ABSTRACT

Provided is a post assembly configured for use with a lighted handrail, wherein the post assembly includes a post body sized to house a driver or other operational components associated with the lighting components disposed within the lighted handrail. In this regard, such components may be disposed in relatively close proximity to the lighted handrail, making the overall assembly safer, more energy efficient. Furthermore, by disposing the components within the post body, such components may be more easily accessed for routine maintenance and repair.
POST MOUNT FOR LIGHTED HANDRAIL ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 61/252,593, filed Oct. 16, 2009.

STATEMENT RE: FEDERALLY SPONSORED RESEARCH/DEVELOPMENT

[0002] Not Applicable

BACKGROUND

[0003] The present invention is generally directed toward handrail post mounts, and more specifically to a post assembly including a post body for supporting a lighted handrail and an internal power supply disposed within the post body for supplying power to the lighted handrail.

[0004] Areas heavily traversed by pedestrians are commonly lined with handrails and guardrails to provide support for the pedestrians. For instance, the pedestrians may grab the handrail for assistance while walking alongside the handrail. The handrails may also serve as a barrier to urge pedestrians to walk along a sidewalk or similar walking path. The handrails typically include a railing spaced from the ground and extending generally parallel to the ground with a plurality of spaced posts mounted to the railing and extending between the railing and the ground.

[0005] Also common to heavily traversed areas are light fixtures for directing light to those areas. The light fixtures may be mounted on a series of lamp posts along the sidewalk, or to building located adjacent the sidewalk. The light emitted by the light fixtures may be generally utilitarian in nature and configured to simply provide sufficient lighting for pedestrians to walk along the sidewalk. Conversely, the light fixtures may be architectural in nature for enhancing the aesthetics of the surrounding area.

[0006] Recently, there has been a trend to mount the lights directly to the handrail. This provides the dual benefit of illuminating the sidewalk, as well as the handrail, thereby making it safer and more user friendly. In most lighted handrail constructions, the power source for the lights is located at a remote location. For instance, the power source may be located in an underground vault, or in a building near the sidewalk. In order to communicate power from the power source to the lighted handrail, wires may extend between the power source and the lighted handrail. A portion of the wire may be buried in the ground, while other portions of the wire extend through the post and into the handrail to connect with the lights. In this regard, a conduit may be placed underground between the post and the power supply to house the wire.

[0007] It is contemplated that after the lighted handrail is used for a period of time, maintenance and repair may be required. This may require accessing the power supply and/or wiring extending between the power supply and the lighting elements. Given that the power supply is remote from the lighting elements, and may be buried along with the wiring, accessing the power supply and wiring may be very difficult.

[0008] In view of the foregoing, there is a need in the art for a post mount for a lighted handrail, wherein the power supply for the lighted handrail is housed within the post mount and may be easily accessed within the post mount.

BRIEF SUMMARY

[0009] Provided is a post assembly configured for use with a lighted handrail, wherein the post assembly includes a post body sized to house power components, such as a driver, or other operational components associated with the lighting elements, such as LEDs disposed within the lighted handrail. In this regard, such components may be disposed in relatively close proximity to the lighted handrail, which may allow operation of the LEDs using less power, making the overall assembly safer and more energy efficient. By disposing the components within the post body, such components may be more easily accessed for routine maintenance and repair.

[0010] According to one embodiment, the post assembly includes a driver disposable in operable communication with the lighted handrail. The post assembly further includes an elongate post body extending along a post axis, wherein the post body includes a wall disposed about the post axis to define a post cavity sized to receive the power source. The post body includes a post opening extending through the post wall to the post cavity to provide access to the power source. A detachable cover is engageable with the post body and disposable over the post opening to cover the post opening.

[0011] The elongate post body may define a first end portion and an opposing second end portion. The post assembly may further include a base engageable with the first end portion of the post body for mounting the post assembly to a support surface. The base may include a projection and a flange disposed about the projection, with the projection being sized and configured to be advanced into the post cavity upon engagement of the base with the post body. The post assembly may further include a base gasket or sealant (such as a silicone sealant, i.e., Room Temperature Vulcanizing) engaged with the base and the post body to create a fluid tight seal between the post body and the base.

