

MULTI-PURPOSE BEAM ASSEMBLY FOR SCAFFOLDING SYSTEM

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to and the benefit of U.S. Provisional
5 Patent Application Number 63/279,440, filed 15 November 2021, the disclosure of
which is now expressly incorporated herein by reference.

FIELD OF THE DISCLOSURE

[0002] The present disclosure relates generally to scaffolding systems, and more
specifically to a beam assembly adapted for multiple connection points and connection
10 types.

BACKGROUND

[0003] Modular scaffold support systems are commonly used to provide vertical
support for structures as well as for use in defining a raised work platform adjacent a
15 structure. Scaffold systems are also used for providing temporary structures such as
work platforms or removable bleacher-type seating.

[0004] One of the most common scaffolding system is modular and is designed
to allow convenient connection of horizontal members to tubular steel upright members.
The tubular steel upright members have a series of connecting members positioned in
20 the length of the vertical upright and the horizontal members include at the ends thereof
a component designed to connect with any of a series of connecting nodes provided on
vertical upright scaffold members. This type of modular connection of scaffold
components is convenient and requires less expertise in the assembly of support
structures or raised platforms.

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SUMMARY

[0005] The present disclosure may comprise one or more of the following
features and combinations thereof.

[0006] A beam assembly for a scaffold system includes a support beam
30 configured to couple with a plurality of modular components to allow the beam assembly
to be built around a variety of different sized and shaped structures. The support beam
has an upper attachment mount, a lower attachment mount, and a web member that

extends between and interconnects the upper attachment mount and the lower attachment mount.

[0007] In some embodiments, the support beam has a plurality of holes of differing diameters to allow for the modular coupling with other scaffolding components.

5 In some embodiments, the beam assembly further includes one or more of a joining beam, ringlock ledger connector, scaffold post connector, guardrail post, angle bracket, and anchor bracket, etc. configured to couple with the support beam.

[0008] In some embodiments, the upper attachment mount, the lower attachment mount, and the web member cooperate to define a passage that extends axially through
10 the first support beam. The joining beam extends into the passage formed in the first support beam. The joining beam may include an upper flange, a lower flange spaced apart vertically from the upper flange, and a web that extends vertically between and interconnects the upper flange and the lower flange.

[0009] In some embodiments, the ringlock ledger connector is configured to
15 couple with the support beam and one or more ledgers. In some embodiments, the scaffold post connector includes a beam connector configured to couple with the first support beam and a post coupler configured to couple with an upright scaffold post. In some embodiments, the guardrail post is configured to couple with the first support beam and an upright scaffold post.

20 **[0010]** In some embodiments, the angle bracket is configured to couple a first support beam with a second support beam. In some embodiments, the anchor bracket is configured to couple the support beam with a foundation structure.

BRIEF DESCRIPTION OF THE DRAWINGS

25 **[0011]** Fig. 1 is a perspective view of a scaffold system configured to support workers above ground on the outside of a building or other structure, the scaffold system including a beam assembly in accordance with the present disclosure, a work surface supported on the beam assembly, and a post and ledger system arranged around the work surface;

30 **[0012]** Fig. 2 is a perspective view of a support beam and a joining beam included in the beam assembly showing the joining beam inserted into and coupled with the support beam;

[0013] Fig. 3 is a perspective view of the opposite side of the support beam and the joining beam shown in Fig. 2;

- [0014] Fig. 4 is a perspective view of the support beam and joining beam similar to Fig. 2;
- [0015] Fig. 5 is an elevation view of two support beams spaced apart from one another and supporting a work platform between the two support beams;
- 5 [0016] Fig. 6 is a perspective view of a scaffold system including the beam assembly similar to Fig. 1 showing the beam assembly includes a second embodiment of upper scaffold post connectors coupled with the support beams and vertical upright posts;
- [0017] Fig. 7 is an exploded perspective view of a ringlock ledger connector
10 included in the beam assembly;
- [0018] Fig. 8 is a perspective view of the ringlock ledger connector of Fig. 7 in an assembled configuration;
- [0019] Fig. 9 is a perspective view of the ringlock ledger connector of Fig. 7 coupled with a support beam in a first orientation and suggesting that the ringlock ledger
15 connector is configured to couple with a ledger;
- [0020] Fig. 10 is a perspective view of the ringlock ledger connector and support beam of Fig. 9 with the ledger coupled with the ringlock ledger connector and a wedge of the ledger extending through a ledger head and the ringlock ledger connector;
- [0021] Fig. 11 is a perspective view of the ringlock ledger connector of Fig. 7
20 coupled with a support beam in a second orientation and suggesting that the ringlock ledger connector is configured to couple with a ledger;
- [0022] Fig. 12 is a perspective view of the ringlock ledger connector and support beam of Fig. 11 with the ledger coupled with the ringlock ledger connector and a wedge of the ledger extending through a ledger head and the ringlock ledger connector;
- 25 [0023] Fig. 13 is a perspective view of two ringlock ledger connectors coupled with a support beam of the beam assembly;
- [0024] Fig. 14 is a top view of two support beams spaced apart from one another and coupled together by a plurality of ringlock ledger connectors and short ledgers;
- [0025] Fig. 15 is a side elevation view of the two support beams of Fig. 14
30 coupled together by the plurality of ringlock ledger connectors and short ledgers;
- [0026] Fig. 16 is a perspective view of an upper scaffold post connector included in the beam assembly coupled with a support beam and extending vertically upward away from the support beam;
- [0027] Fig. 17 is a perspective view of an opposite side of the upper scaffold post
35 connector and support beam of Fig. 16;

[0028] Fig. 18 is a perspective view of a lower scaffold post connector included in the beam assembly coupled with a support beam and extending vertically downwardly away from the support beam;

[0029] Fig. 19 is a perspective view of an opposite side of the lower scaffold post connector and support beam of Fig. 18;

[0030] Fig. 20A is a perspective view of a guardrail post included in the beam assembly and configured to couple to a terminal end of a support beam to provide a connection with vertical upright scaffolding posts;

[0031] Fig. 20B is a perspective view of another guardrail post included in the beam assembly and configured to couple to a terminal end of a support beam to provide a connection with vertical upright scaffolding posts, the guardrail post including a scaffolding rosette and a top rail portion;

[0032] Fig. 20C is a perspective view of a component of the top rail included in the guardrail post of Fig. 20B;

[0033] Fig. 20D is a top plan view of the scaffolding rosette included in the guardrail post of Fig. 20B;

[0034] Fig. 21 is an exploded perspective view of an angle bracket included in the beam assembly and two support beams suggesting that the angle bracket is configured to couple the two support beams together at a perpendicular angle;

[0035] Fig. 22 is a perspective view of the angle bracket and two support beams of Fig. 21 in an assembled arrangement and showing that the angle bracket couples the two support beams together at a perpendicular angle;

[0036] Fig. 23 is a perspective view of an opposite side of the angle bracket and two support beams of Fig. 22;

[0037] Fig. 24 is a perspective view of an anchor bracket included in the beam assembly and a support beam showing the anchor bracket is coupled with the support beam in parallel to secure the support beam to a foundation structure;

[0038] Fig. 25 is a perspective view of the anchor bracket and the support beam of Fig. 24 showing the anchor bracket is coupled with the support beam at a 45 degree angle to secure the support beam to a foundation structure;

[0039] Fig. 26 is a perspective view of the anchor bracket and the support beam of Fig. 24 showing the anchor bracket is coupled with the support beam in a perpendicular arrangement to secure the support beam to a foundation structure;

[0040] Fig. 27 is a perspective view of an opposite side of the anchor bracket and the support beam of Fig. 26;

[0041] Fig. 28 is a perspective view of a lower scaffold post connector coupled with the support beam and extending vertically downward away from the support beam and suggesting that the upper scaffold post connector may be coupled with the same support beam and aligned vertically with the lower scaffold post connector such that the upper and the lower scaffold post connectors provide vertically aligned support for

[0042] Fig. 29 is a perspective view of another joining beam of the beam assembly for joining two support beams at their terminal ends, the joining beam having a web plate that forms the web of the joining beam and made from a first material and upper and lower flanges coupled with the web plate and made from a second material different from the first material;

[0043] Fig. 30 is a side elevation view of the joining beam of Fig. 29 with portions shown in phantom to show the web plate includes upper and lower tabs that extend into and couple with the upper and lower flanges of the joining beam; and

[0044] Fig. 31 is a side elevation view of the web plate of the joining beam of Fig. 29 showing the web plate includes a plurality of holes and the upper and lower tabs for coupling with the upper and lower flanges of the joining beam.

DETAILED DESCRIPTION OF THE DRAWINGS

[0045] For the purposes of promoting an understanding of the principles of the disclosure, reference will now be made to a number of illustrative embodiments illustrated in the drawings and specific language will be used to describe the same.

[0046] A scaffold system 2 configured to support workers above ground on the outside of a building or other structure is shown in Fig. 1. The scaffold system 2 allows the workers to build, repair, clean, etc. the building or other structure. The scaffold system 2 includes a beam assembly 4 in accordance with the present disclosure, a plurality of work platforms 6, and a post and ledger system 8. The beam assembly 4 is configured to provide structural support for the scaffold system 2. The plurality of work platforms 6 are coupled with the beam assembly 4 to provide a generally planar work surface on each level of the scaffold system 2 upon which the workers may stand and rest tools and equipment. The rail system 8 is coupled with the beam assembly 4 and provides vertical support for the different floors of the scaffold system 2 and may help to block workers and equipment from falling from the scaffold system 2.

[0047] The beam assembly 4 includes a plurality of support beams 10 and one or more of and any combination of a number of connection components as suggested in

Figs. 1-27. The additional connection components include, but are not limited to, joining beams 60, 60', a ringlock ledger connector 110, an upper scaffold post connector 210, a lower scaffold post connector 310, guardrail posts 410, 410', an angle bracket 510, and an anchor bracket 610. The beam assembly 4, with its number of interconnecting components, allows for modular and customizable configurations for the scaffold system

5 2.

