



# LANDSCAPE™

## **CAST Set-in-Stone® Wall Light Installation System**

### **Installation Instructions**

#### **Required Materials**

- ▶ CAST Set-in-Stone Wall Light Mounting Modules (CSIS)
- ▶ CAST Set-in-Stone Flexible Conduit (CSISC)
- ▶ CAST Engineered Wall Lights (CEWL5CB or CEWL5LED1)
- ▶ Bricks (1 for each module) (for under capstone installation)
- ▶ Barrel Crimps (CAST Part # XCEWM14BCK) (2 for each module)\*
- ▶ 3/16" x 1" Heat Shrink Tubing (CAST Part # XCEWEPS300316)\* (2 for each module)
- ▶ Crimping/Cutting Tool
- ▶ Heat Gun or torch

\*Crimps and Heat Shrink Tubing included in the CAST Lighting Wire Splice Kit (CLWSK)

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**Advisory and Disclaimer:** Before undertaking the installation, servicing, or maintenance of a low-voltage lighting system, individuals should obey any applicable codes, guidelines, and restrictions that may apply in their regions. CAST Lighting is not liable for any consequences that may arise from the use of material in this manual.

## Introduction

The CAST Set-in-Stone™ Wall Light Installation System is designed to provide a quick and simple method of installing CAST Engineered Wall Lights into any type wall.

It includes two components:

- ▶ CAST Set-in-Stone™ Wall Light Mounting Module (Part# CSIS)
- ▶ CAST Set-in-Stone™ Flexible Conduit (Part# CSISC)

These components are installed during wall construction to provide fixture mounting locations and wiring conduit. This allows the lighting installation to occur after the wall has been completed.

### Step 1. Set Fixture Locations

Before placing the modules and conduits, determine optimal placement of wall lights. CAST Engineered Wall Lights have a wide diffuse beam. Optimal spacing of fixtures is determined by mounting height and desired effect. For relatively uniform coverage of wall, the following spacings are recommended. Wider spacing may also be used when discrete regions of illumination are desired.

#### Wall Mounted

- ▶ 24" above grade: space 6 to 8 ft. apart
- ▶ 30" above grade: space 8 to 10 ft. apart

Mark fixture locations on the wall, pavement, or bed using chalk, flags, or other markers.

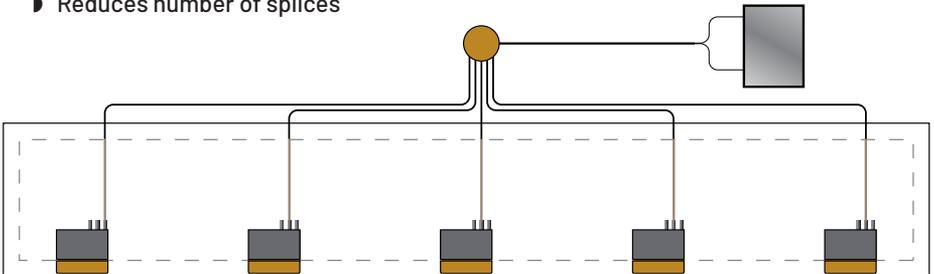
### Step 2. Create Wiring Plan

There are several acceptable wiring techniques that can be applied to a wall light installation. The optimal technique depends on fixture type (LED or incandescent), number of fixtures, and wall construction.

#### Spider Splice

This technique requires that each fixture lead wire exit the wall and terminate at a Spider Splice junction. It is a good choice for retaining walls where fixture lead wires can exit the wall near fixture locations. The main benefits of this technique are:

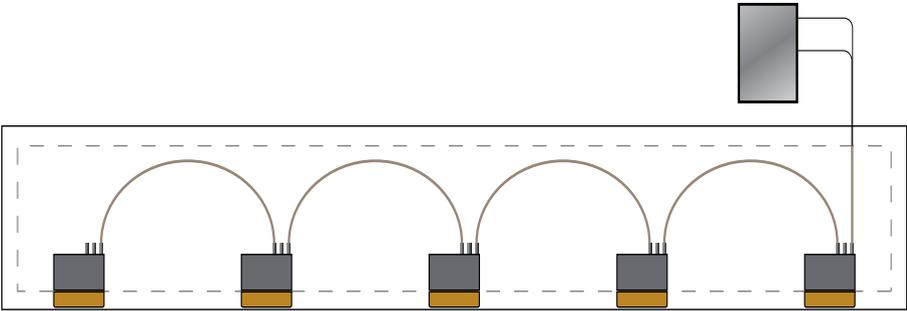
- ▶ Ensures equal voltage at each fixture (important for incandescent lamps to attain target voltage of 10.8v to 11.3v)
- ▶ Reduces number of splices



## Daisy Chain

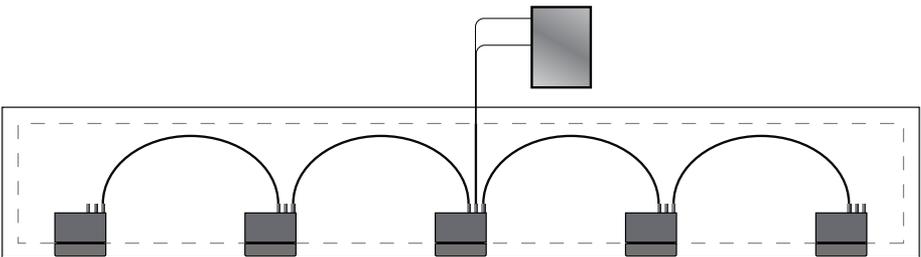
This technique requires that fixtures are connected to each other in series. The first (or last) fixture in the series is connected to the transformer. Daisy chains are useful in wall installations where it is difficult or impossible for wires to enter/exit the wall in multiple locations, and especially when the wall length exceeds the length of the fixture lead wire (25 ft.).

The daisy chain method's greatest limitation is the successive voltage loss that occurs from one fixture to the next. This voltage loss is not a problem for CAST LED light sources since the acceptable voltage range is between 8V and 18V.



## T-Method

This technique is a modified daisy chain where the home run wire to the transformer is connected halfway along the daisy chain instead of the end fixture. Overall voltage loss is identical to the daisy chain, but voltage difference between fixtures is less. The downside is that the home run wire needs to be spliced at a central point in the wall meaning that the wire needs to enter the wall near that point or additional conduit needs to be run through the wall.



## Combined Methods and Maximum Number of Fixtures

It is acceptable to modify any of the above wiring methods. Free-standing walls are a special case where wall lights on both sides of the wall often require a flexible and create solution to wiring.

Keep in mind that voltage loss needs to be considered. For the incandescent CEWL5CB, optimal voltage is between 10.8v and 11.3v - a voltage range that spans 0.5v. This narrow range limits the number of fixtures on a single run. Wire amperage capacity limits the number of fixtures for LED fixtures. The following guidelines only consider #18/2 and #16/2 since Flexible Conduit can not accommodate larger sizes.

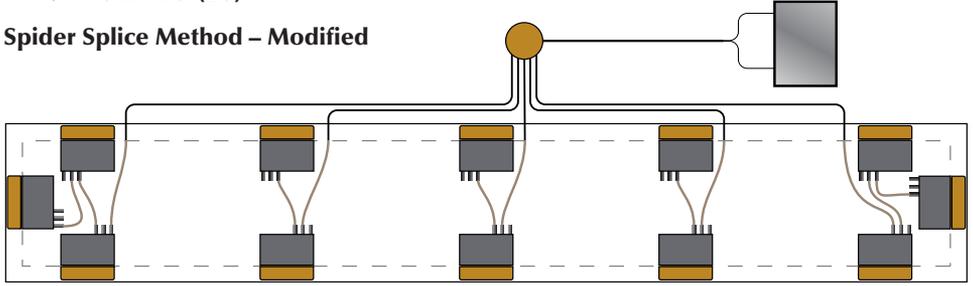
### Maximum # of CEWL5CB (incandescent) on a daisy chain run:

- ▶ #18/2 wire: (4) w/10w lamps; (3) w/18w lamps
- ▶ #16/2 wire: (5) w/10w lamps; (4) w/18w lamps

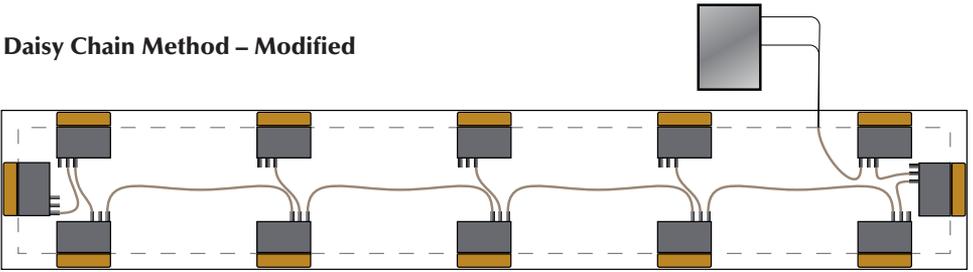
### Maximum # of CEWL5LED1 on a daisy chain:

- ▶ #18/2 wire: (15)
- ▶ #16/2 wire: (20)

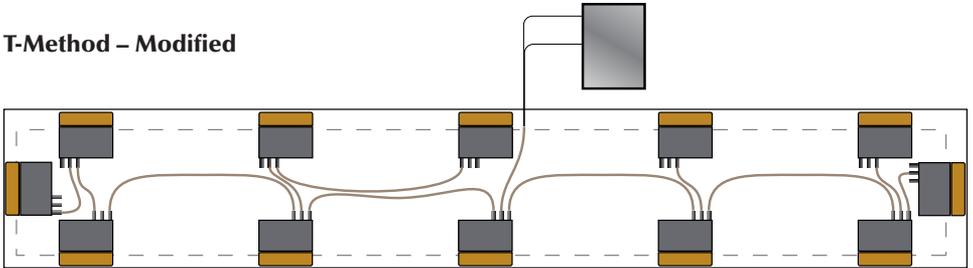
### Spider Splice Method – Modified



### Daisy Chain Method – Modified



### T-Method – Modified



## Deciding Which Wiring Technique is Best

Can you run conduit to exit the wall near each fixture location (esp. retaining wall)?

No  
↓

Yes → Use Spider Splice Method

Will LED wall lights be used?

No  
↓

Yes → Use Daisy Chain

Will there be less than (6) wall lights at 10w each (or less than (5) at 18w each)?\*

No  
↓

Yes → Use Daisy Chain

Will there be more than (10) @ 10w or (8) @ 18w?\*

Yes → Use additional conduit to add home run wires (no more than 100w per run).

No → Use T-Method

\*Guidelines assume #16/2 run in conduit

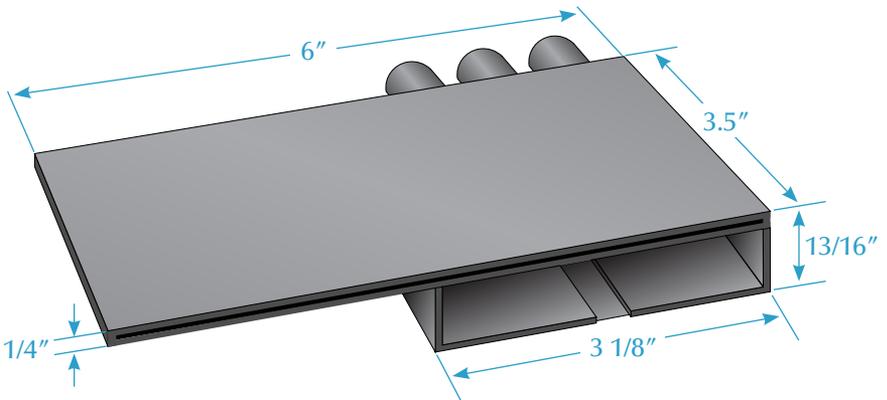
## Documentation

Draw a diagram (plan view) of wall including fixture locations and wiring plan. Be sure to keep this diagram with other system records. Place a copy inside the transformer enclosure.