[0012] A pair of support rods may be connected to the post body and the base to mitigate flexion of the post body in a direction perpendicular to the post axis. The base may further include a pair of support apertures extending from the projection top surface toward the flange bottom surface, wherein the pair of support apertures are sized and configured to receive a respective one of the pair of support rods.

[0013] The post assembly may additionally include an end cap engageable with the second end portion. The end cap may include an end cap body and a handrail connector arm connected to the end cap body. The handrail connector arm may be pivotally connected to the end cap body. An end cap gasket or sealant may be engaged with the end cap and the post body to create a fluid tight seal between the post body and the end cap.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] These and other features and advantages of the various embodiments disclosed herein will be better understood with respect to the following description and drawings, in which like numbers refer to like parts throughout, and in which:

[0015] FIG. 1 is an upper perspective view of a post mount assembly for use with a lighted handrail;
[0016] FIG. 2 is an exploded upper perspective view of the post mount assembly including a post body, an upper end cap, a base, and internal control elements;

[0017] FIG. 3 is an exploded upper perspective view of the post body;

[0018] FIG. 4 is an exploded upper perspective view of the internal control elements, upper end cap, and a lower base;

[0019] FIG. 5 is an upper perspective sectional view of the post mount assembly;

[0020] FIG. 6 is an enlarged upper perspective view of the engagement between the upper end cap and the post body;

[0021] FIG. 7 is a side sectional view of the post mount assembly; and

[0022] FIG. 8 is an upper sectional view of the post mount assembly.

DETAILED DESCRIPTION

[0023] The detailed description set forth below in connection with the appended drawings is intended as a description of certain embodiments of the present disclosure, and is not intended to represent the only forms that may be developed or utilized. The description sets forth the various functions in connection with the illustrated embodiments, but it is to be understood, however, that the same or equivalent functions may be accomplished by different embodiments that are also intended to be encompassed within the scope of the present disclosure. It is further understood that the use of relational terms such as first and second and the like are used solely to distinguish one from another entity without necessarily requiring or implying any actual such relationship or order between such entities.

[0024] Referring now to the drawings, there is depicted a post mount assembly 10 for use with a lighted handrail 12 (shown in phantom in FIG. 1) including a plurality of lighting elements, such as light emitting diodes (LEDs). The post mount assembly 10 includes a post body 14 configured to house the driver associated with conditioning the power delivered to the LEDs. By disposing the driver within the post body 14 (i.e., within close proximity to the LEDs), less power may be required to operate the LEDs, thereby making the lighted handrail 12 safer, more energy efficient and less expensive to operate.

[0025] Referring now specifically to FIG. 1, there is depicted an upper perspective view of the post mount assembly 10 connected to the lighted handrail 12. The post mount assembly 10 includes an elongate post body 14 defining a first (lower) end portion 16 and an opposing second (upper) end portion 18. A base 20 is mounted to the post body 14 adjacent the first end portion 16 and an end cap 22 is mounted to the post body 14 adjacent the second end portion 18. The base 20 is configured to secure the post mount assembly 10 to a mounting surface, such as a sidewalk, walking path, hallway, and the like. The end cap 22 is configured to connect the lighted handrail 12 to the post mount assembly 10.

[0026] Referring now to FIG. 2, the post body 14 extends along a longitudinal axis 24 and includes a wall 26 disposed about the longitudinal axis 24 to define a post cavity 28. In the embodiment depicted in Figures, the post cavity 28 extends through the post body 14 from the first end portion 16 to the second end portion 18. However, other embodiments may include a post cavity 28 that extends only partially between the first end portion 16 and the second end portion 18. As will be described in more detail below, the post cavity 28 is advantageously sized and configured to receive the operational components to provide a convenient storage location for the operational components.

[0027] In the embodiment depicted in FIG. 2, the wall 26 defines a first planar face 32, an opposing second planar face 34, and a pair of opposed curved faces 36 extending between the first planar face 32 and the second planar face 34. In this manner, the post body 14 may define an edge component both round and square styles of architecture. For instance, railing posts are typically round or square, thus the configuration of the post body 14 depicted in the Figures may blend into most architectural environments seamlessly.

