



OTTER CREEK ENGINEERING

July 8, 2020

Mr. Paul Berlejung
Town of Bradford
172 North Main Street, P.O. Box 339
Bradford, VT 05033

Subject: Tri-Valley Transit – Stagecoach Bus Storage and Office
Application for Town of Bradford Zoning Permit

Dear Mr. Berlejung:

On behalf of our client, Tri-Valley Transit, we are pleased to provide for your review the enclosed permit application for construction of a bus storage facility and administrative offices located at #2 Plateau Acres in Bradford.

We have enclosed the following to facilitate your review:

1. Project Narrative
2. Signed and completed Town of Bradford Zoning Permit Application Form,
3. Permit application fee in the amount of \$345 payable to "Town of Bradford",
4. Project location map,
5. Zoning District map,
6. Full size (24 x36) boundary survey drawing dated 12/15/2010, as prepared by Paul R. Hodge of the State of Vermont Agency of Transportation.
7. Full size (24 x36) drawing titled "Site Plan" pages C100-C102, dated 6/15/2020 as prepared by Otter Creek Engineering, Inc.,
8. Reduced scale (11 x17), color rendered building elevations, dated 7/1/2020 as prepared by Black River Design,
9. Full size, drawing titled "Floor Plan" pages A101, dated 7/1/2020 as prepared by Black River Design,
10. Full size (24 x36) drawing numbered ESL1, titled "Site Lighting", dated 6/24/2020 as prepared by Engineering Services of Vermont,
11. Lighting catalog cut sheets of proposed lighting fixtures.
12. Water/wastewater allocation letter from Town of Bradford Water & Sewer Commission dated June 16, 2020.

Thank you in advance for your review and consideration of this application. Should you have any questions or require additional information, please give me a call.

Sincerely,

Brent F. Rakowski, P.E.
Senior Project Engineer

c: Jim Moulton – Tri-Valley Transit (reduced size plans)
Michele Boomhower – Vermont Agency of Transportation (reduced size plans)

Enclosures /12/
963-003 P2

PO Box 712 404 East Main Street East Middlebury, Vermont 05740 802.382.8522
110 Merchants Row 4th Floor, Suite 15 Rutland, Vermont 05701 802.747.3080

www.OtterCrk.com

Tri-Valley Transit is planning the construction of a bus storage facility with administrative offices at #2 Plateau Acres in Bradford, VT. The 10.2 acre parcel is owned by State of Vermont Agency of Transportation and will be part of a long term lease to Tri-Valley Transit. The project site is located in a previously undisturbed area behind the Vermont Agency of Transportation's park and ride lot in the Town's Lower Plain Zoning District. The entrance to the proposed facility will be through the pre-existing entrance to the park and ride.

The bus garage portion of the new facility has a footprint of approximately 6,700 square feet and rises to 25 feet at the highest point of the roof. The building is designed to accommodate up to 8 buses. The roof of the bus storage facility will collect stormwater in a 5,000 gallon rainwater tank for use in washing buses. After washing, the reused water will exit through floor drains, run through an oil and grit separator, and be pumped through a force main to the municipal wastewater system. The administrative offices have a footprint of approximately 1,000 square feet and are attached to the east side of the bus storage and wash facility. The administrative offices will have restroom facilities which will drain via gravity to a grinder pump station which will then pump flows through a forcemain to the Town's wastewater collection system. The building will be sprinklered for fire protection purposes.

