CUBE 3 STUDIO

architecture ▫ interiors ▫ planning

Sudbury Station Apartments
Sudbury, MA

Architecture and Exterior Materials Narrative:
05/13/2016

The following is a narrative summarizing the design approach to the buildings and exterior materials for the proposed Sudbury Station project.

Design

The proposed building architecture and the site plan have been designed to work together and embrace the topography of the site. The concept is to retain the natural grading as much as possible and create a village green which would be the center of this new neighborhood. The architecture will take full advantage of the sloping topography and the scale of the proposed buildings to embrace a village setting and the natural features of the site. Thus, most of the buildings are set into the naturally sloping grades of the site, which allow the parking below the buildings to be hidden from view, keeping as much of the site as possible for open, landscaped green space. The buildings are organized on the site in such a fashion so that the lower-scale Townhome buildings are arrayed closest to the eastern edge of the property with the larger buildings located farthest away, mitigating the project's visual impact.

Architecture and Materials

The architecture of the individual buildings picks up on many of the vernacular clues of New England architecture, including steep-sloped asphalt-shingled roofs, an articulated elevation, large open porches and a stone base, which respectfully echoes the existing stone walls of the site and connects the buildings to the natural landscape. The primary exterior materials are fiber cement lap siding of different exposures, colors and textures to break down the mass of the buildings. There are also detailed trim and corner boards around the windows and doors to create visual interest and a pedestrian-friendly scale. The full walk-out balconies for many of the units become exterior patio spaces at the ground floor units to directly connect the buildings to the landscape and activate the surrounding village green and streetscape. The windows will typically be vinyl, but in a traditional double-hung style that is sympathetic to the historic character of Sudbury. The balcony and wrap-around porch railing systems will be in a traditional vertical picket-style, although the system will be painted aluminum in lieu of wood railings.

The design strategy is to incorporate many of these traditional New England details while still providing all of the amenities and functionality of a modern 21st century apartment building. The buildings' scale, proportion, details and materials reinforce a sense of neighborhood and will be respectful of the adjacent historic district and Sudbury's history. The project will be focused on the pedestrian experience with lots of connectivity to the adjacent lands and larger Sudbury.

CUBE 3 STUDIO

architecture ▫ interiors ▫ planning

Sudbury Station Apartments
Sudbury, MA

LEED and Environment Narrative:
05/13/2016

The following is a narrative summarizing the approach to LEED and Environmental approach for the proposed Sudbury Station project.

LEED (Leadership in Energy & Environmental Design)

The Sudbury Station four-story residential buildings require an Energy Model be constructed with all of the project architecture, lighting, equipment, etc. to calculate the whole energy approach to the building. Since Sudbury adopted the Massachusetts Stretch Energy Code in 2011, the four-story buildings are required to achieve a 20% improvement in building energy performance over the MA base energy code (IECC 2009). With common-sense selection of energy-efficient lighting and appliances, robust insulation, high-performance windows, and other common-sense green choices, this goal is readily achievable. This approach will fill out the LEED checklist and target a goal of LEED Certifiable. The project may not choose to apply for LEED certification.

The residential buildings that are three stories or less are required to meet an energy performance standard using the Home Energy Rating System (HERS), which rates each home on a scale. The proponent will hire an independent certified building energy professional to conduct the HERS efforts and ensure quality construction.

Environmental Design

In the apartments, the use of LED lighting, low-flow water toilets and plumbing fixtures, on-demand hot water heaters, efficient heating and cooling systems and Energy-Star appliances all contribute towards a positive green approach to the project. A full cut-off site lighting fixture will be employed to facilitate energy efficiency and no light spillage (dark skies compliant).

The use of low-emitting VOC's for the paint and sealants, collecting recyclables separate from trash, and the use of large windows to maximize daylight will further enhance the positive environmental aspects of the project.

The site design green initiatives includes the use of LED site lighting (see attached example site light fixture cut), putting some of the parking below grade to reduce the heat island effect, and providing bike racks in both the garages and at the Clubhouse and each apartment building entry. A total of seventy-five bike racks will be provided throughout the project. We anticipate that access to the future Rail Trail that abuts the site will help to encourage more non-vehicular transportation from the Sudbury Station site in the future.