[0028] The post body 14 includes an elliptical opening 30 extending through the wall 26 to facilitate access to the operational components housed within the post body 14. The elliptical shape of the opening 30 dissipates stress within the post body 14 to enhance the strength of the post body 14. Although an elliptical shape is the preferred shape of the opening 30, it is understood that the opening 30 may define other shapes without departing from the spirit and scope of the present invention. The opening 30 may extend through the first planar face 32, the second planar face 34, or both planar faces 32, 34. A separate opening (not shown) may additionally be formed in one, or both, of the curved faces 36.

[0029] A cover 38 may be attached to the post body 14 to cover the opening 30. The cover 38 is sized and configured to conceal the opening 30 when the cover 38 is connected to the post body 14. A U-Channel gasket 35 may be wrapped around the edges of the opening 30 to create a tight light seal between the cover 38 and the post body 14 and to add edge protection when accessing the operational components (i.e., the gasket 35 may reduce the risk of being injured due to sharp edges).

[0030] As depicted, the cover 38 is complimentary in shape to the first and second planar faces 32, 34. The cover 38 includes a plurality of cover apertures 40 and the post body 14 defines a plurality of corresponding post apertures 42 for mounting the cover 38 to the post body 14. Respective ones of the cover apertures 40 are coaxially aligned with respective ones of the post apertures 42 and a mechanical fastener 44, such as a screw, is advanced through the cover aperture 40 and post aperture 42 to couple the cover to the post body 14. The cover 38 may include an aperture 40 which is disposed over the opening 30 (i.e., the middle aperture 40 shown in FIG. 2), and therefore may not engage with the post body 14. In that case, a mounting bracket 46 having a mounting aperture 49 may be connected to the post body 14 for connecting the cover 38 to the post body 14.

[0031] According to one embodiment, the optional mechanical fasteners 44 are stainless steel tamper-proof screws which may be hidden behind a flush snap on/off cover plug 45 (see FIG. 1), which may be formed out of aluminum, stainless steel or other materials commonly used in the art. The screw 44 and cover plug 45 may be recessed into a decorative architectural relevant chambered support collar.

[0032] Referring now to FIGS. 3 and 4, there is depicted an exploded view of the post body 14 and the operational components housed within the post body 14. The operational components may include a driver 50, which receives power from a power source and “steps down” or otherwise conditions the power before it is communicated to the LEDs. In addition to, or in replacement of the driver 50, other control devices (such as Photo-control, PIR proximity sensors, color mixing, emergency battery backup, etc.), a power source, and other
components known by those skilled in the art, may be disposed within the post body 14. The operational components may be stacked in a linear configuration and spaced from the base 20 and end cap 22 to be aligned with the opening 30 formed within the post body 14 to allow for easy access to the operational components. Wiring may extend between the lighting elements in the lighted handrails 12 and the operational components housed within the post body 14 to establish electrical communication therebetween. By disposing the operational components within the post body 14, the operational components are in relatively close proximity to the lighting elements in the lighted handrail 12. Accordingly, the lighting elements may operate efficiently to achieve a longer operational life of the lighting elements and reduced operating costs.

[0033] The driver 50 and other operational components may be mounted to a component plate 55, which may in turn be mounted to support castings 57. The support castings 57 are configured to engage with support rods 68 which extend through the post body 14 and engage with the base 20 and the end cap 22. Heat transfer elements may be disposed adjacent to the driver 50 to aid in the operational components to keep the driver components within an operable temperature range.

[0034] The post cavity 28 is enclosed by connecting the base 20 the post body 14 adjacent the first end portion 16 and the post body 14 adjacent the second end portion 18. The base 20 may be mounted to a support surface, such as a sidewalk or walking path to secure the post mount assembly 10 thereto. According to one embodiment, the base 20 includes a base projection 52 and a base flange 54 disposed about the base projection 52. The base flange 54 defines a first surface 56 and a second surface 58 with a plurality of mounting recesses 60 extending from the first surface 56 toward the second surface 58. A mounting aperture may be disposed within each mounting recess 60 and extend through the base 20 to the second surface 58. A bolt may be advanced through the mounting aperture to secure the base 20 to a mounting surface. The mounting recess 60 may be sized and configured to receive the head of the bolt to mitigate a tripping hazard. The sides of the base 20 may be shaped (along the path direction) to further mitigate tripping hazards.

