

Mobile Cantilever Platforms and Methods of Installation Thereof

The invention relates to mobile cantilever platforms and methods of installation thereof. More particularly, the invention relates to mobile cantilever platforms and
5 methods of installation in an elevator riser, such as an elevator shaft in a building.

Current practice for installation of elevators usually results in lengthy and complex procedures given, for example, the logistics and health & safety concerns posed any time human workers have to work at height, in these instances in an elevator riser of
10 a building. For instance, one such practice is the current practice for construction of a machine-roomless elevator using inspection speed operation. Referring to Figure 1, an elevator shaft 2 is disposed within building 4. The building has a total of n storeys and has elevator landings 6a, 6b, ..., 6n-1 and 6n branching off from the elevator shaft 2. During the elevator installation procedure, a cantilevered platform
15 8 with its related guardrails and toeboards (not shown) is installed at the uppermost area 10 of the elevator shaft 2. The uppermost area 10 of the elevator shaft 2 becomes the machine space 10 for housing equipment as discussed below. After an inspection by a professional engineer, the cantilever platform is ready for use by lift installers 16. The installers 16 commence setting out reference lines (not shown)
20 from the cantilever platform 8 to ensure the straightness of the permanent lift installation when installed.

The elevator machine 14 (the drive motor) and its related equipment is located in the machine space area 10. The related equipment includes, for example, the
25 machine beams (not shown), a deflector sheave 16 and the controller, governor, etc.

The workers 16 move to the pit area 17 to install the lift car 18, the first set of guardrails 20 and other pit equipment, for example, the safety buffers (not shown). Subsequent to this, a winch and chain block (also not shown) is mounted in the
30 machine space area 10 to lift the counterweight frame 22 to the top of the lift shaft

2. The ropes 24 connecting the lift car 18 and the counterweight frame 22 are then fitted. The governor rope (not shown) is then installed to the governor and the safety device of the lift car 18 to provide redundant safety measures.

5 The installers 16 then carry and load filler weight – usually each weighing between 25 kg and 30 kg – at the cantilever platform 10 into the counterweight frame 22 to bring the counterweight 22 to the desired dead weight for the lift system to be balanced.

10 Wirings and travelling cables are connected to the lift system to run it at inspection speed operation, typically travelling at 0.25 metres per second.

The installers 16a then continue to work from the top 18a of the lift car 18 to operate the car movement using an inspection box (not shown) located at the car top 18a. From here, the remainder of the guardrails 20 are stacked on top of one another and their brackets are welded together. New guardrails 20a are shown in outline to indicate their future position as the workers 16 install them one atop the other as the lift car 18 is raised through the elevator shaft 2. At a level approximately halfway up the elevator shaft 2, where the counterweight 22 meets the counterweight rails 20, the counterweight is guided into the rails.

Simultaneously with the lift car 18 moving up through the lift shaft 2, entrances are fitted to the landing areas 6 to complete the lift installation.

25 The invention is defined in the independent claims. Some optional features of the invention are defined in the dependent claims.

Various advantages may be realised with such a mobile cantilever platform and methods of installation. For instance, a mobile cantilever platform provides a mobile, compact and stable working platform which can be easily assembled and

disassembled for use when desired to access an inside of an elevator/lift shaft for repair, maintenance and installation of new and existing lifts. Such a mobile cantilever platform can be easily assembled by two persons or more from a location inside the building in which the lift is installed or to be installed. A mobile cantilever platform has a working surface to allow for complete repair, maintenance and installation without the need for dangerous stooping over or reaching by the user.

Additionally, a mobile cantilever platform allows for lift repair, maintenance and installation which does not require installation of connector means (e.g. bolts or other fixings) to the building at the lift lobby landing location 6 and thereby avoids permanent disfiguration of marring of existing floors and walls at the landing location 6. A mobile cantilever platform can be installed at any landing lobby installation up to the uppermost floor lift lobby landing location to allow installation of the elevator counterweight frame and counterweight filler weight. Such a method of installation improves the methodology and safety aspects for filling of counterweight filler weight into a counterweight frame. Additionally, a mobile cantilever platform which can be installed at any lobby landing location allows existing lift repair and maintenance work to be carried out at any building lift lobby landing location as desired in a highly-convenient manner.