[0048] Each support beam 10 extends axially relative to an axis 11 and includes an upper attachment mount 12, a lower attachment mount 14, a web member 16, and a top rail 18 as shown in Fig. 2. The upper attachment mount 12, lower attachment mount

10 14, and web member 16 cooperate to provide structural strength to the support beam 10. The upper attachment mount 12, lower attachment mount 14, and web member 16 are shaped generally as an I-beam in cross section. The top rail 18 extends away from the upper attachment mount 12 and configured to couple with and support the work platforms 6 as suggested in Fig. 5. In the illustrative embodiment, the upper attachment

15 mount 12, lower attachment mount 14, web member 16, and top rail 18 are integrally formed as a single, one-piece beam. As shown in Figs. 2-4, the features of the support beam 10 are symmetrical about a vertical axis.

[0049] The upper attachment mount 12 extends axially relative to the axis 11 and is generally rectangular as shown in Figs. 2-4. The upper attachment mount 12 includes

20 a plurality of first through holes 22 that extend completely through the upper attachment mount 12 in a transverse direction perpendicular to the axis 11. The plurality of first through holes 22 are configured to receive fasteners 15 such as, for example, pins, bolts, etc. that extend through the upper attachment mount 12 and another component to couple the component with the support beam 10.

25 **[0050]** The plurality of first through holes 22 each have a same first diameter. Each of the plurality of first through holes 22 are spaced apart axially relative to one another. Each of the plurality of first through holes 22 are located at a same vertical height relative to a bottom of the support beam 10 and relative to the top of the support beam 10 such that the plurality of first through holes 22 are arranged generally along a

30 line. Each of the plurality of first through holes 22 are circular in the illustrative embodiment.

[0051] The upper attachment mount 12 includes a first upper sidewall 24, a second upper sidewall 26, and a top wall 28 as shown in Fig. 2. The first upper sidewall 24 and the second upper sidewall 26 are spaced apart from one another and extend

35 vertically as well as axially along a length of the support beam 10. The first upper

sidewall 24 and the second upper sidewall 26 are parallel with each other. The plurality of first through holes 22 extend through the first upper sidewall 24 and the second upper sidewall 26. The top wall 28 extends between and interconnects the first upper sidewall 24 and the second upper sidewall 26.

5 **[0052]** The lower attachment mount 14 extends axially relative to the axis 11 and is generally rectangular as shown in Figs. 2-4. The lower attachment mount 14 includes a plurality of second through holes 30 that extend completely through the lower attachment mount 14 in a transverse direction perpendicular to the axis 11. The plurality of second through holes 30 each have a same second diameter. The plurality of second
10 through holes 30 are configured to receive fasteners 15 such as, for example, pins, bolts, etc. that extend through the lower attachment mount 14 and another component to couple the component with the support beam 10.

[0053] Each of the plurality of second through holes 30 are spaced apart axially relative to one another. Each of the plurality of second through holes 30 are located at a
15 same vertical height relative to a bottom of the support beam 10 and relative to the top of the support beam 10 such that the plurality of second through holes 22 are arranged generally along a line. The second diameter is equal to the first diameter in the illustrative embodiment such that the same type of fasteners may be used with the upper attachment mount 12 and the lower attachment mount 14. Each of the plurality of
20 second through holes 30 are circular in the illustrative embodiment.

[0054] The lower attachment mount 14 includes a first lower sidewall 32, a second lower sidewall 34, and a bottom wall 36 as shown in Fig. 2. The first lower sidewall 32 and the second lower sidewall 34 are spaced apart from one another and extend vertically as well as axially along a length of the support beam 10. The first lower
25 sidewall 32 and the second lower sidewall 34 are parallel with each other. The plurality of second through holes 30 extend through the first lower sidewall 32 and the second lower sidewall 34. The bottom wall 36 extends between and interconnects the first lower sidewall 32 and the second lower sidewall 34.

[0055] The bottom wall 36 is formed to define a T-bolt slot 38 configured to
30 receive T-bolts as shown in Fig. 2. The T-bolt slot 38 extends axially along the length of the support beam 10 and opens downwardly away from upper attachment mount 12 through a lowermost face of the bottom wall 36. The lowermost face of the bottom wall 36 is planar. In the illustrative embodiment, the first upper sidewall 24, second upper sidewall 26, top wall 28, first lower sidewall 32, second lower sidewall 34, bottom wall
35 36, first wall 42, and second wall 44 are each generally planar.

[0056] The web member 16 extends between and interconnects the upper attachment mount 12 and the lower attachment mount 14 as shown in Figs. 2-4. The web member 16 is formed to define a plurality of third through holes 40 that extend completely through the web member 16 in a transverse direction perpendicular to the axis 11. The plurality of third through holes 40 each have a same third diameter. The plurality of third through holes 40 are configured to receive components that couple with the support beam 10 such as, for example, ringlock ledger connector 110.

[0057] Each of the plurality of third through holes 40 are spaced apart axially relative to one another. Each of the plurality of third through holes 40 are located at a same vertical height relative to a bottom of the support beam 10 and relative to the top of the support beam 10 such that the plurality of third through holes 40 are arranged generally along a line. The third diameter is at least three times larger than the first diameter and the second diameter in the illustrative embodiment. Each of the plurality of third through holes 40 are circular in the illustrative embodiment. Each of the plurality of third through holes 40 are spaced vertically about halfway between the upper attachment mount 12 and the lower attachment mount 14. Each of the plurality of third through holes 40 are spaced apart axially from one another a distance equal to about the third diameter. One half of a third through hole 40 is formed in each of the axially terminating ends of the web member 16.

[0058] The web member 16 includes a first wall 42 and a second wall 44 spaced apart from the first wall 42 as shown in Fig. 2. The first wall 42 and the second wall 44 are generally parallel with each other. The first wall 42 extends between and interconnects the first upper sidewall 24 and the first lower sidewall 32. The second wall 44 extends between and interconnects the second upper sidewall 26 and the second lower sidewall 34. The plurality of third through holes 40 extend through the first wall 42 and the second wall 44.

[0059] The web member 16 is situated inward of the upper attachment mount 12 and the lower attachment mount 14 as shown in Figs. 2-4. This forms a channel on each side of the support beam 10 that extend axially along the support beam 10. The first wall 42 is spaced apart transversely inward toward center from the first upper sidewall 24 and the first lower sidewall 32. The second wall 44 is spaced apart transversely inward toward center from the second upper sidewall 26 and the second lower sidewall 34. In other words, a distance between the first upper sidewall 24 and the second upper sidewall 26 is greater than a distance between the first wall 42 and the second wall 44.

[0060] The upper attachment mount 12, the lower attachment mount 14, and the web member 16 cooperate to define a passage 46 that extends axially completely through the support beam 10 as suggested in Figs. 2-4. As such, the support beam 10 is hollow within the upper attachment mount 12, the lower attachment mount 14, and the web member 16. In the illustrative embodiment, the first upper sidewall 24, second upper sidewall 26, top wall 28, first lower sidewall 32, second lower sidewall 34, bottom wall 36, first wall 42, and second wall 44 define the perimeter of the passage 46. As suggested in Figs. 2-4, the passage 46 is sized to receive the entire joining beam 60 therein.

[0061] The top rail 18 extends vertically away from the top wall 28 of the upper attachment mount 12 as shown in Figs. 2-4. The top rail 18 includes a stem 48 and a head 50 coupled with the stem 48. The stem 48 extends vertically away from the top wall 28 of the upper attachment mount 12. The stem 48 extends the axial length of the support beam 10. The stem 48 is centered in the transverse direction on the axis 11 such that it is located about midway between the first upper sidewall 24 and the second upper sidewall 26.

[0062] The head 50 extends transversally outward from the stem 48 and vertically outward from the stem 48 as shown in Figs. 2-4. The head 50 includes an uppermost surface that is planar. The head 50 is formed to define a T-bolt slot 52 that extends into the head 50 and opens outwardly from the uppermost surface. In the illustrative embodiment, the head 50 is D-shaped when viewed axially relative to the axis 11. Illustratively, the head 50 is formed to define a cavity that extends axially through the head 50 such that the head 50 is hollow.

[0063] The head 50 includes top wall 54, a first sidewall 56, and a second sidewall 58 as shown in Figs. 2-5. The top wall 54 is formed to define the T-bolt slot 52 and interconnects the first sidewall 56 and the second sidewall 58. The top wall 54 has a lateral width 55 equal to or about equal to 48.3 millimeters. In other words, the lateral width 55 of the top wall 54 is about equal to the outside diameter of a conventional scaffold tube. Having the lateral width 55 be about equal with the outside diameter of a conventional scaffold tube allows the beam hooks 74, 76 of pre-existing work platforms 6 to function with both the beam assembly 4 of the present disclosure and with conventional scaffold tube scaffolding systems. For example, the beam hooks 74, 76 of the work platforms 6 may couple with the head 50 of the support beam 10 or, if using a conventional scaffold system, the work platforms 6 may couple with conventional scaffold tubes.

[0064] The first sidewall 56 includes a planar segment coupled with the top wall 54 and a curved segment that extends from the planar segment to the stem 48. The second sidewall 58 includes a planar segment coupled with the top wall 54 and a curved segment that extends from the planar segment to the stem 48. As discussed in greater detail below, the stem 48 and the head 50 are configured to engage and support the work platforms 6 as shown in Figs. 5 and 6.

[0065] The plurality of work platforms 6 are supported across pairs of support beams 10 as suggested in Figs. 1, 5, and 6. Each work platform 6 includes a platform body 73, a first beam hook 74, a second beam hook 76, and, illustratively, a first lock tab 78 and a second lock tab 80 as shown in Fig. 5. Fig. 6 shows the scaffold system 2 similar to Fig. 1, but with an alternative post and ledger system 8.