[0035] The base projection 52 is sized to be advanced into the post cavity 28 to couple the base 20 to the post body 14. In this manner, the base projection 52 may be complimentary in shape to the post cavity 28. A projection extension 47 may be connected to the base projection 52 to further extend into the post cavity 28. A base gasket may be disposed between the base 20 and the post body 14 to fluidly seal the interface between the base 20 and post body 14. The base gasket may be formed out of silicone or other materials known by those skilled in the art.

[0036] The base 20 includes a base aperture 62 (see FIG. 4) to receive conduit or wires for connection with the internal components. A flexible cover 64 with a clover-leaf patterned opening is shown in FIGS. 3 and 4, and is configured to direct the conduit/wiring to the center of the base aperture 62.

[0037] The base 20 further includes a pair of support apertures 66 extending into the base projection 52, with each support aperture 66 being sized and configured to receive a support rod 68. The support rods 68 may extend from the first end portion 16 to the second end portion of the post body 14 in a direction generally parallel to the longitudinal axis 24 when mounted within the support apertures 66. The support rods 68 are configured to strengthen the post mount assembly 10 by mitigating deflection of the post mount assembly 10 in a direction orthogonal to the longitudinal axis 24. In addition, the support rods 68 provide structural support to the operational components housed within the post body 14. According to one implementation, the support rods 68 may be formed out of 8 mm stainless steel with an adjustable stainless turnbuckle 69 in the middle of two portions which collectively define a support rod 68.

[0038] Referring now specifically to FIGS. 5 and 6, the post mount assembly 10 may additionally include a swivel end cap 22 mounted to the post body 14 adjacent the second end portion 18 of the post body 14. The swivel end cap 22 includes an end cap body 70, a neck 72 and a swivel arm 74 pivotally connected to the neck 72. The end cap body 70 is configured to engage with the post body 14 and may include a pair of bosses 73 for receiving the support rods 68. The neck 72 may include a pair of wire access holes 75 (see FIGS. 5 and 6) to route wires from the operational components to the lighting elements disposed within the lighted handrail 12 while at the same time allowing the swivel arm 74 to pivot relative to the neck 72.

[0039] The swivel arm 74 may include a pair of opposed handrail engagement portions 76 configured to engage with the lighted handrail 12. The handrail engagement portions 76 may be complimentary in shape to the lighted handrail to facilitate engagement therebetween. The swivel arm 74 may pivot relative to the neck 72 to adjust the position of the lighted handrail 12 engaged with the swivel arm 74. The swivel arm 74 may be coupled to the neck 72 via connector pins 78 (see FIG. 4). A gasket may be disposed between the swivel end cap 22 and the post body 14 to create a fluid tight seal between the end cap 22 and the post body 14.

[0040] The above-described post mount assembly 10 may be connected to a support surface, such as a sidewalk or walking path by connecting the base 20 to the support surface. It is contemplated that two other mounting embodiments may be employed. The first embodiment is an “embodiment” design, wherein the post body 14 is placed directly into a hole cored within a concrete slab surface and is surrounded by anchor cement. This design may be desirable for installation on angled or ramped surfaces. The smooth transition from the post body 14 to the concrete surface may also eliminate the collection of debris.

[0041] The second embodiment is a “wall mounted” embodiment which includes one or more, preferably a pair, of wall mount bases for connected the post body 14 to a vertical support surface, such as a wall. The wall mounted embodiment may be desirable when there is a sloped or uneven surface for the post to mount to. Each wall mount base may include two 8 mm stainless steel mounting studs for attachment to the post body 14 with internal nuts. A silicone gasket may be disposed between the wall mount bases and the post body 14. The gaskets may include openings to allow for conduit entry into the post body 14. An additional gasket may be disposed between the wall mount base and the vertical support surface to mitigate water and debris from entering.