In one methodology, a mobile cantilever platform can be installed at an uppermost lift lobby landing location thereby allowing replacement of traditional scaffold installation which is extremely time-consuming and labour-intensive to install. Yet further, a mobile cantilever platform can be installed at a particular location in a lift shaft where machine-roomless lifts are concerned.

The invention will now be described, by way of example only, and with reference to the accompanying figures in which:

Figure 1 is a layout diagram depicting current practice for construction of a machine-roomless elevator using inspection speed operation;

Figure 2 is an elevation view of a first mobile cantilever platform;

Figure 3 is an exploded view of component parts of a second mobile cantilever platform;

Figure 4 is an assembled view of the second mobile cantilever platform of Figure 3;

5 Figure 5 is an elevation view of the second mobile cantilever platform of Figures 3 and 4 depicting the mechanical forces at work when the mobile cantilever platform is installed; and

Figure 6 is a layout diagram depicting a method for construction or maintenance in an elevator riser.

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Turning now to Figure 2, a mobile cantilever platform generally referred to by 200 comprises a first portion 202 defining a working platform for workers to work on within an elevator riser 256. The mobile cantilever platform 200 has an elongate restraint member 204 extending from the first portion 202. Elongate restraint

15 member 204 is pivotally hinged on the first portion 202 at point 210. Elongate restraint member 204 additionally comprises an engagement member 206 which will be discussed in greater detail below. In the example of Figure 2, mobile cantilever platform 200 has a compression steel prop 208 pivotally hinged upon first portion 202 at 214 and pivotally hinged on elongate restraint member 204 at 216.

20 Compression steel prop 208 will also be discussed in greater detail below.

In position as shown in Figure 2, mobile cantilever platform 200 rests on floor 252 of working area (landing) 254 of a building. Working area 254 is an elevator landing adjacent elevator riser 256. In the example of Figure 2, elevator riser 256 is an

25 elevator shaft shown in part and defined by distal (distal from working area 254) wall 256a and line 256b separating the elevator shaft 256 from landing 254. It will be appreciated that the mobile cantilever platform 200 can be used in other elevator risers, such as those used for inspection lifts on, for example, an external façade of a building, or in an open atrium internal to a building as commonly seen in large hotels
30 and the like.

First portion 202 extends into elevator riser 256 from floor 252 and defines a surface on which human workers (not shown) can work within the space of the elevator riser 256. Elongate restraint member 204 is fixed to the first portion 202 and, as noted above, is pivotably fixed at point 210; that is, elongate restraint member 204 and first portion 202 may move relative to one another about pivot point 210. Elongate restraint member 204 extends in a direction having a vertical component d_1 and a horizontal component d_2 from the first portion at a point 210 within working area 254 in a non-vertical orientation towards elevator riser 256 to contact with surface 258 in the working area 254. In the example of Figure 2, surface 258 of working area 254 is a structural member of the working area, soffit 260 projecting from ceiling 262. As shown, elongate restraint member 204 extends in a non-vertical orientation at an angle θ from vertical. The angle θ can be any suitable angle, but useful angles are between 20 and 40 degrees, between 25 and 35 degrees, or 30 degrees. Essentially any non-zero value of θ (i.e. elongate restraint member is disposed in a non-vertical orientation) may be useful. At the distal end (distal the first portion 202) of elongate restraint member 204, engagement member 206 is arranged to engage with surface 258, the underside of soffit 260. In the example of Figure 2, engagement member 206 comprises angled members 206a, 206b arranged to have surfaces at 90 degrees to one another complementing the external right-angled surfaces of soffit 260 so as to restrain the mobile cantilever platform in the position shown in Figure 2 as will be described in greater detail below. Other arrangements are possible to suit the geometry of internal surface 258 but a noteworthy feature of engagement member 206 is that its angled members 206a, 206b are arranged to exert forces against surface 258/soffit 260 to restrain mobile cantilever platform against movement in the direction components d_1 , d_2 . This is discussed in greater detail below.