PROJECT NAME:

FIXTURE TYPE:

SOLID STATE AREA LIGHTING

DSS SERIES-LED

SPECIFICATIONS

HOUSING Upper housing is heavy gauge cast aluminum (DSS1) or 0.125" thick spun aluminum with reveal (DSS2). Lower housing is 0.080" thick spun aluminum with integrated LED module seat. Lower housing is vented at top and bottom for convective cooling of LED module. Top Driver chamber is sealed from LED Module chamber. Trulevel ball coupling mount is welded to housing and facilitates quick leveling and installation.

VLED® OPTICAL MODULE

Low copper A356 alloy (<.2% copper) cast aluminum housing. Integrated clear tempered 3/16" glass lens sealed with a continuous silicone gasket protects emitters (LED's) and emitter Reflector-Prism optics, and seals the module from water intrusion and environmental contaminants. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Each emitter is optically controlled by a Reflector-Prism injection molded from H12 acrylic (3 types per module; one from 0° - 50°; one from 50° - 65°; one from 65° - 72°). Each Reflector-Prism has indexing pins for aiming and is secured to an optical plate made of matte black anodized aluminum. The optical plate locates every Reflector-Prism over an emitter. Reflector-Prisms are secured to the optical plate with a UV curing adhesive. The Reflector-Prisms are arrayed to produce IES Type II, III, IV, and V-SQ distributions. The entire Optical Module is field rotatable in 90° increments. Both module and drivers are factory wired using water resistant, insulated cord. Lens, module and drivers are field replaceable.

LED EMITTERS

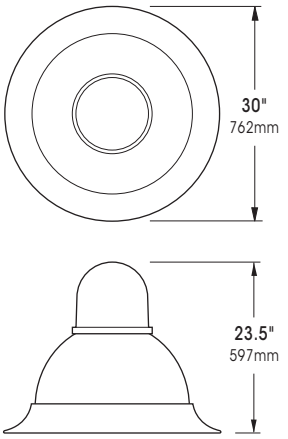
High Output LED's are driven at 350mA for nominal 1 Watt output each or 525mA for nominal 1.5 Watt output each. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Consult Factory for other LED options.

LED DRIVER

UL and CUL recognized High Power Factor, Constant Current LED drivers operate on input voltages from 120-277VAC, 50/60hz. Consult Factory for 347-480VAC. Driver is mechanically fastened to a retaining bracket. Main power quick disconnect provided. Driver has a minimum 4KV of internal surge protection, 10KV & 20KV Surge Protector optional. Dimming and High-Low Driver options available.

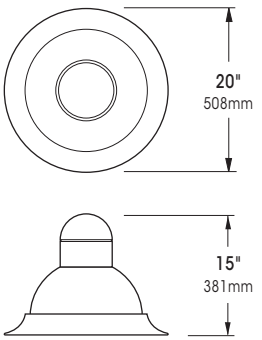
FINISH

Electrostatically applied TGIC Polyester Powder Coat on substrate prepared with 20 PSI power wash at 140°F. Four step iron phosphate pretreatment for protection and paint adhesion. 400°F bake for maximum hardness and durability. Texture finish is standard.