[0066] The platform body 73 extends between and is supported on the top walls 54 of the heads 50 of the corresponding pair of support beams 10 as shown in Fig. 5. The first beam hook 74 is coupled to a terminal end of the platform body 73 and extends over the top wall 54 and first sidewall 56 of the head 50 to block movement of the work platform relative to a first of the support beams 10. The second beam hook 76 is coupled to the other terminal end of the platform body 73 and extends over the top wall 54 and second sidewall 58 of the head 50 to block movement of the work platform relative to a second of the support beams 10. The first and second beam hooks 74, 76 are sized and arranged to allow work platforms 6 to be placed on each side of a support beam 10 to make continuous work surface on each side of the support beam 10 as shown in Fig. 1.

[0067] The first lock tab 78 is rotatably coupled with the platform body 73 and configured to interlock the work platform 6 with the first support beam 10 as suggested in Fig. 5. A first end of the first lock tab 78 is coupled to a pin of the platform body 73 and formed with a slot that allows the first lock tab 78 to rotate and slide relative to the pin. A second end of the first lock tab 78 is configured to extend into a space defined between the second sidewall 58 of the head 50 and the top wall 28 of the upper attachment mount 12. The first lock tab 78 and the first beam hook 74 cooperate to block the work platform 6 from fully uncoupling from the first support beam 10. The second lock tab 80 is substantially similar to the first lock tab 78 and is spaced apart from the first lock tab 78 to interact with the second support beam 10.

[0068] The joining beam 60 is configured to join one support beam 10 to another component and, typically, to another support beam 10 as suggested in Figs. 2-4. A first end of the joining beam 60 is configured to be received in and slide axially in the

passage 46 formed in the support beam 10. The fasteners 15 extend through the support beam 10 and the joining beam 60 to couple the joining beam 60 with the support beam 10 (or other component configured to receive the joining beam 60). A second end of the joining beam 60 may be received in a second support beam 10 and fasteners inserted therethrough to couple the joining beam 60 with the second support beam and, therefore, couple one support beam 10 to another support beam 10.

[0069] The joining beam 60 includes an upper flange 62, a lower flange 64, and a web 66 that each extend an axial length of the joining beam 60 as suggested in Figs. 2-4. The upper flange 62 is configured to be received within the upper attachment mount 12 and to receive the fasteners 15 that extend through the upper attachment mount 12. The lower flange 64 is configured to be received within the lower attachment mount 14 and to receive the fasteners 15 that extend through the upper attachment mount 12. The web 66 extends vertically and interconnects the upper flange 62 and the lower flange 64. The web 66 is configured to be received within the web member 16 and to receive the components, such as ringlock ledger connector 110, that extend through the web member 16.

[0070] The upper flange 62 is rectangular when viewed axially and is hollow as shown in Fig. 2. The upper flange 62 is formed to define a plurality of first joining beam through holes 68 that extend transversally to the axis 11 through the upper flange 62. The plurality of first joining beam through holes 68 each have a same first joining beam diameter. The first joining beam diameter is equal to or about equal to the first diameter of the first through holes 22 formed in the upper attachment mount 12. The first joining beam diameter may be nominally larger than the first diameter to make it easier to pass the fasteners 15 through the first joining beam through holes 68.

[0071] Each of the plurality of first joining beam through holes 68 are spaced apart axially relative to one another with the same axial spacing as the first through holes 22 formed in the upper attachment mount 12. Each of the plurality of first joining beam through holes 68 are located at a same vertical height relative to a bottom of the joining beam 60 and relative to the top of the joining beam 60 such that the plurality of first joining beam through holes 68 are arranged generally along a line. Each of the plurality of first joining beam through holes 68 are circular in the illustrative embodiment.

[0072] The lower flange 64 is rectangular when viewed axially and is hollow as shown in Fig. 2. The lower flange 64 is formed to define a plurality of second joining beam through holes 70 that extend transversally to the axis 11 through the lower flange 64. The plurality of second joining beam through holes 70 each have a same second

joining beam diameter. The second joining beam diameter is equal to or about equal to the second diameter of the second through holes 30 formed in the lower attachment mount 14. The second joining beam diameter may be nominally larger than the second diameter to make it easier to pass the fasteners 15 through the second joining beam through holes 70.

[0073] Each of the plurality of second joining beam through holes 70 are spaced apart axially relative to one another with the same axial spacing as the second through holes 30 formed in the lower attachment mount 14. Each of the plurality of second joining beam through holes 70 are located at a same vertical height relative to a bottom of the joining beam 60 and relative to the top of the joining beam 60 such that the plurality of second joining beam through holes 70 are arranged generally along a line. Each of the plurality of second joining beam through holes 70 are circular in the illustrative embodiment.

[0074] The web 66 is formed to define a plurality of third joining beam through holes 72 that extend completely through the web 66 in a transverse direction perpendicular to the axis 11 as shown in Figs. 2-4. The plurality of third joining beam through holes 72 each have a same third joining beam diameter. The third joining beam diameter is equal to or about equal to the third diameter of the third through holes 40 formed in the web member 16. The third joining beam diameter may be nominally larger than the third diameter to make it easier to pass fastening features through the third joining beam through holes 72. The plurality of third joining beam through holes 72 are configured to receive components that couple with the support beam 10 such as, for example, the ringlock ledger connector 110. The web 66 is situated inward of the upper flange 62 and the lower flange 64 as shown in Figs. 2-4. This forms a channel on each side of the joining beam 60 that extend axially along the joining beam 60.

[0075] Each of the plurality of third joining beam through holes 72 are spaced apart axially relative to one another by the same spacing as the third through holes 40. Each of the plurality of third joining beam through holes 72 are located at a same vertical height relative to a bottom of the joining beam 60 and relative to the top of the joining beam 60 such that the plurality of third joining beam through holes 72 are arranged generally along a line. The third joining beam diameter is at least two times larger than the first joining beam diameter and the second joining beam diameter in the illustrative embodiment. Each of the plurality of third joining beam through holes 72 are circular in the illustrative embodiment. One half of a third joining beam through hole 72 is formed in each of the axially terminating ends of the web 66.

- [0076]** The ringlock ledger connector 110 is configured to couple a first support beam 10 to a second support beam 10 spaced apart transversally from the first support beam as suggested in Figs. 7-15. The ringlock ledger connector 110 may also couple a first support beam 10 to another component other than another support beam 10 located adjacent the first support beam 10. In some embodiments, a first ringlock ledger connector 110 is coupled with the first support beam 10, a second ringlock ledger connector 110 is coupled with the second support beam 10, and a scaffold ledger 90 extends between and interconnects the first ringlock ledger connector 110 and the second ringlock ledger connector 110 as shown in Figs. 9-12. In some embodiments, a first ringlock ledger connector 110 is coupled with the first support beam 10, a second ringlock ledger connector 110 is coupled with the second support beam 10, and a ledger 90 with minimal length extends between and interconnects the first ringlock ledger connector 110 and the second ringlock ledger connector 110 as shown in Figs. 14-15.
- [0077]** Each ringlock ledger connector 110 includes a ringlock connector 112, a first lock plate 114, and a second lock plate 116 as show in Figs. 7 and 8. The ringlock connector 112 is configured to couple with ledgers 90 or other components. The first lock plate 114 and the second lock plate 116 cooperate to couple the ringlock connector 112 with the support beam 10 as suggested in Figs. 9 and 11.
- [0078]** The ringlock connector 112 includes a centerbody 120, a first connection plate 122, and a second connection plate 124 as shown in Figs. 7 and 8. The centerbody 120 is cylindrical in the illustrative embodiment and sized with a diameter to be received in the third through holes 40 formed in the web member 16 of the support beam 10 and the third joining beam through holes 68 of the joining beam 60. As such, the centerbody 120 has a diameter nominally smaller than the third joining beam hole diameter in the illustrative embodiment. The centerbody 120 is completely solid in the illustrative embodiment. The centerbody 120 has a width greater than a width between the first wall 42 and the second wall 44 of the web member 16.
- [0079]** The first connection plate 122 is fixed with the centerbody 120 and extends away from the centerbody 120 along a transverse axis 111 that is perpendicular with the axis 11 of the support beam 10 as shown in Fig. 7. The first connection plate 122 has a cuboid shape in the embodiment shown. The first connection plate 122 has a relatively small height compared to its length and width as shown in Fig. 7. The first connection plate 122 is located along a center point of the centerbody 120. The first connection plate 122 is formed to define a first aperture 126

that extends entirely through the first connection plate 122 to receive a wedge 96 of a ledger 90 as suggested in Figs. 9-12. The first aperture 126 has elongated curved walls and two planar endwalls connecting the curved walls. The first aperture 126 is generally centered in the first connection plate 122.

5 **[0080]** The second connection plate 124 is substantially similar to the first connection plate 122. The second connection plate 124 extends from the opposite end of the centerbody 120 away from the first connection plate 122. The second connection plate 124 is formed to define a second aperture 128 that extends entirely through the second connection plate 124. The second connection plate 124 and the first connection
10 plate 122 are oriented in substantially the same plane and are parallel with each other.

[0081] The first lock plate 114 is configured to engage the support beam 10 and block the ringlock ledger connector 110 from passing through or rotating relative to the support beam 10 as suggested in Fig. 9. The first lock plate 114 is fixed with at least one of the centerbody 120 and the first connection plate 122. In other embodiments, the
15 first lock plate 114 is configured to slide on and off the ringlock connector 112. The first lock plate 114 extends outward beyond the centerbody 120 across 360 degrees when viewed along the transverse axis 111. The first lock plate 114 is rectangular when viewed along the transverse axis 111 in the illustrative embodiment. The first lock plate 114 has four planar perimeter surfaces and, in the exemplar embodiment, are each
20 interconnected by rounded edges. The first lock plate 114 is formed to define a slot 130 that extends axially entirely through the first lock plate 114. The first connection plate 122 extends through the slot 130 and the first lock plate 114 abuts the centerbody 120.

[0082] The first connection plate 122 has a first segment 132, a second segment 134, and a third segment 136 as shown in Fig. 7. The first segment 132 is generally
25 planar and the second segment 134 is generally planar. The third segment 136 extends between and interconnects the first segment 132 and the second segment 134. The third segment 136 is curvilinear such that a concave opening faces the centerbody 120. The contour of the third segment 136 matches the curved contour of a scaffold tube 86 of a post 84.