As an alternative to the engagement member 206 engaging with a structural surface of the building in working area 254, a bracket (not shown) having a contact surface could be provided (perhaps temporarily within landing area 254) for engagement

member 206 to engage with thereby to retain mobile cantilever platform 200 in the position shown in Figure 2.

Engagement member 206 is moveable in direction 224 in the axis of elongate restraint member 204 by means of a telescopic extension 222. The telescopic extension 222 is provided for length adjustment of the elongate restraint member 204 to suit varying heights of ceiling 262 within working area 254 and/or contact surface geometries including, in the example of Figure 2, soffit 260 dimensions.

- 10 Elongate restraint member 204 is pivotably mounted upon first portion 202 at 210 as discussed already. During installation, elongate restraint member 204 can be restrained in the correct position (e.g. at angle theta as shown at Figure 2) by any suitable means. For example, a fixing arrangement may be provided at point 210 to restrain movement of elongate restraint member 204 in the directions 212.
- 15 Alternatively, and in the example of Figure 2, mobile cantilever platform 200 comprises restraint strut 208 pivotably fixed to first portion 202 at point 214 and pivotably fixed to elongate restraint member at 205 at point 216. Additionally, the length of restraint strut 208 may be adjusted in the directions 220 by means of telescopic extension 218. The pivotable fixings at points 214, 216 allow restraint
- 20 strut to move about those pivot points 214, 216 with respect to first portion 202 and elongate restraint member 204 respectively while mobile cantilever platform is being installed in position in the working area 254. When first portion 202 is determined to be in a correct position upon floor 252 by onsite workers and elongate restraint member 204 is oriented at a preferred angle, the length of
- 25 restraint strut 208 is fixed to secure elongate restraint member in an orientation at angle theta and fixing is applied at pivot points 214, 216 to restrain pivoting movement.

- By fixing the elongate restraint member 204 to have engagement member 206 in
- 30 engagement with surface 258 of soffit 260, first portion 202 of mobile cantilever

platform 200 is restrained from rotation in downwards direction 264 within elevator riser 256 about fulcrum F. First portion 202 will naturally tend to rotate about fulcrum F in direction 264, especially if workers (not shown) or any other weight is disposed upon first portion 202. The position of elongate restraint member 204 and the engagement of engagement member 206 in engagement with soffit 260 provides the restraining action and also restrains that portion of mobile cantilever platform 200 within working area 254 from rotating about fulcrum F in direction 266 (having directional components d1, d2, mentioned above).

- Thus, mobile cantilever platform 200 is securely fixed in place and loads may be safely placed upon first portion 202, including human workers who may safely stand or otherwise work in the void of elevator riser 256 whilst upon first portion 202.

It will be appreciated that, optionally, elongate restraint member 204, engagement member 206 and restraint strut 208 may be provided in a pair (in the view of Figure 2, the paired items are directly “behind” the items illustrated in Figure 2), with the paired items being fixed to first portion 202 at lateral edges of first portion 202.

Turning now to Figure 3, a second mobile cantilever platform is illustrated in exploded view detailing the component parts. Mobile cantilever platform 300 comprises, principally, the following parts which will be discussed in greater detail below:

- platform sliding bracket 320
- platform first portion 302, comprising a platform support frame
- elongate restraint members 304
- platform deck 340
- platform stopper 360.