The proposed facility will have a gravel (impervious) parking lot with 16 automobile parking spaces, 2 of which will be accessible spaces. Town zoning requires parking for all employees and one space for every 300 sf of floor area. Building is anticipated to have 18 employees total: 6 administrative staff and 12 bus drivers. The office area is approximately 1,000 square feet. Based on this information, zoning dictates a total of 21 spaces (18 employee/worker spaces and 3 additional spaces per floor area). Though this would total 21 spaces, Tri-Valley Transit is requesting a waiver of the parking requirement based on their operational needs

The proposed facility and parking lot will result in a net increase of 0.82 acres of impervious surface. Because there is already existing impervious on the parcel (Park and ride), the resulting impervious area following construction is more than 1 acre total. As a result, a state stormwater discharge permit is required. Dry swales and an infiltration basin will be constructed onsite to treat stormwater. Runoff following treatment will ultimately discharge to the Waits River and Connecticut River

The proposed facility is expected to be served by the Town of Bradford municipal water and sewer service. Water service will be via a connection to the Town's existing waterline which lies to the east of the project site on lands owned by Bradford Community Development Corporation (BCDC). Wastewater service will be by a connection to the Town's municipal sewer system sewer manhole located to the east of the NAPA auto parts store. A forcemain will convey wastewater from the site across lands owned by BCDC, then will cross into the VT Rt25 right-of-way where it will connect into the sewer manhole. Water supply and wastewater design flows are based on the Vermont Environmental Protection Rules. Design water supply flow is 2,020 gallons per day (gpd) and wastewater disposal flow is 1,990 gpd, respectively. An allocation approval letter from the Town is enclosed with the application materials.

The proposed facility is on a 10.8 acre lot and determined to be commercial in nature. Therefore, an ACT 250 Permit Application is required for the project.

The building construction will not have an effect on the character of the neighborhood as the use will remain consistent with the uses currently existing in the area. The project is also not expected to have any burden on the schools.

There is not expected to be any increase in the traffic or circulation issues as a result of the project. The project will be located with direct access to Plateau Acres Drive and the highway system highway as is currently in place. Bus and employee vehicular traffic is not expected to be significant increase over existing conditions.



Town of Bradford
 172 North Main Street, PO Box 339, Bradford, VT 05033
 Phone: (802) 222-4727/ Fax: (802) 222-3520/ E-mail: Zoning@bradford-vt.us
 Website: www.bradford-vt.us

PERMIT #

ZONING/BUILDING APPLICATION

Name of Landowner: Vermont Agency of Transportation, c/o Michele Boomhower

Mailing Address: 219 North Main Street

City/Town: Barre State: VT Zip code: 05641

Phone: (802) 505-3480 Property Location/ 911 #: 2 Plateau Acres, Bradford, VT 05033

Parcel ID #: 09-27-0165 Deed Reference: Book: 59/60 Page (s) 12-14/293-295

APPLICANT/CONTACT INFORMATION (Relationship to Landowner)

Owner (If so, skip to site information) Lessee Contractor under purchase contract

Name of Applicant: Jim Moulton Mailing Address: 297 Creek Road

City/Town: Middlebury State: VT Zip Code 05753

Company (if any): Tri-Valley Transit Phone (Day): (802) 388-2287

SITE INFORMATION

Nature of Project: Bus Storage facility and administrative offices. Zone: LP Lot Size: 10.80

Building Length: 106' Width: 80' 2" # of Stories: 1 Height: 35'
 Number of Bed Rooms: 0 # of Full Bath 0 1/2 Baths: 2 Total # of All Rooms: 12
 Setbacks: Road Right of Way: ~200' Rear: ~350' Side: ~90' Side: ~350'
 Stream/Pond: 7100 ft Road Frontage: < 500' Amount of off Street parking: 16

Type of Water System: Public Drilled Well Shallow Well
 Type of Septic System: Public Single Septic Multiple Septic
 Septic Design on File: Yes No State Wastewater Permit #: Pending
 New Curb Cut: Yes No New Driveway Yes No Access Permit# _____

 Town of Bradford Access Permits require a separate application form. State Permits may also be required for your project. Please contact a state permit specialist at 802-476-0195 to determine whether you need any state permits.

I, the undersigned, request a zoning/building permit for the use and/or construction stated, to be issued on the basis of the representation contained in this application and any required submission materials. I fully understand that any incorrect or misleading representations may result in the permit becoming void and that legal action may be initiated by the Town of Bradford. I further understand that the permit may contain conditions with which I will be required to comply.