30 **[0083]** The second lock plate 116 is substantially similar to the first lock plate 114 as suggested in Fig. 7. The second lock plate 116 is configured to removably couple with the ringlock connector 112 as suggested in Figs. 7 and 8. The second lock plate 116 is formed to define a slot 138 that extends axially entirely through the second lock plate 116. The second connection plate 124 extends through the slot 138 and the
35 second lock plate 116 is configured to removably engage the centerbody 120. The

second lock plate 116 includes a first segment 140, a second segment 142, and a third segment 146 that interconnects the first segment 140 and the second segment 142.

The first and second segments 140, 142 are planar and the third segment 146 is curved similar to the third segment 136.

5 **[0084]** In use, the second lock plate 116 is separated from the ringlock connector 112 and the centerbody 120 is inserted into one of the third through holes 40 formed in the web member 16 of the support beam 10 (and through a third joining beam through hole 68 if a joining beam 60 is in its path) as suggested in Figs. 9, 10, 14, and 15. The centerbody 120 is located in the third hole 40, the first lock plate 114 abuts the second wall 44 of the web member 16, and the second connection plate 124 extends away from the first wall 42. The first lock plate 114 blocks the ringlock connector 112 from moving through and escaping the third through hole 40.

10 **[0085]** The second lock plate 116 is slid over the second connection plate 122 such that the second connection plate 122 extends through the slot 138 formed in the second lock plate 116 as shown in Fig. 9. The second lock plate 116 is located within the channel formed by the support beam 10 and engages the first wall 42 of the web member 16.

15 **[0086]** A ledger 90 is moved to the ringlock ledger connector 110 and the support beam 10 as suggested in Fig. 9. Each ledger 90 includes an elongated support body 92, a first ledger head 94 and a second ledger head 95 coupled to opposite ends of the elongate support body 92, and wedges 96 configured to be received by the ledger heads 94, 95. The wedge 96 is removed from the first ledger head 94 and the ledger 90 is moved such that the second lock plate 116 extends into the first ledger head 94 as suggested in Figs. 9 and 10. The wedge 96 is moved through the ledger head 94 and the aperture 128 formed in the second connection plate 124 to interlock the ledger 90 with the ringlock ledger connector 110 as shown in Fig. 10. The wedge 96 removably couples the ledger 90 with the ringlock ledger connector 110 and support beam 10. The interlocking of the wedge 96 in the aperture 128 of the second connection plate 124 blocks the second lock plate 116 from uncoupling from the ringlock connector 112.

20 **[0087]** The first lock plate 114 is fixed with the ringlock connector 112 in the illustrative embodiment. As such, a second ledger 90 may or may not be coupled with the first connection plate 122 of the ringlock ledger connector 110 and the ringlock ledger connector 110 will still stay coupled with the support beam 10 due to the wedge 96 extending through the second connection plate 124. In other embodiments, the first lock plate 114 may be removably coupled with the ringlock connector 112 such that a

second ledger 90 is used to secure the ringlock ledger connector 110 with the support beam 10.

[0088] The first lock plate 114 and the second lock plate 116 are sized and shaped to block rotation of the ringlock ledger connector 110 in the third hole 40 as suggested in Figs. 9 and 10. The centerbody 120 is cylindrical and may be urged to rotate within the circular third through holes 40. Because the lock plates 114, 116 are located within the channels of the support beam 10, the perimeter surfaces of the lock plates 114, 116 are configured to rotate with the ringlock connector 112 and engage the upper attachment mount 12 and the lower attachment mount 14 which blocks the ringlock ledger connector 110 from rotating. The lock plates 114, 116 are sized nominally smaller than the channel height such that minimal rotation occurs before the ringlock ledger connector 110 engages the support beam and is blocked from rotating.

[0089] As shown in Figs. 11 and 12, the ringlock ledger connector 110 may also be coupled with the support beam 10 with the first connection plate 122 and the second connection plate 124 extending horizontally and the wedge 96 extending vertically. Each lock plate 114, 116 is generally square shaped to allow insertion into the channel at 90 degree rotations. The other end of the ledger 90 may be coupled with a second support beam 10 or other component.

[0090] Two support beam 10 may be coupled together with a small transverse distance therebetween using ringlock ledger connectors 110 and short or modified ledgers 90 as shown in Figs. 13-15. As shown in Figs. 13 and 14, two ringlock ledger connectors 110 are coupled with a first support beam 10 and spaced apart from each other by an axial distance. Two more ringlock ledger connectors 110 are coupled with a second support beam 10 and spaced apart from each other by the same axial distance. A first short ledger 90 with ledger heads 94, 95 interconnect two of the ringlock ledger connectors 110 and a second short ledger 90 with ledger heads 94, 95 interconnect the other two of the ringlock ledger connectors 110.

[0091] The upper scaffold post connector 210 and the lower scaffold post connector 310 are shown in Figs. 16-19. The upper scaffold post connector 210 and the lower scaffold post connector 310 are configured to couple the support beam 10 with upright posts 84 as suggested in Figs. 1 and 6. The upper scaffold post connector 210 couple to and extend upward from the upper attachment mounts 12 of the support beam 10 as shown in Figs. 16 and 17. The lower scaffold post connector 310 couple to and extend downward from the lower attachment mounts 14 of the support beam 10 as shown in Figs. 18 and 19.

[0092] The upper scaffold post connector 210 includes a beam connector 212 configured to couple with the upper attachment mount 12 of the support beam 10 and a post coupler 214 as shown in Figs. 16 and 17. The beam connector 212 removably couples the upper scaffold post connector 210 with the support beam 10. The post coupler 214 extends vertically away from the beam connector 212 and is configured to couple the upper scaffold post connector 210 with an upright post 84 as suggested in Figs. 1 and 6.

[0093] The beam connector 212 includes a mount plate 220, a first flange 222, a second flange 224, and a plurality of support ribs 226 as shown in Figs. 16 and 17. The mount plate 220 is planar and sized to extend transversely over and beyond the edges of the top rail 18 of the support beam 10. The first flange 222 and the second flange 224 extend downwardly away from the mount plate 220 on opposite sides of the support beam 10 and receive fasteners 15 for coupling the beam connector 212 with the support beam 10. The support ribs 226 are coupled with the mount plate 220 and one of the first flange 222 and the second flange 224 to reinforce the beam connector 212.

[0094] The first flange 222 is formed to define at least one hole 228 that extends through the first flange 222 as shown in Figs. 16 and 17. The at least one hole 228 is configured to align with one of the first through holes 22 formed in the upper attachment mount. In the illustrative embodiment, the at least one hole 228 includes two holes 228. The two holes 228 are spaced apart from each other axially relative to the axis 11 with the same axial spacing as the first through holes 22. As such, each of the holes 228 aligns with one of the first through holes 22.

[0095] The illustrative first flange 222 is T-shaped having a first segment with a first width coupled with the mount plate 220 and a second segment having a second width larger than the first width as shown in Figs. 16 and 17. The first segment is solid with no apertures in the embodiment shown. The second segment is formed to define the holes 228. The second segment is generally planar and engages a sidewall of the upper attachment mount 12. The second segment has a height about equal to the height of the upper attachment mount 12. The first segment is generally planar and extends around the top rail 18 of the support beam so as to join with the mount plate 220 at a location transversely outward of the second segment. Two support ribs 226 having generally triangular shapes are coupled with the mount plate 220 and the first flange 222. The two support ribs 226 terminate partway along the second segment.

[0096] The second flange 224 is substantially similar to the first flange 222 as shown in Figs. 16 and 17. The second flange 224 is formed to define holes 230 for receiving the fasteners 15.

[0097] The post coupler 214 extends vertically away from the mount plate 220 of the beam connector 212 as shown in Figs. 16 and 17. The post coupler includes an upright post 232, a scaffold rosette 234, and ribs 236. The upright post 232 is coupled with the mount plate 220 and extends vertically away from the support beam 10. The upright post 232 includes a first segment with a first diameter and a second segment with a second diameter for insertion into another post 84 for example as shown in Fig. 1. The scaffold rosette 234 is fixed with the upright post 232 and configured to receive ledger heads 94, 95 and wedges 96 for coupling ledgers 90 with the upper scaffold post connector 210 as shown in Fig. 1. The ribs 236 extend vertically and coupled to a base of the upright post 232 and the mount plate 220.

[0098] A second embodiment of an upper scaffold post connector 210' is shown in Fig. 6. The upper scaffold post connector 210' is substantially similar to the upper scaffold post connector 210 and includes each of the features of the upper scaffold post connector 210 except where the figures and descriptions of each differ. In particular, the upper scaffold post connector 210' includes a beam connector 212' and a post coupler 214'. The post coupler 214' is a stub coupler and is relatively short as opposed to the relative tall post coupler 214. The post coupler 214' does not include a scaffolding rosette.

[0099] The lower scaffold post connector 310 is similar to the upper scaffold post connector 210, but configured to extend downwardly from the lower attachment mount 14 of the support beam as shown Figs. 18 and 19. The lower scaffold post connector 310 includes a beam connector 312 configured to couple with the lower attachment mount 14 of the support beam 10 and a post coupler 314. The beam connector 312 removably couples the lower scaffold post connector 310 with the support beam 10. The post coupler 314 extends vertically downward and away from the beam connector 312 and is configured to couple the lower scaffold post connector 310 with an upright post 84. In this way, upper levels of support beams 10 and work platforms 6 may be added to the scaffold system 2 and supported by the support beams 10 and upright posts 84 beneath.

[00100] The beam connector 312 includes a mount plate 320, a first flange 322, a second flange 324, and a plurality of support ribs 326 as shown in Figs. 18 and 19. The mount plate 320 is planar and sized to extend transversely over and beyond the edges

of bottom wall 36 of the lower attachment mount 14 of the support beam 10. The first flange 322 and the second flange 324 extend upwardly away from the mount plate 320 on opposite sides of the support beam 10 and receive fasteners 15 for coupling the beam connector 312 with the support beam 10. The support ribs 326 are coupled with the mount plate 320 and one of the first flange 322 and the second flange 324 to reinforce the beam connector 312.