Looking first at sliding bracket 320, this comprises a pair of channel supports 322 with inside surfaces 326. Channel supports 322 are fixed in a parallel and spaced

relationship by virtue of retention portion 324 having an upper side surface 328 and oriented perpendicularly to channel supports 322. The function of retention portion 328 will be discussed in greater detail below. Each channel portion 322 comprises an eye bracket 310a for registration (i.e. alignment) with a corresponding eye bracket
5 on elongate restraint member 304. Additionally, each channel member 322 comprises a bolt hole 366 for receiving bolts 364, through bolt holes 362 of platform stopper 360 as will be discussed in greater detail below. Further, each channel member 322 comprises eye bracket 310 for registration with the corresponding bracket 314 on restraint strut 308 which allows restraint strut 308 to be pivotally
10 moveable about point 310/314 with respect to channel member 322.

Support frame 302 comprises, essentially, of a ladder-type structure made of channel members welded together to have stiles 330 and rungs 332. At an end of support frame 302 distal sliding bracket 320, support frame 302 comprises eye holes
15 334 for receiving optional tension hangers 358 (e.g. chain tension hangers) which are fixed through the eye holes 334 and retained in place by virtue of wing collars 359.

Platform 340 comprises three pieces of platform decking 342 each of which is provided with a leading edge 344 for slotting of trailing slot 346. Plates 348 assist in
20 alignment of the platform deck pieces 342 with one another. Platform deck 340 comprises one or more fixtures 350 for fixing of a scaffold pole (not shown) thereto, although these fixtures 350 may also be fixed on the mobile cantilever platform for positioning in the elevator riser. In this alternative arrangement, the fixtures 350 may be situated on the platform first portion, say, on stiles 330. As such, when the
25 platform deck 340 is placed upon support frame 302 a scaffold frame may be constructed on platform deck 340 in the elevator riser, the scaffold frame having a secure base provided by virtue of fixtures 350.

In the example of Figure 3, platform deck 340 has a width W1 which is greater than a
30 width W2 of support frame 302. As such, support frame 302 can be extended

through narrow lift lobby entrances and, if necessary, platform deck 304 width W1 is not restricted by the width of the lift lobby entrance. Each individual platform deck piece 342 can be transported from the elevator landing in to the elevator riser through the lift lobby entrance and assembled on support frame 302 in the elevator riser to construct a platform 340 having width W1 greater than width W2 of support frame 302 and, if desired, greater than a width of an entrance (not shown) to the elevator riser from the elevator landing/working area.

Each elongate restraint member 304 comprises an engagement member 306 provided upon telescopic support 322. In the example of Figure 3, engagement member 306 is the same as engagement member 206 of Figure 2. Additionally, each elongate restraint member 304 comprises a support bracket 356 for supporting tension hanger support frame 352 as will be discussed in greater detail below. As discussed with reference to Figure 2 above, the engagement members 306 may be adjusted in place for engagement with a surface inside a lift lobby area at the correct angle theta. Restraint struts 308 operate in the same manner as restraint struts 208 of Figure 2. That is, each restraint strut 308 is pivotably fixed to channel support member 322 at point 314 and to elongate restraint member 304 at point 316. As above, the lengths of restraint members 308 are adjustable by virtue of telescopic adjustment means 318.

Tension hanger support frame 352 comprises eye holes 354 for receiving tension hangers 358 which may be fixed thereto by wing collars 357 as will be discussed in greater detail below.

Finally, angle stopper 360 is an angled channel member for fixing to support frame 320 by virtue of bolts 364 through bolt holes 362 for registration with bolt holes 366 in channel members 322. When installed, angle stopper 360 restrains support frame 302 from movement in a direction towards the working area/lift lobby.