[0042] Additional modifications and improvements of the present invention may also be apparent to those of ordinary skill in the art. Thus, the particular combination of parts described and illustrated herein is intended to represent only certain embodiments of the present invention, and is not intended to serve as limitations of alternative devices within the spirit and scope of the invention.
What is claimed is:
1. A post assembly for use with a lighted handrail, the post assembly comprising:
   a driver disposable in operable communication with the lighted handrail;
   an elongate post body extending along a post axis, the post body including a wall disposed about the post axis to define a post cavity sized to receive the driver, the driver being connected to the wall, the post body including a post opening extending through the post wall to the post cavity to provide access to the driver; and
   a detachable cover engageable with the post body and disposable over the post opening to cover the post opening.
2. The post assembly recited in claim 1, wherein the elongate post body defines a first end portion and an opposing second end portion, the post assembly further comprising a base engageable with the first end portion of the post body.
3. The post assembly recited in claim 2, wherein the base includes a projection and a flange disposed about the projection, the projection being sized and configured to be advanced into the post cavity upon engagement of the base with the post body.
4. The post assembly recited in claim 2, further comprising a pair of support rods connected to the post body and the base, the pair of support rods being configured to mitigate flexion of the post body in a direction perpendicular to the post axis.
5. The post assembly recited in claim 4, wherein the base defines a projection top surface and a flange bottom surface, the base further including a pair of support apertures extending from the projection top surface toward the flange bottom surface, the pair of support apertures being sized and configured to receive a respective one of the pair of support rods.
6. The post assembly recited in claim 2, further comprising a base gasket engaged with the base and the post body to create a fluid tight seal between the post body and the base.
7. The post assembly recited in claim 1, wherein the elongate post body defines a first end portion and an opposing second end portion, the post assembly further comprising an end cap engageable with the second end portion.
8. The post assembly recited in claim 7, wherein the end cap includes an end cap body and a handrail connector arm connected to the end cap body.
9. The post assembly recited in claim 8, wherein the handrail connector arm is pivotally connected to the end cap body.
10. The post assembly recited in claim 7, further comprising an end cap gasket engaged with the end cap and the post body to create a fluid tight seal between the post body and the end cap.
11. A post assembly for use with a driver for a lighted handrail, the post assembly comprising:
    an elongate post body extending along a post axis, the post body including a wall disposed about the post axis to define a post cavity sized to receive the driver, the post body including a post opening extending through the post wall to the post cavity to provide access to the driver; and
    a detachable cover engageable with the post body and disposable over the post opening to cover the post opening.
12. The post assembly recited in claim 11, wherein the elongate post body defines a first end portion and an opposing second end portion, the post assembly further comprising a base engageable with the first end portion of the post body.
13. The post assembly recited in claim 12, wherein the base includes a projection and a flange disposed about the projection, the projection being sized and configured to be advanced into the post cavity upon engagement of the base with the post body.
14. The post assembly recited in claim 12, further comprising a pair of support rods connected to the post body and the base, the pair of support rods being configured to mitigate flexion of the post body in a direction perpendicular to the post axis.
15. The post assembly recited in claim 14, wherein the base defines a projection top surface and a flange bottom surface, the base further including a pair of support apertures extending from the projection top surface toward the flange bottom surface, the pair of support apertures being sized and configured to receive a respective one of the pair of support rods.
16. The post assembly recited in claim 12, further comprising a base gasket engaged with the base and the post body to create a fluid tight seal between the post body and the base.
17. The post assembly recited in claim 11, wherein the elongate post body defines a first end portion and an opposing second end portion, the post assembly further comprising an end cap engageable with the second end portion.
18. The post assembly recited in claim 17, wherein the end cap includes an end cap body and a handrail connector arm connected to the end cap body.
19. The post assembly recited in claim 18, wherein the handrail connector arm is pivotally connected to the end cap body.
20. A post assembly for use with a lighted handrail, the post assembly comprising:
    an operational component disposable in operable communication with the lighted handrail;
    an elongate post body extending along a post axis, the post body including a wall disposed about the post axis to define a post cavity sized to receive the operational component, the operational component being connected to the wall, the post body including a post opening extending through the post wall to the post cavity to provide access to the operational component; and
    a detachable cover engageable with the post body and disposable over the post opening to cover the post opening.

* * * * *