to any one of the preceding claims, wherein each elongate member is a beam or rail of regular cross section, for example U, I, H, square, or round.

6. The system according to claim 1, 2 or 3, wherein each bracket also
5 incorporates the guide means.

7. The system according to claim 6, wherein the guide means and retaining means of each bracket are integrated.

8. The system according to claim 7, wherein each integrated guide and retaining means is in the form of one or more pairs of cooperating opposed
10 pivotable arms.

9. The system according to claim 8, wherein each said pair of pivotable arms is arranged to pivot between a closed position for retaining each elongate member and an open position for releasing said elongate member.

10. The system according to any one of the preceding claims, wherein the
15 support means includes an arm pivotably attached to the bracket and a stop means, such that the arm is independently pivoted by the action of support portion to permit passage of the support portion during raising of the assembly, and independently returns to a support position to prevent return of the support portion by interaction of the stop means with a portion of the bracket.

20 11. The system according to any one of the preceding claims, wherein the support portion of each elongate member includes one or more permanent or removable pins, bolts, bars or combinations thereof.

12. The system according to any one of the preceding claims, wherein the brackets are constructed for mounting to a structure by one or more bolts,
25 adhesives, anchor means, or combinations thereof.

13. The system according to claim 3 or 4, including a moving means for raising and/or lowering the scaffolding assembly, wherein said means is a crane.

14. The system according to any one of the preceding claims, wherein said system further includes formwork means.

5 15. The system according to claim 14, wherein said formwork means includes formwork panels for constructing substantially vertical concrete walls in situ.

16. The system according to any one of the preceding claims, wherein the scaffolding assembly is pre-assembled as a unitary or modular assembly prior to being retained by the brackets.

10 17. The system according to any one of the preceding claims, wherein the scaffolding assembly is up to about 10 metres wide by about 12 metres high.

18. The system according to claim 17, wherein the scaffolding assembly is about 5 metres wide by about 12 metres high.

15 19. The system according to any one of the preceding claims, wherein the upright elongate members of the scaffolding assembly include connected U section beams, and the scaffolding assembly further includes cross-members interconnecting said beams to form a framework.

20 20. The system according to claim 19, wherein said scaffolding assembly further includes one or more platform members for supporting persons and/or materials thereon.

25 21. The system according to claim 3, wherein at least one said receiving bracket includes a tapered guide flange at an end thereof distal from the support means such that the corresponding support portion is guided by said tapered guide flange into the predetermined position on said support means when the assembly positioned.

22. The system according to claim 1 or 2, wherein each support means includes a receiving bracket extending therefrom.

23. The system according to claim 22, wherein at least one said receiving bracket includes a tapered guide flange at an end thereof distal from the support means such that the corresponding support portion is guided by said tapered flange into predetermined position on said support means when the assembly is positioned.

24. A method of positioning a scaffolding assembly having an upper and lower end, including a plurality of elongate members, said members including support portions, wherein said method includes the steps of:

- a) attaching a moving means to the scaffold assembly via a tie element;
- b) pulling the scaffolding assembly upwards by said moving means whilst said assembly is suspended from said moving means,
- 15 c) guiding the assembly through guides connected to the structure simultaneous with said raising,
- d) permitting support portions of the scaffolding assembly passage past support positions therefor,
- e) positioning support means for the support portions at the corresponding respective support positions, and
- 20 f) supporting the support portions with the support means.

25. The method according to claim 24, wherein step a) includes attaching the moving means proximate the upper end of the scaffold assembly.

26. The method according to claim 20, further including the step of releasably mounting the scaffolding assembly to brackets provided on the structure prior to step (a).

27. The method according to claim 24 or 25, wherein the method further includes the step of pre-assembling the scaffolding assembly prior to mounting to the structure.

28. The method according to any one of claims 24 to 27, wherein, during positioning of the assembly, the support portions act on the support means to automatically move the support means out of their path, and said support means automatically return to block said path to allow the support portions thereafter to
5 rest on the support means for supporting the assembly.

29. The system according to any one of claims 24 to 27, wherein said positioning step e) further includes receiving each support portion in a receiving bracket of each corresponding support means.