In alternative arrangements (not illustrated) parts of mobile cantilever platform 300 are provided integrally with one another. For instance, in one alternative arrangement, platform stopper 360 is provided integrally with platform sliding bracket 322 by, for example, welding together. Additionally, or as a further
5 alternative, sliding bracket 320 and platform support frame 302 can be provided in an integral arrangement using, again for example, a telescopic arrangement whereby stiles 330 of platform support frame 302 extend telescopically from platform sliding bracket 322. In this arrangement, it will be appreciated therefore that the mobile cantilever platform is arranged so that the first portion extends from the working
10 area adjacent the elevator riser into the elevator riser in a telescopic arrangement. In one such implementation, the stiles and the parts of platform sliding bracket 322 from which the stiles telescopically extend are of circular cross-section, stiles 330 having a smaller cross-section than the parts of parts of platform support frame 302 from which they extend. Yet further, stiles 330 may have multiple telescopic sections
15 of gradually reducing cross-sectional size, where a section of lesser cross-section may be withdrawn into an adjacent telescopic section of larger cross section.

Turning now to Figure 4, an assembled mobile cantilever platform 300 is illustrated. During installation at an elevator riser, the typical installation procedure is as
20 follows. Workers (not shown) ensure that entrance barricades are properly provided at the lift lobby entrance (the entrance to the elevator riser) before commencement of installation of the mobile cantilever platform 300. Anchoring points are installed for each individual worker for the installation of lifelines. Each worker is equipped with a safety harness and rope grab devices. The area around the lift lobby entrance
25 is cordoned off to prevent other trade subcontractors from improperly entering into the work area before work commences. As a first point of construction, sliding bracket 320 is placed on the lift lobby floor (not shown). Retention portion 324 is aligned with a lip edge of the lift lobby floor. That is, retention portion 324 overhangs the edge of the lift lobby floor into the elevator riser and is placed in
30 contact with the edge of the floor. Such positioning restrains mobile cantilever

platform 300 from axial movement in directions D2. Following this, support frame 300 is placed upon upper surface 328 of sliding bracket 320 and slid into the elevator riser in direction D1. The width W2 of support frame 300 is selected to be slightly smaller than a width W3 of the internal surfaces 326 of channel members 322 to
5 provide a secure fit.

As an alternative to placing sliding bracket 320 on the lift lobby floor in front of the lift entrance as a first step, the assembly of the sliding bracket 320 and the support frame 302 may now be placed on the floor in front of the lift entrance.

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Elongate restraint members 304 are then assembled with engagement members 306 which, in the example Figure 3, comprise jack bases. Tension hanger support frame 352 is then placed (or fixed) onto support brackets 356 of elongate restraint members 304. Restraint struts 308, comprising compression steel props, are then
15 introduced into the assembly by fixing at points 314 and 316. Engagement members 306 are then aligned with the surface of the working area (not shown), commonly a soffit or other beam structure of the lift lobby entrance and adjusted to the correct height by adjustment of telescopic members 342. Simultaneously, restraint struts 308 are adjusted to the correct length and secured.

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A chain block (for example, a single 1 ton rated chain block) – not shown for the sake of clarity – is hung from centre eye piece 355 of tension hanger support frame 352 using a shackle rating for 1 ton or higher. The other end of the chain block is lowered such that it is long enough to wrap around a distal rung 332a of the
25 platform support frame 302.

Tension hangers 358 are connected to each of the lower eye piece 334 of support frame 302 and eye pieces 354 of tension hanger support frame 352. Each tension hanger – which in this example comprises a length of chain – is retained in a

slackened state until the platform support frame has reached its intended extended length.

Subsequent to this, the platform support frame 302 is extended outwards from the platform sliding bracket simultaneously with the extension of the chain of the chain blocks. Progressively, platform deck pieces 342 of platform deck 340 are laid onto the platform sliding frame, until all pieces 342 are in place on the support frame 302. The leading edge 344 of right-most piece 342 when viewed in Figure 3 is slotted into plates 335 of (or adjacent to) eye holes 334 for securing. Further, brackets (not shown) welded to the underside of each platform deck piece 342 are provided for fixing platform deck 342 to support frame 302. In the example of Figure 3 and Figure 4, the maximum of length of extension, corresponding to the maximum extended length of support frame into the elevator riser is 2.2 metres. Subsequent to this, platform stopper 360 is fixed to sliding bracket 320 by bolts 364 through bolt holes 362 and 366 to restrain the support frame from sliding in a direction opposite to that of direction D1.