I agree to allow Town of Bradford personnel access to the property to review all aspects of this application. The below signed hereby agrees that the proposed work shall be done accordance with the application, plan, specifications and associated documentation and that the work shall conform to all applicable Town ordinances and regulations.

NOTICE: ALL PORJECTS SHALL COMPLY WITH VERMONT ENERGY CODE PRIOR TO THE ISSUANCE OF A REQUIRED CERTIFICATE OF COMPLIANCE

Applicant Signature: [Signature] Landowner Signature Michele Boomhower Digitally signed by Michele Boomhower Date: 2020.07.01 08:01:41 -0707 Date: 07/01/2020

Please attach a sketch of the property drawn to approximate to scale on a separate sheet showing the dimension of the lots, any existing and proposed structures, septic systems, water supply, driveways, right-of-way and utilities.

NOTE: The Zoning/Building Permit & Recording Fees are REQUIRED with each Application in addition to any other applicable fees listed below.

- Non-construction \$30.00
- Construction <600 Sq. Ft. \$30.00
- Construction >600 Sq. Ft. \$50.00
- Extraction \$300.00
- Site Plan Review \$75.00
- Conditional Use \$75.00
- Combined Review \$125.00 if both Planning & ZBA review project
- Appeals \$75.00
- Variance \$75.00

X RECORDING FEE \$20.00 (REQUIRED WITH EACH APPLICATION)

TOTAL FEES: \$ 345

PAYABLE TO: TOWN OF BRADFORD

FOR OFFICE USE ONLY:

PERMIT NUMBER: _____ DATE RECEIVED: _____ RECEIVED: _____

Zoning Administrator's Decision

Approved _____ Denied _____ Reason for Denial: _____

REFERRED to the PLANNING COMMISSION for REVIEW on: _____

REFERRED to the ZONING BOARD OF ADJUSTMENT for REVIEW on: _____

Planning Commission or Zoning Board of Adjustment Decision

ZONING BOARD OF ADJUSTMENT HEARING on _____ Decision Date _____

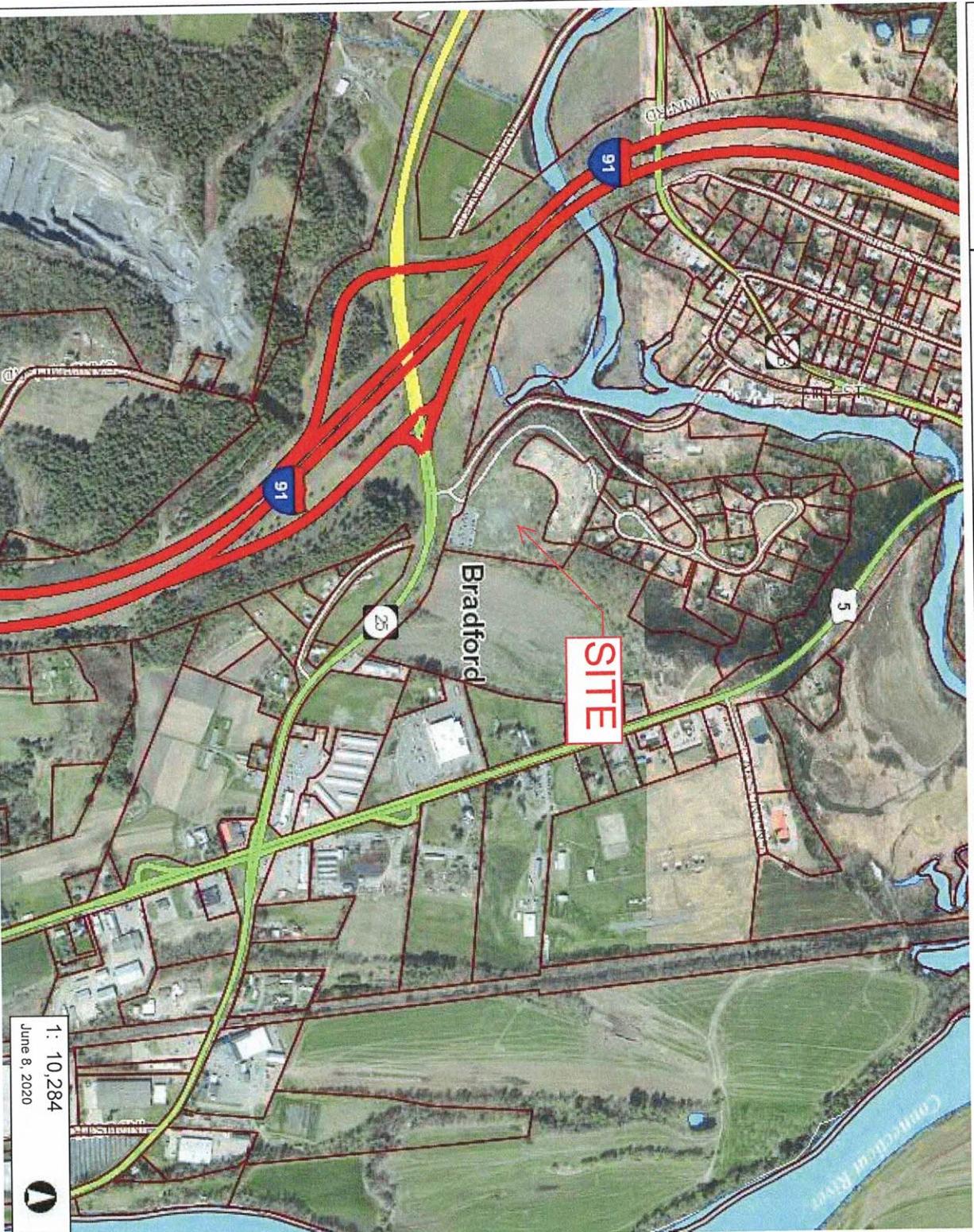
PLANNING COMMISSION HEARING on _____ Decision Date _____

REQUIREMENT OR COMMENTS: _____

Signatures: _____
Selectboard Zoning Administrator Date
Robert Wing

APPEAL RIGHTS: An interested person may appeal any decision by the Zoning Administrator to the Zoning Board of Adjustment in accordance with 24 VSA, Chapter 117, §4465, in writing, within 15 days of the date of such decision. The fee is \$75.00. An interested person who has participated in the municipal regulatory proceeding may appeal the decision rendered in that proceeding by the appropriate municipal panel (Planning Commission or Zoning Board of Adjustment) to the Environmental Court in accordance with 24 VSA, Chapter 117, §4471, in writing within 30 days of the date of such decision. If you fail to appeal a decision, your right to challenge the decision at some future time may be lost because you waited too long. You will be bound by the decision, pursuant to 24 VSA §447(d)

___ Applicant ___ Listers ___ Post ___ 911 Coordinator ___ ZA Copy



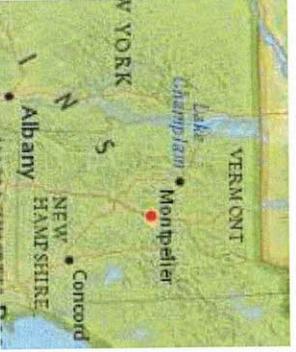
522.0 0 261.00 522.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 857 Ft. 1cm = 103 Meters

© Vermont Agency of Natural Resources THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

1: 10,284
June 8, 2020



LEGEND

- River Corridor Easement
- Parcels (standardized)
- Parcels (non-standardized)
- Roads**
- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- Not part of function Classification S
- Waterbody
- Stream/River
- Town Boundary