[00101] The first flange 322 is formed to define at least one hole 328 that extends through the first flange 322 as shown in Figs. 18 and 19. The at least one hole 328 is configured to align with one of the second through holes 30 formed in the lower attachment mount 14. In the illustrative embodiment, the at least one hole 328 includes two holes 328. The two holes 328 are spaced apart from each other axially relative to the axis 11 with the same axial spacing as the second through holes 30. As such, each of the holes 328 aligns with one of the first through holes 30.

[00102] The first flange 322 is generally planar and engages a sidewall of the lower attachment mount 14. The first flange 322 has a height about equal to the height of the lower attachment mount 14. Two support ribs 326 having generally triangular shapes are coupled with the mount plate 320 and the first flange 322. The two support ribs 326 terminate partway along the second segment.

[00103] The second flange 324 is substantially similar to the first flange 322 as shown in Figs. 18 and 19. The second flange 324 is formed to define holes 330 for receiving the fasteners 15.

[00104] The post coupler 314 extends vertically downward away from the mount plate 320 of the beam connector 312 as shown in Figs. 18 and 19. The post coupler includes an upright post 332, a scaffold rosette 334, and ribs 336. The upright post 332 is coupled with the mount plate 320 and extends vertically away from the support beam 10. The upright post 332 is configured to receive another post 84. The scaffold rosette 334 is fixed with the upright post 332 and configured to receive ledger heads 94, 95 and wedges 96 for coupling ledgers 90 with the lower scaffold post connector 310. The ribs 336 extend vertically and coupled to a base of the upright post 332 and the mount plate 320.

[00105] As suggested in Fig. 28, one or multiple upper scaffold post connectors 210 and lower scaffold post connectors 310 are configured to couple to the same support beam 10. The spacing between the upper attachment mount 12 and lower attachment mount 14 along with the sizing of the beam connectors 212, 312 allow the upper scaffold post connector 210 and the lower scaffold post connector 310 to be

coupled to the same support beam 10 and vertically aligned with one another as suggested in Fig. 28 to allow the upper scaffold post connector 210 and the lower scaffold post connector 310 to support upper and lower levels of the scaffold system 2. The beam connector 212 is configured to be coupled to the upper attachment mount 12 with fasteners 15 and the beam connector 312 is coupled with fasteners 15 to the lower attachment mount 14 of the same support beam 10 directly below and axially aligned with the beam connector 212.

[00106] The guardrail post 410 as shown in Fig. 20A is configured to couple to a terminal end of a support beam 10 to couple an upright post 84 with the support beam 10. The guardrail post 410 includes a joining beam stub 460 and a post coupler 484 fixed with the joining beam stub 460. The joining beam stub 460 is similar to the joining beam 60 and the post coupler 484 is similar to a portion of a scaffolding post 84 and configured to couple with a scaffolding post 84.

[00107] The joining beam stub 460 includes an upper flange 462 having first joining beam stub through holes 468, a lower flange 464 having second joining beam stub through holes 470, and a web 466 having a third joining beam stub through hole 468 as shown in Fig. 20A. The first joining beam stub through holes 468 and the second joining beam stub through holes 470 have diameters and axial spacing equal to the diameters and spacing of joining beam through holes 68, 70. The third joining beam stub through hole 470 has a diameter and axial location relative to the other holes 468, 470 equal to that of the third joining beam through hole 70. In other embodiments, a support beam stub (segment of a support beam 10) may be used in the guardrail post 410 and connected with a support beam 10 via a joining beam 60.

[00108] The post coupler 484 includes a circular tube 486 coupled with an axial terminal end of the joining beam stub 460 as shown in Fig. 20A. A portion of the tube 486 extends below the lower flange 464 and a portion of the tube 486 extends above the upper flange 462. A spigot 488 having a smaller diameter than the tube 486 is located in the tube 486 and configured to be inserted into a post 84 to couple the post 84 with the guardrail post 410. As such, the terminal ends of the support beam 10 may have scaffold posts 84 and guardrails to support upper levels of the scaffold system 2 and block workers and equipment from falling off the edges of the scaffold system 2.

[00109] Another guardrail post 410' is shown in Figs. 20B-20D and is configured to couple to the terminal end of the support beam 10. The guardrail post 410' is substantially the same as guardrail post 410 except where differences are discussed

below. Notably, the guardrail post 410' includes a scaffolding rosette 434' and a top rail 418'.

[00110] The guardrail post 410' includes a joining beam stub 460' and a post coupler 484' fixed with the joining beam stub 460'. The joining beam stub 460' includes an upper flange 462' having first joining beam stub through holes 468', a lower flange 464' having second joining beam stub through holes 470', and a web 466' having a third joining beam stub through hole 468' as shown in Fig. 20B. The post coupler 484' includes a circular tube 486' coupled with an axial terminal end of the joining beam stub 460' as shown in Fig. 20B. A spigot 488' having a smaller diameter than the tube 486' is located in the tube 486' and configured to be inserted into a post 84 to couple the post 84 with the guardrail post 410'.

[00111] The scaffolding rosette 434' is coupled with the tube 486' and configured to couple the guardrail post 410' with ledgers 90 as suggested in Figs. 20B and 20D. The scaffolding rosette 434' includes a plurality of holes 490' and a plurality of elongated holes 492' alternating with the plurality of holes 490'. The scaffolding rosette 434' further includes a center hole 494' configured to be received on tube 486' or other tubular post. The scaffolding rosette 434' is located vertically above the joining beam stub 460' and below the spigot 488'.

[00112] The top rail 416' extends only partway axially along the joining beam stub 460' and is located at an axial end of the joining beam stub 460'. The top rail 416' includes a stem 426' and a rail 428' as shown in Figs. 20B and 20C. The stem 426' is fixed with and extends vertically away from the upper flange 462' of the joining beam stub 460'. In the illustrative embodiment, the stem 426' has a smaller width than a width of the upper flange 462' and is generally centered on the upper flange 462'. The rail 428' is fixed with the stem 426' and is aligned with the top rail 18 of the support beam 10. The rail 428' includes a tube 430' and a flared end 432' that extends from the tube'. The tube 430' may support a work platform 6 thereon. The flared end 432' tapers toward the axis in the lateral direction and flares outward in the vertical directions. The flared end 432' forms an elongated vertical opening and defines a horizontal slot that extends into the flared end 432' as shown in Fig. 20C. A portion of the scaffolding rosette 434' is received in the slot 440'. The flared end 432' has an upper segment 442' and a lower segment 444' that are welded with the tube 486'. In the illustrative embodiment, the flared end 432' is formed by crimping an end of the tubing that forms the tube 430' and machining a slot in the crimped portion.

- [00113]** The angle bracket 510 is configured to couple a first support beam 10 with a second support beam 10 (or other structure) in a direction perpendicular to the second support beam 10 as shown in Figs. 21-23. The angle bracket 510 includes a base plate 512 configured to couple with the second support beam 10, a joining beam stub 560 that extends away from the base plate 512 and into the passage 46 at an end of the first support beam 10, and a top rail 514 that provides a continuing surface from the top rail 18 of the first support beam 10. The illustrative angle bracket 510 further includes a back plate 518 for clamping with fasteners 15 the support beam 10 between the back plate 518 and the base plate 512.
- [00114]** The base plate 512 extends between the upper attachment mount 12 and the lower attachment mount 14 of the support beam 10 as shown in Figs. 21-23. The base plate 512 includes a plurality of holes 520 that extend through the base plate 512. The holes 520 are sized and spaced to align with the plurality of first through holes 22 and the plurality of second through holes 30 formed in the support beam. In the illustrative embodiment, the base plate 512 includes four holes 520, two for the upper attachment mount 12 and two for the lower attachment mount 14. The holes 520 may be sized with a diameter small than the holes 22, 30 for example if different fasteners 15 such as smaller diameter bolts are used. Illustratively, the angle bracket 510 further includes ribs 522 coupled with the base plate 512 and the web 566 of the joining beam stub 560.
- [00115]** The joining beam stub 560 is substantially similar to the joining beam stub 460 and joining beam 60 as shown in Fig. 21. The joining beam stub 560 includes an upper flange 562, a lower flange 564, and a web 566. The upper flange 562 is formed to define holes 568 that align with first through holes 22 in the support beam 10 when the angle bracket 510 is inserted into the support beam 10. The lower flange 564 is formed to define holes 570 that align with second through holes 30 in the support beam 10 when the angle bracket 510 is inserted into the support beam 10. The web 566 is formed to define a hole 572 that aligns with third through holes 40 in the support beam 10 when the angle bracket 510 is inserted into the support beam 10. The joining beam stub 560 is inserted into the passage 46 of the support beam 10 and fasteners 15 such as pins extend through the holes 568, 570, 22, 30 to couple the angle bracket 510 with the support beam 10.
- [00116]** The top rail 516 extends upwardly away from the upper flange 562 as shown in Figs. 21-23. The top rail 516 is provided to avoid a gap being formed between the top rail 18 and the second support beam 10. Work platforms 6 may be coupled with

the top rail 516 to allow for a continuous work surface from the first support beam 10 up to the second support beam 10.

[00117] The top rail 516 includes a stem 526 and a rail 528 as shown in Figs. 21-23. The stem 526 is fixed with and extends vertically away from the upper flange 562 of the joining beam stub 560. In the illustrative embodiment, the stem 526 has a smaller width than a width of the upper flange 562 and is generally centered on the upper flange 562. The rail 528 is fixed with the stem 526 and is aligned with the top rail 18 of the support beam 10. The rail 528 is a tube in the illustrative embodiment with a hollow cavity. The top rail 516 extends only partway axially along the joining beam stub 560 and is located at an axial end of the joining beam stub 560 near the base plate 512.