DSS1

PATENT PENDING



DSS2

PATENT PENDING

U.L. Listed for wet location

MADE IN THE USA

2013174

U.S. Architectural Lighting

660 West Avenue O, Palmdale, CA 93551
Phone (661) 233-2000 Fax (661) 233-2001
www.usaltg.com

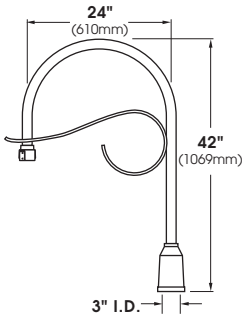
U.S. ARCHITECTURAL LIGHTING

DSS SERIES - LED

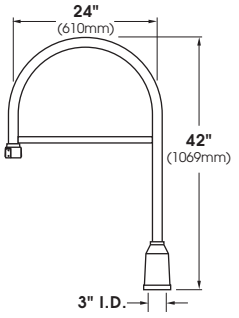
S P E C I F I C A T I O N S

MOUNTING STYLES

XPD

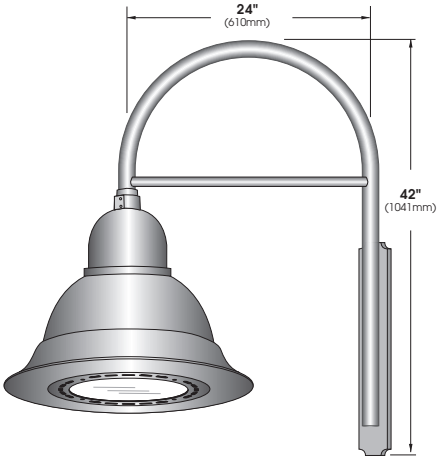


XPS



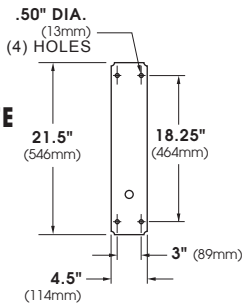
ARMS ARE HEAVY WALL EXTRUDED ALUMINUM CONSTRUCTION. FOR ADDITIONAL ARM OPTIONS SEE ARM SECTION.

WALL MOUNT

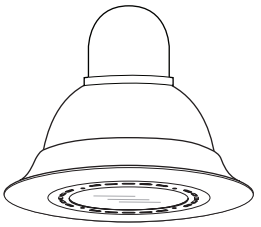


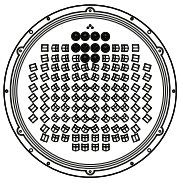
ARM BRACKET EXTRUDED AND CAST ALUMINUM CONSTRUCTION,

WALL PLATE



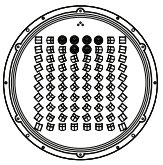
VLED® MODULES





120 LED Module

DSS1 E.P.A.= 1.72
Available in:
120, 100, 80 & 64
LED Module



80 LED Module

DSS2 E.P.A.= 0.71
Available in:
80, 64 & 48
LED Module

MAX INPUT WATTAGE

# OF LED's	DRIVE CURRENT 350mA	525mA
120	131W	198W
100	110W	164W
80	91W	130W
64	70W	105W
48	53W	79W

O R D E R I N G I N F O R M A T I O N

LUMINAIRE	OPTICS	# of LED's DRIVE CURRENT COLOR VOLTAGE	MOUNTING	FINISH	OPTIONS

LUMINAIRE

LUMINAIRE

- ☐ **DSS1**
- ☐ **DSS2**

OPTICS

VLED® IES DISTRIBUTION TYPE

- ☐ **VLED - II** . . . . (Type-II)
- ☐ **VLED - III** . . . . (Type-III)
- ☐ **VLED - IV** . . . . . (Type-IV)
- ☐ **VLED - VSQ** . . . (Type-VSQ)

LED

# of LED's

DSS1
- ☐ **120LED**
- ☐ **100LED**
- ☐ **80LED**
- ☐ **64LED**

DSS2
- ☐ **80LED**
- ☐ **64LED**
- ☐ **48LED**

DRIVE CURRENT
- ☐ **350mA**
- ☐ **525mA**

COLOR
- ☐ **NW (4000K)** *STANDARD
- ☐ **CW (5000K)**
- ☐ **WW (3000K)**

OTHER LED COLORS AVAILABLE CONSULT FACTORY

VOLTAGE
- ☐ **120**
- ☐ **208**
- ☐ **240**
- ☐ **277**
- ☐ **347**
- ☐ **480**

MOUNTING

ARM MOUNT
- ☐ **XPD** ☐ **XPS**
- ☐ **1** . . . . . .

WALLMOUNT
- ☐ **WM** . . . . . .

FINISH

STANDARD TEXTURED FINISH
- ☐ BLACK **RAL-9005-T**
- ☐ WHITE **RAL-9003-T**
- ☐ GREY **RAL-7004-T**
- ☐ DARK BRONZE **RAL-8019-T**
- ☐ GREEN **RAL-6005-T**

FOR SMOOTH FINISH REMOVE SUFFIX "T" (EXAMPLE: RAL-9500)