## Step 3. Put Wall Light Mounting Modules in Position

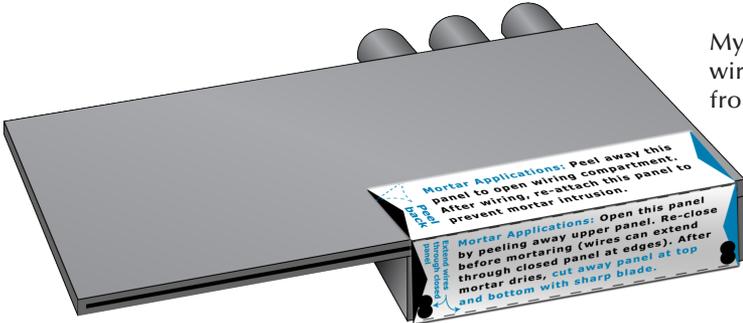
Wall Light Mounting Modules can be used under capstones, between blocks, or embedded in solid walls. Each of these applications require enough space in building materials to accommodate the module. See dimensions below.

### For between-block and solid-wall installations,



- ▶ **Cut or chisel opening to accommodate module.** Drill wire hole directly behind module opening then insert flexible conduit into hole and connect to rear of module. Insert module into place and apply mortar to secure into position (use bubble level to ensure that module is level, and push module until it is flush with wall surface).
- ▶ **Note:** Each module is sealed with a mylar label. This label prevents mortar from entering the wiring compartment. If mortar is to be applied, then keep this label intact. When installing fixtures, use a sharp blade to cut away the label on the dotted lines.

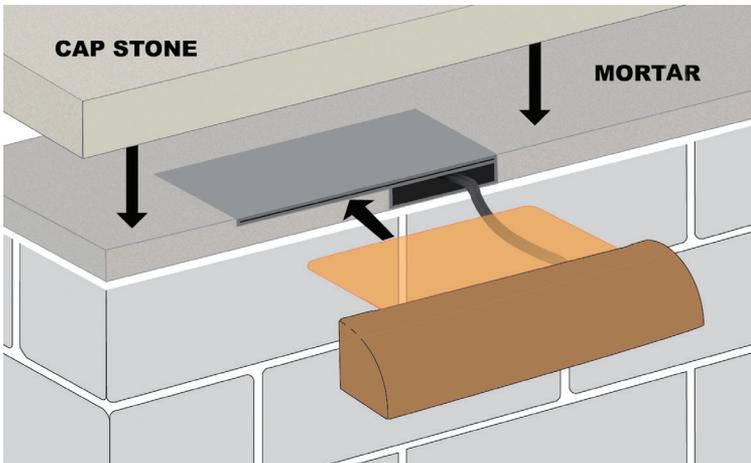
#### For under-capstone installations,



Mylar label protects wiring compartment from mortar intrusion.

Label can be peeled back for wire installation then re-sealed prior to mortaring.

- ▶ module requires a vertical space of 7/8". If space under capstone is insufficient, then chisel opening for module wiring compartment so end position of module places it in contact with under-surface of capstone.
- ▶ After wall has been constructed, but before capstone is in place, place one module at each marked fixture location.
- ▶ Place a brick on top of each module to hold it in place. Bricks are removed during completion of wall construction.



#### **Step 4. Lay Out Flexible Conduit**

Depending on wiring technique, wires may exit the wall from one or more locations. Use the flexible conduit to provide a path for these exiting wires.

Referring to your wiring diagram, cut sections of conduit to connect modules. Push cut ends firmly into one of the openings in the back of each module.

#### **Step 5. Run wires**

Wires may be run prior to, or after, final wall construction. Keep in mind that flexible conduits are sized to accommodate (1) # 14-2, 16-2, or 18-2 wire. They will not accommodate # 10-2 nor # 12-2.