[00118] The back plate 518 is similar to the base plate 512 as shown in Figs. 21-23. The back plate 518 is aligned with the base plate 512 on the opposite side of the support beam 10 and configured to receive the fasteners 15. The back plate 518 engages the upper attachment mount 12 and the lower attachment mount 14. As shown in Fig. 23, nuts engage the back plate 518 and couple with the fasteners 15.

[00119] The anchor bracket 610 is configured to couple a support beam 10 with a second support beam 10, foundation structure such as a concrete or steel foundation, etc. at a plurality of optional angles as shown in Figs. 24-27. The anchor bracket 610 includes a base plate 612, a first mount plate 614, and a second mount plate 616 as shown in Figs. 24-27. The base plate 612 is configured to be fastened with a foundation structure or other support structure. The first mount plate 614 and the second mount plate 616 extend away from the base plate 612 and are configured to couple with the support beam 10 at a number of different angles.

[00120] The base plate 612 is generally planar and formed to include a plurality of holes 624 that extend through the base plate 612 and a center hole 626 as shown in Figs. 24-27. The base plate 612 is adapted to lay generally flat against a surface of a foundation structure such as a concrete base. Fasteners extend through the holes 624 and into the foundation structure to fix the base plate 612 to the foundation structure. The plurality of holes 624 are spaced apart along the perimeter of the base plate 612. In the illustrative embodiment, the holes 624 have a same diameter and the plurality of holes 624 includes six holes. The center hole 626 is spaced apart from the perimeter of the base plate 612 and aligned with the support beam 10 when the anchor bracket 610 is coupled with the support beam 10. The center hole 628 illustrative has a diameter that is larger than the diameter of the holes 624.

[00121] The first mount plate 614 extends away from the base plate 612 and toward the support beam 10 as shown in Figs. 24-27. The illustrative first mount plate 614 is planar and extends perpendicularly away from the base plate 612. A first terminal end of the first mount plate 614 is fixed with the base plate 612. As shown in Figs. 24-27, the first mount plate 614 has a length that allows the first mount plate 614 to extend over the upper attachment mount 12 and the lower attachment mount 14 for a plurality of angles of the anchor bracket 610. This allows the anchor bracket 610 to be coupled with the support beam 10 at the plurality of angles.

[00122] The first mount plate 614 is formed to include a plurality of holes that include a first set of holes 628 and a second set of holes 630 as shown in Figs. 24-27. The plurality of holes extend entirely through the first mount plate 614. The first set of holes 628 and the second set of holes 630 each have a diameter for receiving a fastener 15 that extends through the holes 628, 630 and through the first through holes 22 and the second through holes 30 of the support beam 10. In the illustrative embodiment, the first set of holes 628 and the second set of holes 630 each have a diameter equal to or nominally larger than the first diameter and the second diameter of the holes 22, 30.

[00123] The first set of holes 628 include four holes arranged in a rectangular pattern as shown in Figs. 24-27. The four holes 628 are spaced apart from each other axially and vertically such that each hole 628 aligns with one of the first through holes 22 and the second through holes 30 formed in the support beam 10 when the first mount plate 614 is parallel with or perpendicular to the axis 11 of the support beam 10 as shown in Figs. 24, 26, and 27. In the illustrative embodiment, holes 628 have the same spacing as the holes 22, 30. The first set of holes 628 further allow the anchor bracket 610 to be oriented perpendicular with the support beam 10 such that the base plate 612 is below the lower attachment mount 14.

[00124] The second set of holes 630 includes four holes arranged in a rectangular pattern as shown in Figs. 24-27. The second set of holes 630 are arranged at a 45 degree offset to the first set of holes 628. As such, each of the second set of holes 630 aligns with one first through hole 22 or one second through hole 30 of the support beam 10 when the first mount plate 614 is at a 45 degree angle with the axis 11 of the support beam 10 as shown in Fig. 25. The anchor bracket 610 is shown with the base plate 612 generally above the web member 16 of the support beam 10 in Fig. 25. The second set of holes 630 further allow the anchor bracket 610 to be at a different 45 degree angle such that the base plate 612 is generally below the web member 16 of the support

beam 10. In the illustrative embodiment, holes 630 have the same spacing as the holes 22, 30.

[00125] The first mount plate 614 is further formed to include a hole 632 located between the first set of holes 628 and the second set of holes 630. The hole 632 is configured to align with the third through hole 40 formed in the web member 16 of the support beam 10. The hole 632 receives a shaft 634 that extends through the first mount plate 614, the web member 16, and the second mount plate 616 as shown in Figs. 24-27. The shaft 634 including a tube portion and a bracket portion that engages the first mount plate 614.

[00126] The second mount plate 616 is spaced apart from the first mount plate 614 on an opposite side of the support beam 10 as shown in Figs. 24-27. The second mount plate 616 is substantially similar to the first mount plate 614 and includes a first set of holes 638 and a second set of holes 640 similar to holes 628, 630.

[00127] The ribs 618 include four ribs 618 in the illustrative embodiment. Two ribs 618 are fixed with the base plate 612 and the first mount plate 614. Another two ribs 618 are fixed with the base plate 612 and the second mount plate 616. The ribs 618 are triangular in the illustrative embodiment.

[00128] Another embodiment of a joining beam 60' configured to join one support beam 10 to another component is shown in Figs. 29-31. The joining beam 60' is substantially similar to the joining beam 60 except where discussed herein. The joining beam 60' has external dimensions that are substantially similar to those of the joining beam 60; however, the joining beam 60' is constructed from an upper rectangular tube 61', a lower rectangular tube 63', and a web plate 65'. Illustratively, the upper rectangular tube 61' and the lower rectangular tube 63' are made of a first material and the web plate 65' is made of a second material different from that first material. In some embodiments, the first material is a first steel type and the second material is a second steel type. In some embodiments, the first material is a material other than steel and the second material is steel.

[00129] A first end of the joining beam 60' is configured to be received in and slide axially in the passage 46 formed in the support beam 10. The fasteners 15 extend through the support beam 10 and the joining beam 60' to couple the joining beam 60' with the support beam 10 (or other component configured to receive the joining beam 60'). A second end of the joining beam 60' may be received in a second support beam 10 and fasteners inserted therethrough to couple the joining beam 60' with the second

support beam 10 and, therefore, couple one support beam 10 to another support beam 10.

[00130] The joining beam 60' includes an upper flange 62', a lower flange 64', and a web 66' as shown in Figs. 29 and 30. The upper rectangular tube 61' forms the upper flange 62', the lower rectangular tube 63' forms the lower flange 64', and the web plate 65' forms the web 66'. The upper flange 62' is formed to define a plurality of first joining beam through holes 68'. The lower flange 64' is formed to define a plurality of second joining beam through holes 70'. The web 66' is formed to define a plurality of third joining beam through holes 72'.

[00131] The web plate 65' includes a body segment 67', an upper tab 69', and a lower tab 71' as shown in Fig. 31. The body segment 67' extends axially and has a vertical height of the web 66'. The plurality of third joining beam through holes 72' are formed in the body segment 67'. The upper tab 69' and the lower tab 71' are centered axially on the body segment 67' in the illustrative embodiment. The upper tab 69' and the lower tab 71' have an axial length equal to about one-third of a length of the body segment 67' in the illustrative embodiment. The upper tab 69' extends vertically upward from the body segment 67' and the lower tab 71' extends vertically downward from the body segment 67'.

[00132] The upper tab 69' is formed to define first through holes 73' having the same as or nominally larger diameters as the first joining beam through holes 68' as suggested in Fig. 31. The first through holes 73' align with the first joining beam through holes 68' as shown in Figs. 29 and 30. The lower tab 71' is formed to define second through holes 75' having the same as or nominally larger diameters as the second joining beam through holes 70' as suggested in Fig. 31. The second through holes 75' align with the second joining beam through holes 70' as shown in Figs. 29 and 30.

[00133] The upper rectangular tube 61' is formed to define a slot 77' that extends axially along a portion of the upper rectangular tube 61' and vertically entirely through the upper rectangular tube 61' as shown in Fig. 29. The upper tab 69' of the web plate 65' extends into the slot 77'. An uppermost surface of the upper tab 69' is flush or about flush with an uppermost surface of the upper rectangular tube 61'. The upper tab 69' of the web plate 65' is welded or otherwise coupled with the upper rectangular tube 61'. The lower rectangular tube 63' is formed to define a slot 79' that extends axially along a portion of the lower rectangular tube 63' and vertically entirely through the lower rectangular tube 63' as shown in Fig. 29. The lower tab 71' of the web plate 65' extends into the slot 79'. A lowermost surface of the lower tab 71' is flush or about flush

with a lowermost surface of the lower rectangular tube 63'. The lower tab 71' of the web plate 65' is welded or otherwise coupled with the lower rectangular tube 63'.

[00134] Aspects of the disclosed embodiments are also set out in the following set of numbered clauses in which is described:

- 5 1. A beam assembly for use with a scaffolding system may include a first support beam that includes an upper attachment mount, a lower attachment mount, and a web member. The first support beam extends axially relative to an axis and is configured to provide structural support for the scaffolding system.
2. The beam assembly of clause 1, wherein the upper attachment mount has a first
10 width transverse to the axis. The upper attachment mount is formed to define a plurality of first through holes that extend transverse to the axis through the upper attachment mount. The plurality of first through holes have a first diameter and are spaced apart from one another axially with a preset spacing distance.
3. The beam assembly of clause 2, wherein the lower attachment mount is spaced
15 apart vertically from the upper attachment mount. The lower attachment mount has a second width transverse to the axis. The lower attachment mount is formed to define a plurality of second through holes that extend transverse to the axis through the lower attachment mount. The plurality of second through holes have a second diameter equal to the first diameter. The plurality of second through holes being spaced apart from one
20 another axially with the preset spacing distance.
4. The beam assembly of any one of the clauses 2 or 3, wherein the web member extends vertically between and interconnects the upper attachment mount and the lower attachment mount. The web member has a third width transverse to the axis that is smaller than the first width and the second width to define a channel vertically between
25 the upper attachment mount and the lower attachment mount on two sides of the first support beam.
5. The beam assembly of clause 4, wherein the web member is formed to define a plurality of third through holes that extend transverse to the axis through the web member. The plurality of third through holes have a third diameter that is greater than
30 the first diameter and the second diameter. The plurality of third through holes are spaced apart from one another axially with the preset spacing distance.
6. The beam assembly of one of the clauses 2-5, wherein the upper attachment mount, the lower attachment mount, and the web member cooperate to define a passage that extends axially through the first support beam.