Each tension hanger 358 is tightened with the wing nuts 356, 359 until the correct tension is achieved between the upper and lower eye pieces 356, 359 of the lifting eye.

The assembled mobile cantilever platform is shown in Figure 4 with the major component parts of mobile cantilever platform 300 being identified.

A scaffold frame may now be installed upon platform deck 340 utilising fixtures 350 to the maximum height of, say, 4 metres, 10 metres, or any other suitable/safe height, excluding hand rails and their supports at the uppermost lift of the scaffold. It will be appreciated that national health and safety regulations may specify other parameters.

The centre chain block may now be removed from the centre eye 355 of tension hanger support frame 352 and the constructed mobile cantilever working platform is completed. National health and safety regulations may require signage such as “safe to use” to be provided on the scaffold limiting the safe working load to 220 kg/m^2 .

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Turning now to Figure 5, the mechanical forces at work on the mobile cantilever platform are now discussed. Arrows 550, 552 and 554 illustrate forces acting on mobile cantilever platform 530 from the building structure.

- 10 Arrow 504 indicates the mechanical force applied by platform stopper to sliding bracket 320. Arrow 506 indicates the mechanical force applied on retention portion 324 by the remainder of mobile cantilever platform 300. For instance, this force is related to the force indicated by arrow 264 in Figure 2. Arrow 508 indicates the downward force elongate restraint member 304 exerts upon sliding bracket 320.
- 15 Arrows 510 and 512 indicate, respectively, the forces applied by restraint strut 308 on sliding bracket 320 and elongate restraint members 304. Arrow 516 indicates the force applied by tension hanger 358 on elongate restraint member 304. The force applied by elongate restraint member 304 on engagement member 306 is indicated by arrow 518. Arrow 520 indicates the force applied by tension hanger 358 to
- 20 support frame 330 and arrow 522 indicates the restraining force tension hanger 358 applies on the cantilever platform 300.

- Turning now to Figure 6, a method for construction or maintenance in an elevator riser will now be discussed. Building 600 comprises elevator riser 602 which is in this
- 25 example an elevator shaft void. Building 600 has multiple floor levels two of which are denoted first level 610 and second level 612. A pulley 608 is installed at an uppermost point of elevator riser 602 and attached to this are lines 609 which will be discussed below. A first mobile cantilever platform 604 is installed from a first working area 610 adjacent the elevator riser 602 into elevator riser 602. A
- 30 temporary support structure 606 which is, in the present example, a scaffold frame,

is installed on the mobile cantilever platform 604 within the elevator riser 602.

Cantilever platform 604a is installed from second working area 612 into the elevator riser 602. Mobile cantilever platform 604a may be a second installation point for mobile cantilever platform 604 or another mobile cantilever platform. Starting from

5 a position where mobile cantilever platform 604 is installed from first working area 610 with scaffold frame 606 installed thereon, a method for construction or maintenance comprises supporting the weight of scaffold frame 606 via pulley 608 and lines 609. The scaffold frame in its entirety is lifted off mobile cantilever

platform 604 and removed a safe distance from mobile cantilever platform 604 to, 10 say, a position above second working area 612. Mobile cantilever platform 604 is then uninstalled from the position extending from first work area 610. The mobile cantilever platform 604 may be moved to second working area 612 and installed extending from area 612 as described above with reference to Figures 3 and 4.

Scaffold frame 606 (now denoted 606a) is load onto the mobile cantilever platform 15 extending from area 612 now denoted 604a. In this way, significant time savings may be effected obviating the required assembly and disassembly of the scaffold frame 606 multiple times while moving up through the elevator shaft from the bottom of the building whilst working at or adjacent lift lobby areas 610, 612, 614, 616, 618 and 620.