SEE USALTG.COM FOR ADDITIONAL COLORS

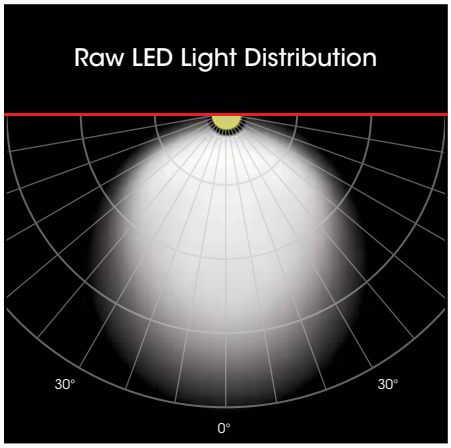
OPTIONS

- ☐ INTERNAL HOUSE SIDE SHIELDS. . . **HS**
- ☐ EXTERNAL HOUSE SIDE SHIELD. . . **EHS**
- ☐ DIMMABLE DRIVER(S) (0-10V). . . . . **DIM**
- ☐ HIGH-LOW DIMMING FOR HARDWIRED SWITCHING OR NON-INTEGRATED MOTION SENSOR . . . . . **HLSW**
- ☐ PHOTO CELL + VOLTAGE (EXAMPLE: PC120V) . . . . **PC+V**
- ☐ 10KV SURGE PROTECTOR. **10SP**
- ☐ 20KV SURGE PROTECTOR (277V & 480V Only) **20SP**

660 West Avenue O, Palmdale, CA 93551
Phone (661) 233-2000 Fax (661) 233-2001
www.usaltg.com

U.S. ARCHITECTURAL LIGHTING

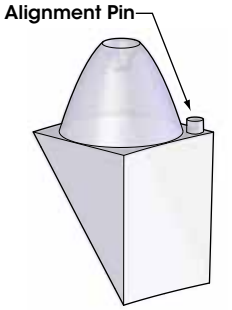
Optical Control



Challenge:

LED's offer a tremendous opportunity to conserve energy and provide precise placement of illumination. To take advantage of these qualities, it is essential to utilize the full output of each LED, given their relatively low illumination level when measured individually - - all without compromising life expectancy or efficacy. The output of an array of LED's must then be redirected efficiently to reproduce standard IES distribution types at illumination levels comparable to those produced by HID lamps.

VLED™ Solution:

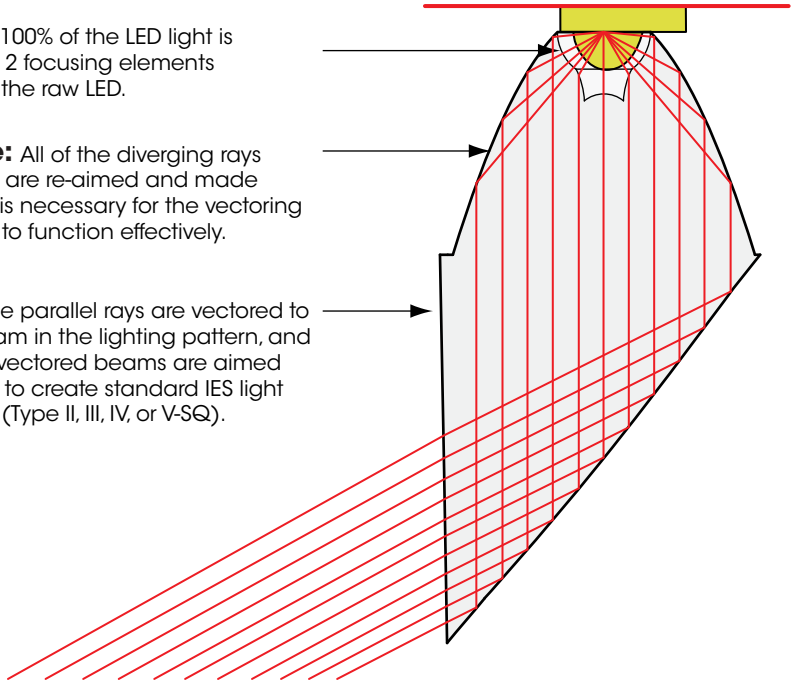


VLED™ Reflector-Prism for distribution pattern perimeter (high-angle). Note alignment pin for precise aiming.

Capture: 100% of the LED light is captured by 2 focusing elements surrounding the raw LED.

Collimate: All of the diverging rays from the LED are re-aimed and made parallel. This is necessary for the vectoring prism below to function effectively.

Vector: The parallel rays are vectored to create a beam in the lighting pattern, and the array of vectored beams are aimed (combined) to create standard IES light distributions (Type II, III, IV, or V-SQ).



Result:

The VLED™ system of three Reflector-Prisms with independent vertical control.