7. The beam assembly of clause 6, further comprising a joining beam that extends into the passage formed in the first support beam, the joining beam including an upper flange, a lower flange spaced apart vertically from the upper flange, and a web that extends vertically between and interconnects the upper flange and the lower flange.
- 5 8. The beam assembly of clause 7, wherein the upper flange is formed to define a plurality of first joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of first joining beam through holes are configured to align with the plurality of first through holes, the lower flange is formed to define a plurality of second joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of second joining beam through holes are configured to align with the plurality of second through holes, and the web is formed to define a plurality of third joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of third joining beam through holes are configured to align with the plurality of third through holes.
- 10 9. The beam assembly of clause 8, wherein the plurality of first joining beam through holes have about the first diameter, the plurality of second joining beam through holes have about the second diameter, and the plurality of third joining beam through holes have about the third diameter.
- 15 10. The beam assembly of any one of the preceding clauses, wherein the lower attachment mount is formed to define a T-bolt slot that opens through a lowermost surface of the lower attachment mount.
- 20 11. The beam assembly of any one of the preceding clauses, wherein the first support beam further includes a top rail that extends away from the outer attachment mount, the top rail having a stem coupled with the outer attachment mount and head having a width transverse to the axis that is greater than a width of the stem.
- 25 12. The beam assembly of one of the any preceding clauses, wherein the head includes a flat outermost surface and a T-bolt slot that extends axially along a length of the first support beam and opens outwardly out of the flat outermost surface.
- 30 13. The beam assembly of clause 12, wherein the width of the head is about 48.3 millimeters.
14. The beam assembly of any one of the clauses 11-13, wherein the head is D-shaped when viewed along the axis.
15. The beam assembly of any one of the clauses 5-14, further comprising a ringlock ledger connector configured to couple with the support beam and one or more ledgers,
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the ringlock ledger connect including a ringlock connector, a first lock plate, and a second lock plate, the ringlock connector sized to be received and extend through one of the plurality of third through holes, the first lock plate is coupled with the ringlock connector and configured to block the ringlock connector from passing entirely through the one of the plurality of third through holes, and the second lock plate being

5 removably coupled with the ringlock connector.

16. The beam assembly of clause 15, wherein the ringlock connector includes a centerbody configured to be received in the one of the plurality of third through holes, a first connection plate that extends away from the centerbody and formed to define a first aperture therein for receiving a first wedge of a first ledger, and a second connection plate that extends away from the centerbody opposite the first connection plate and formed to define a second aperture therein for receiving a second wedge of a second ledger.

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17. The beam assembly of clause 16, wherein the first lock plate extends around the first connection plate and is located between the first aperture and the centerbody and wherein the second lock plate is formed to include a slot sized to receive the second connection plate to allow the second lock plate to removably couple with the ringlock connector.

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18. The beam assembly of any one of the clauses 15-18, wherein the first and second lock plates each have curved segments that match a contour of a scaffold post.

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19. The beam assembly of any one of the clauses 16-18, wherein the first connection plate and the second connection plate are each rectangular and sized to be received in the channels formed by the web member, the upper attachment mount, and the lower attachment mount and wherein the first connection plate and the second connection plate are each configured to engage the upper attachment mount and the lower attachment mount in response to rotation of the ringlock ledger connector to limit rotation of the ringlock ledger connector.

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20. The beam assembly of any one of the clauses 15-19, further comprising a ledger coupled with the ringlock ledger connector, the ledger including an elongated support body, a first ledger head at a first end of the elongated support body, and a second ledger head at a second end of the elongated support body opposite the first ledger head.

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21. The beam assembly of any one of the clauses 15-20, wherein the ringlock ledger connector is configured to be received in the channels in the support beam in a first orientation and a second orientation that is rotated 90 degrees from the first orientation

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about an axis that extends through the first centerbody, first connection plate, and second connection plate.

22. The beam assembly of any of the clauses 5-21, further comprising a scaffold post connector that includes a beam connector configured to couple with the first support beam and a post coupler configured to couple with an upright scaffold post.

23. The beam assembly of clause 22, wherein the beam connector includes a mount plate, a first flange that extends away from the mount plate, and a second flange that extends away from the mount plate, the first flange being spaced apart from the second flange to receive the first support beam therebetween, and the first flange and the second flange each including a plurality of through holes that align with at least one of the plurality of first through holes and the plurality of second through holes to allow fasteners to extend through the first flange, the second flange, and at least one of the upper attachment mount and the lower attachment mount of the first support beam.

24. The beam assembly of clause 23, wherein the scaffold post receiver is coupled with the mount plate and extends away from the first flange and the second flange and the scaffold post receiver is formed to mate with a male or female end of an upright scaffold post.

25. The beam assembly of any of the clauses 6 to 24, further comprising a guardrail post configured to couple with the first support beam and an upright scaffold post, the guard rail post including a joining beam stub configured to be received in the passage formed in the first support beam and a post coupler coupled with the joining beam stub and extending vertically to mate with an upright scaffold post.

26. The beam assembly of clause 25, wherein the joining beam stub includes an upper flange configured to be received in the upper attachment mount, a lower flange configured to be received in the lower attachment mount, and a web that extends between and interconnects the upper flange and the lower flange, and the web is configured to be received in the web member.

27. The beam assembly of clause 26, wherein the upper flange is formed to define a plurality of first joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of first joining beam through holes are configured to align with the plurality of first through holes, the lower flange is formed to define a plurality of second joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of second joining beam through holes are configured to align with the plurality of second through holes, and the web is formed to define a plurality of third joining

beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of third joining beam through holes are configured to align with the plurality of third through holes.

28. The beam assembly of any of the clauses 5-27, further comprising an angle bracket configured to couple the first support beam with a second support beam, the angle bracket including a base plate configured to couple with the first support beam and a joining beam stub that extends away from the base plate and into a passage formed in the second support beam.

29. The beam assembly of clause 28, wherein the base plate is formed to include a plurality of holes configured to align with subsets of the plurality of first through holes and the plurality of second through holes to allow fasteners to extend through the plurality of holes in the base plate and into the upper attachment mount and the lower attachment mount of the first support beam.

30. The beam assembly of any of the clauses 28 or 29, wherein the angle bracket further includes a top rail that extends vertically upward from the joining beam stub, the top rail configured to align vertically with the top rail of the first support beam and a top rail of the second support beam.

31. The beam assembly of any of the clauses 28-30, wherein the angle bracket further includes a back plate coupled with the first support beam on an opposite side of the base plate.

32. The beam assembly of any of the clauses 5-31, further comprising an anchor bracket configured to couple the first support beam with a foundation structure, the anchor bracket including a base plate configured to couple with the foundation structure, a first mount plate that extends away from the base plate, and a second mount plate that extends away from the base plate, the first mount plate and the second mount plate spaced apart from one another to receive the first support beam therebetween, and the first mount plate and the second mount plate configured to receive fasteners that extend through the first mount plate, through the first support beam, and through the second mount plate.

33. The beam assembly of clause 32, wherein the first mount plate and the second mount plate each are formed to define a first set of holes and a second set of holes, the first set of holes are arranged to align with a number of the first through holes and the second through holes formed in the first support beam when the first mount plate and the second mount plate are in a first orientation relative to the first support beam, and the second set of holes are arranged to align with the number of the first through holes

and the second through holes formed in the first support beam when the first mount plate and the second mount plate are in a second orientation relative to the first support beam that is rotated 45 degrees relative to the first orientation.

34. The beam assembly of clause 32, wherein each of the first mount plate and the second mount plate includes a first set of holes formed in a rectangular pattern to align with the first through holes and the second through holes of the first support beam to couple the anchor bracket with the first support beam in a first orientation and a second set of holes in a rectangular pattern with a 45 degree offset from the first set of holes and configured to align with the first through holes and the second through holes to couple to the first support beam in a second orientation about 45 degrees offset from the first orientation.

35. The beam assembly of clause 25, wherein the guardrail post further includes a top rail coupled with the joining beam stub and a scaffolding rosette coupled with the post coupler and having a portion thereof received in the top rail.

36. The beam assembly of clause 7, wherein the joining beam includes an upper rectangular tube that forms the upper flange, a lower rectangular tube that forms the lower flange, and a web plate that forms the web and wherein the upper rectangular tube and the lower rectangular tube are made of a first material and the web plate is made of a second material that is different than the first material.

37. The beam assembly of clause 36, wherein the web plate includes a body segment, an upper tab that extends upwardly away from the body segment, and a lower tab that extends downwardly away from the body segment, the upper tab formed to define a plurality of first holes, the lower tab formed to define a plurality of second holes, and the body segment formed to define a plurality of third holes that are larger in diameter than the plurality of first and second holes.

38. The beam assembly of any of the clauses 36 or 37, wherein the upper rectangular tube is formed to define a first slot therein and the upper tab of the web plate is received in the first slot and the lower rectangular tube is formed to define a second slot therein and the lower tab of the web plate is received in the second slot.

[00135] While the disclosure has been illustrated and described in detail in the foregoing drawings and description, the same is to be considered as exemplary and not restrictive in character, it being understood that only illustrative embodiments thereof have been shown and described and that all changes and modifications that come within the spirit of the disclosure are desired to be protected.