Note: It is easier and faster to run wires through conduit before mortaring.

Wires can usually be pushed through conduit. For extra-long conduit runs, or if pushing wire is difficult, then use a fish tape to pull wire through conduit.

If mortar will be applied after wiring then peel back module label from top to expose wiring compartment. After wiring, re-attach label to close compartment.

#### **Spider Splice Method**

The Spider Splice Method (see p. 2) requires that each fixture lead wire runs through the wall to the Spider Splice junction. In this case, pre-wiring the installation is not possible. Instead, fixture wires are run when wall lights are installed.

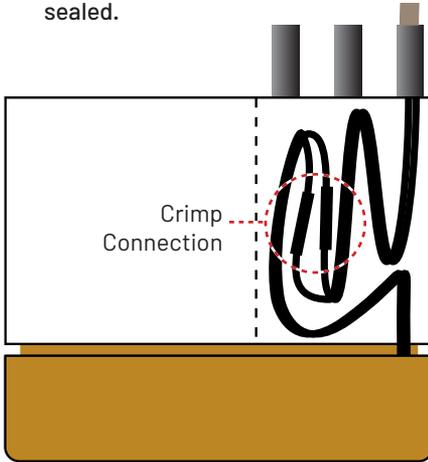
#### **Daisy Chain and T-Methods**

Run #16-2 or #18-2 wires through each conduit, entering and exiting through wall light modules. Allow 4" extra wire to extend from each module.

## Step 6. Connect Wires

When fixtures are ready to be installed,

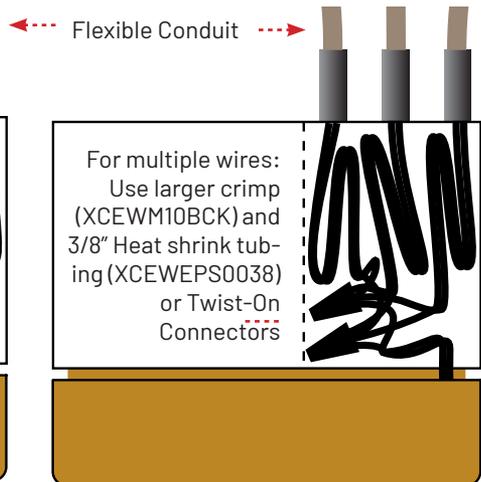
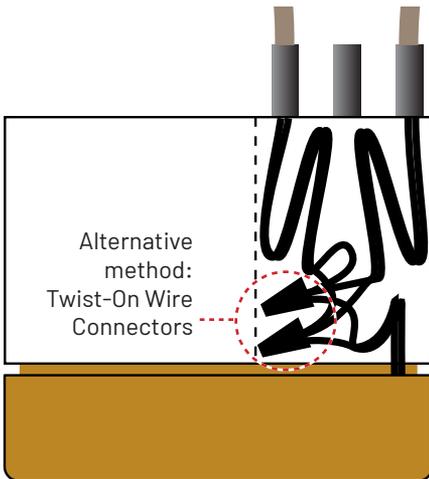
- ▶ Cut fixture lead wire 5" from fixture.
- ▶ Separate insulated wire strands about 2" from end.
- ▶ Repeat for all wires exiting the module.
- ▶ Strip 1/4" of insulation on all wire ends.
- ▶ Slip a 1" length of 3/16" heat shrink tube (part# XCEWEPS300316) over each fixture lead wire strand.
- ▶ Slip barrel crimps (part# XCEWM14BCK) over exposed stripped wire ends.
- ▶ Use crimping tool to crimp barrel on both sides.
- ▶ Slip heat shrink tube over connection and apply heat with heat gun or flame until sealed.



Up to three wires can enter module to enable looping through fixtures.

Crimp connections are highly preferred. They are more secure and take less space than twist-on connectors.

CAST Lighting Splice Kit (CLWSK) contains a selection of crimp connectors and heat shrink tubing.



## Step 7. Insert Wall Lights

Slip wall light bracket into module slot while pushing wires into wiring compartment.