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It will be appreciated that the invention has been described by way of example only and various modifications may be made to the techniques described herein without departing from the spirit and scope of the appended claims.

Claims

1. A mobile cantilever platform for installation in an elevator riser, the mobile cantilever platform comprising:
 - 5 a first portion comprising a support frame and being arranged to extend from a working area adjacent the elevator riser into the elevator riser;
 - an elongate restraint member pivotably mounted upon the first portion for installation in a non-vertical orientation and having an engagement member for engagement with a surface of the working area thereby to restrain the mobile
 - 10 cantilever platform against rotation about a fulcrum;
 - a sliding bracket for:
 - supporting the support frame during its extension from the working area into the elevator riser; and
 - engaging with the elongate restraint member; and
 - 15 a restraint strut for fixing the non-vertical orientation of the elongate restraint member, the restraint strut being pivotably fixed to the first portion and pivotably fixed to the elongate restraint member.
2. The mobile cantilever platform of claim 1, wherein the engagement member
 - 20 is arranged for engagement with a structural member of the working area.
3. The mobile cantilever platform of claim 1, wherein the sliding bracket
 - comprises a retention portion for engagement with an edge of a floor surface of the working area.
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4. The mobile cantilever platform of any preceding claim, wherein the mobile cantilever platform further comprises a platform deck for fixing to the first portion.
5. The mobile cantilever platform of claim 4, wherein the platform deck has a
 - 30 width which is greater than a width of the first portion.

6. The mobile cantilever platform of claim 1, further comprising a fixture for fixing of a scaffold pole thereto in the elevator riser.
- 5 7. The mobile cantilever platform of any preceding claim, wherein the mobile cantilever platform further comprises a tension hanger having a first end for fixing at a distal end of the first portion and a second end for fixing inside the working area.
8. The mobile cantilever platform of claim 7, wherein the second end of the
10 tension hanger is for fixing to the elongate restraint member.
9. The mobile cantilever platform of any preceding claim, wherein the mobile cantilever platform further comprises a platform stopper for restraining the support frame from sliding through the sliding bracket towards the working area.
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10. A method of installing a mobile cantilever platform in an elevator riser, the method comprising:
 - moving a first portion of the mobile cantilever platform from a working area adjacent the elevator riser into the elevator riser; and
 - 20 installing an elongate restraint member pivotably mounted upon the first portion in a non-vertical orientation and engaging an engagement member of the elongate restraint member with a surface of the working area thereby restraining the mobile cantilever platform against rotation about a fulcrum;
 - wherein the first portion comprises a support frame and the method
25 comprises moving the first portion from the working area into the elevator riser by moving the support frame through a sliding bracket of the mobile cantilever platform and engaging the elongate restraint member with the sliding bracket; and
 - wherein the method comprises fixing the non-vertical orientation of the elongate restrain member using a restraint strut which is pivotably fixed to the first
30 portion and pivotably fixed to the elongate restraint member.

11. The method of claim 10 comprising engaging the engagement member with a structural member of the working area.
- 5 12. The method of claim 10 comprising engaging a retention portion of the sliding bracket with an edge of a floor surface of the working area.
13. The method of any of claims 10 to 12 comprising fixing a platform deck to the first portion.
- 10 14. The method of claim 13 comprising fixing a platform deck to the first portion, the platform deck having a width which is greater than a width of the first portion.
- 15 15. The method of claim 13 or claim 14 comprising fixing a scaffold pole to a fixture of the platform deck.
16. The method of claim any of claims 10 to 15 comprising fixing a first end of a tension hanger at a distal end of the first portion and fixing a second end of the tension hanger inside the working area.
- 20 17. The method of claim 16 comprising fixing the second end of the tension hanger to the elongate support member.
18. The method of any of claims 10 to 17 comprising fixing a platform stopper to the mobile cantilever platform to restrain the support frame from moving through the sliding bracket towards the working area.
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