What is claimed is

1. A beam assembly for use with a scaffolding system, the beam assembly comprising:
 - a first support beam that extends axially relative to an axis and configured to provide structural support for the scaffolding system, the first beam support including:
 - an upper attachment mount having a first width transverse to the axis, the upper attachment mount formed to define a plurality of first through holes that extend transverse to the axis through the upper attachment mount, the plurality of first through holes having a first diameter and being spaced apart from one another axially with a preset spacing distance,
 - a lower attachment mount spaced apart vertically from the upper attachment mount, the lower attachment mount having a second width transverse to the axis, the lower attachment mount formed to define a plurality of second through holes that extend transverse to the axis through the lower attachment mount, the plurality of second through holes having a second diameter equal to the first diameter, and the plurality of second through holes being spaced apart from one another axially with the preset spacing distance,
 - a web member that extends vertically between and interconnects the upper attachment mount and the lower attachment mount, the web member having a third width transverse to the axis that is smaller than the first width and the second width to define a channel vertically between the upper attachment mount and the lower attachment mount on two sides of the first support beam,
 - wherein the web member is formed to define a plurality of third through holes that extend transverse to the axis through the web member, the plurality of third through holes having a third diameter that is greater than the first diameter and the second diameter, and the plurality of third through holes being spaced apart from one another axially with the preset spacing distance.
2. The beam assembly of claim 1, wherein the upper attachment mount, the lower attachment mount, and the web member cooperate to define a passage that extends axially through the first support beam.
3. The beam assembly of claim 2, further comprising a joining beam that extends into the passage formed in the first support beam, the joining beam including an upper flange, a lower flange spaced apart vertically from the upper flange,

and a web that extends vertically between and interconnects the upper flange and the lower flange.

4. The beam assembly of claim 3, wherein the upper flange is formed to define a plurality of first joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of first joining beam through holes are configured to align with the plurality of first through holes, the lower flange is formed to define a plurality of second joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of second joining beam through holes are configured to align with the plurality of second through holes, and the web is formed to define a plurality of third joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of third joining beam through holes are configured to align with the plurality of third through holes.

5. The beam assembly of claim 4, wherein the plurality of first joining beam through holes have about the first diameter, the plurality of second joining beam through holes have about the second diameter, and the plurality of third joining beam through holes have about the third diameter.

6. The beam assembly of any of the preceding claims, wherein the lower attachment mount is formed to define a T-bolt slot that opens through a lowermost surface of the lower attachment mount.

7. The beam assembly of any preceding claim, wherein the first support beam further includes a top rail that extends away from the outer attachment mount, the top rail having a stem coupled with the outer attachment mount and head having a width transverse to the axis that is greater than a width of the stem.

8. The beam assembly of claim 7, wherein the head includes a flat outermost surface and a T-bolt slot that extends axially along a length of the first support beam and opens outwardly out of the flat outermost surface.

9. The beam assembly of claim 8, wherein the width of the head is about 48.3 millimeters.

10. The beam assembly of any of the claims 7 to 9, wherein the head is D-shaped when viewed along the axis.

11. The beam assembly of any of the claims 1 to 10, further comprising a ringlock ledger connector configured to couple with the support beam and one or more ledgers, the ringlock ledger connector including a ringlock connector, a first lock plate, and a second lock plate, the ringlock connector sized to be received and extend

through one of the plurality of third through holes, the first lock plate is coupled with the ringlock connector and configured to block the ringlock connector from passing entirely through the one of the plurality of third through holes, and the second lock plate being removably coupled with the ringlock connector.

12. The beam assembly of claim 11, wherein the ringlock connector includes a centerbody configured to be received in the one of the plurality of third through holes, a first connection plate that extends away from the centerbody and formed to define a first aperture therein for receiving a first wedge of a first ledger, and a second connection plate that extends away from the centerbody opposite the first connection plate and formed to define a second aperture therein for receiving a second wedge of a second ledger.

13. The beam assembly of claim 12, wherein the first lock plate extends around the first connection plate and is located between the first aperture and the centerbody and wherein the second lock plate is formed to include a slot sized to receive the second connection plate to allow the second lock plate to removably couple with the ringlock connector.

14. The beam assembly of any of the claims 11 to 13, wherein the first and second lock plates each have curved segments that match a contour of a scaffold post.

15. The beam assembly of any of the claims 12 to 14, wherein the first connection plate and the second connection plate are each rectangular and sized to be received in the channels formed by the web member, the upper attachment mount, and the lower attachment mount and wherein the first connection plate and the second connection plate are each configured to engage the upper attachment mount and the lower attachment mount in response to rotation of the ringlock ledger connector to limit rotation of the ringlock ledger connector.

16. The beam assembly of any of the claims 1 to 15, further comprising a ledger coupled with the ringlock ledger connector, the ledger including an elongated support body, a first ledger head at a first end of the elongated support body, and a second ledger head at a second end of the elongated support body opposite the first ledger head.

17. The beam assembly of any of the claims 11 to 16, wherein the ringlock ledger connector is configured to be received in the channels in the support beam in a first orientation and a second orientation that is rotated 90 degrees from the

first orientation about an axis that extends through the first centerbody, first connection plate, and second connection plate.

18. The beam assembly of any of the claims 1 to 17, further comprising a scaffold post connector that includes a beam connector configured to couple with the first support beam and a post coupler configured to couple with an upright scaffold post.

19. The beam assembly of claim 18, wherein the beam connector includes a mount plate, a first flange that extends away from the mount plate, and a second flange that extends away from the mount plate, the first flange being spaced apart from the second flange to receive the first support beam therebetween, and the first flange and the second flange each including a plurality of through holes that align with at least one of the plurality of first through holes and the plurality of second through holes to allow fasteners to extend through the first flange, the second flange, and at least one of the upper attachment mount and the lower attachment mount of the first support beam.

20. The beam assembly of claim 19, wherein the scaffold post receiver is coupled with the mount plate and extends away from the first flange and the second flange and the scaffold post receiver is formed to mate with a male or female end of an upright scaffold post.

21. The beam assembly of any of the claims 2 to 20, further comprising a guardrail post configured to couple with the first support beam and an upright scaffold post, the guard rail post including a joining beam stub configured to be received in the passage formed in the first support beam and a post coupler coupled with the joining beam stub and extending vertically to mate with an upright scaffold post.

22. The beam assembly of claim 21, wherein the joining beam stub includes an upper flange configured to be received in the upper attachment mount, a lower flange configured to be received in the lower attachment mount, and a web that extends between and interconnects the upper flange and the lower flange, and the web is configured to be received in the web member.

23. The beam assembly of claim 22, wherein the upper flange is formed to define a plurality of first joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of first joining beam through holes are configured to align with the plurality of first through holes, the lower flange is formed to define a plurality of second joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of second joining beam through holes are configured to align with

the plurality of second through holes, and the web is formed to define a plurality of third joining beam through holes that are spaced apart from one another axially with the preset spacing distance such that the plurality of third joining beam through holes are configured to align with the plurality of third through holes.

24. The beam assembly of any preceding claim, further comprising an angle bracket configured to couple the first support beam with a second support beam, the angle bracket including a base plate configured to couple with the first support beam and a joining beam stub that extends away from the base plate and into a passage formed in the second support beam.

25. The beam assembly of claim 24, wherein the base plate is formed to include a plurality of holes configured to align with subsets of the plurality of first through holes and the plurality of second through holes to allow fasteners to extend through the plurality of holes in the base plate and into the upper attachment mount and the lower attachment mount of the first support beam.

26. The beam assembly of any of the claims 24 or 25, wherein the angle bracket further includes a top rail that extends vertically upward from the joining beam stub, the top rail configured to align vertically with the top rail of the first support beam and a top rail of the second support beam.

27. The beam assembly of any of the claims 24 to 26, wherein the angle bracket further includes a back plate coupled with the first support beam on an opposite side of the base plate.

28. The beam assembly of any preceding claim, further comprising an anchor bracket configured to couple the first support beam with a foundation structure, the anchor bracket including a base plate configured to couple with the foundation structure, a first mount plate that extends away from the base plate, and a second mount plate that extends away from the base plate, the first mount plate and the second mount plate spaced apart from one another to receive the first support beam therebetween, and the first mount plate and the second mount plate configured to receive fasteners that extend through the first mount plate, through the first support beam, and through the second mount plate.

29. The beam assembly of claim 28, wherein the first mount plate and the second mount plate each are formed to define a first set of holes and a second set of holes, the first set of holes are arranged to align with a number of the first through holes and the second through holes formed in the first support beam when the first mount plate and the second mount plate are in a first orientation relative to the first

support beam, and the second set of holes are arranged to align with the number of the first through holes and the second through holes formed in the first support beam when the first mount plate and the second mount plate are in a second orientation relative to the first support beam that is rotated 45 degrees relative to the first orientation.

30. The beam assembly of claim 28, wherein each of the first mount plate and the second mount plate includes a first set of holes formed in a rectangular pattern to align with the first through holes and the second through holes of the first support beam to couple the anchor bracket with the first support beam in a first orientation and a second set of holes in a rectangular pattern with a 45 degree offset from the first set of holes and configured to align with the first through holes and the second through holes to couple to the first support beam in a second orientation about 45 degrees offset from the first orientation.

31. The beam assembly of claim 21, wherein the guardrail post further includes a top rail coupled with the joining beam stub and a scaffolding rosette coupled with the post coupler and having a portion thereof received in the top rail.

32. The beam assembly of claim 3, wherein the joining beam includes an upper rectangular tube that forms the upper flange, a lower rectangular tube that forms the lower flange, and a web plate that forms the web and wherein the upper rectangular tube and the lower rectangular tube are made of a first material and the web plate is made of a second material that is different than the first material.

33. The beam assembly of claim 32, wherein the web plate includes a body segment, an upper tab that extends upwardly away from the body segment, and a lower tab that extends downwardly away from the body segment, the upper tab formed to define a plurality of first holes, the lower tab formed to define a plurality of second holes, and the body segment formed to define a plurality of third holes that are larger in diameter than the plurality of first and second holes.

34. The beam assembly of claim 33, wherein the upper rectangular tube is formed to define a first slot therein and the upper tab of the web plate is received in the first slot and the lower rectangular tube is formed to define a second slot therein and the lower tab of the web plate is received in the second slot.