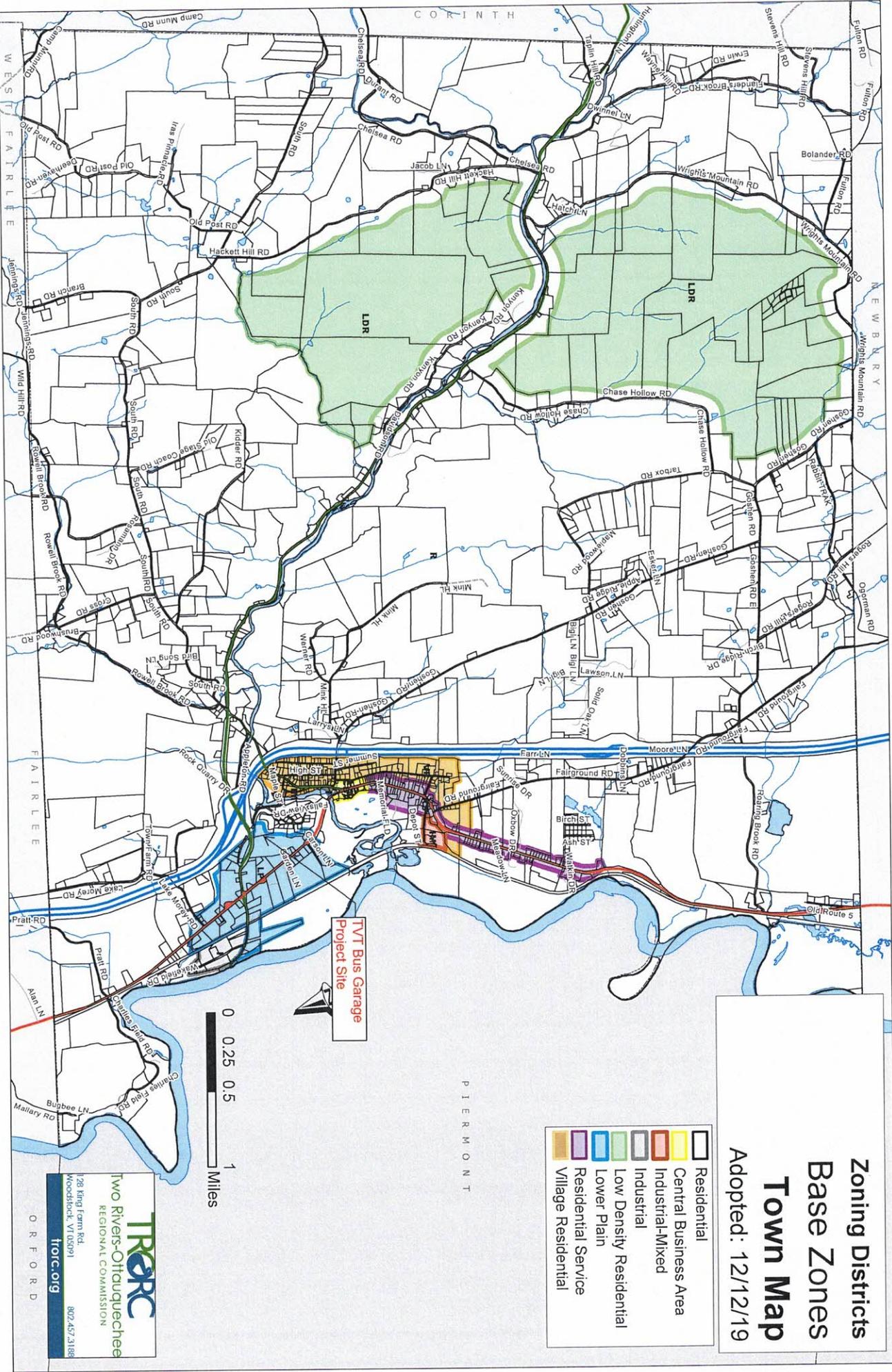
NOTES

Map created using ANR's Natural Resources Atlas

Zoning Districts Base Zones Town Map

Adopted: 12/12/19

- Residential
- Central Business Area
- Industrial-Mixed
- Industrial
- Low Density Residential
- Lower Plain
- Residential Service
- Village Residential



I/VT Bus Garage
Project Site

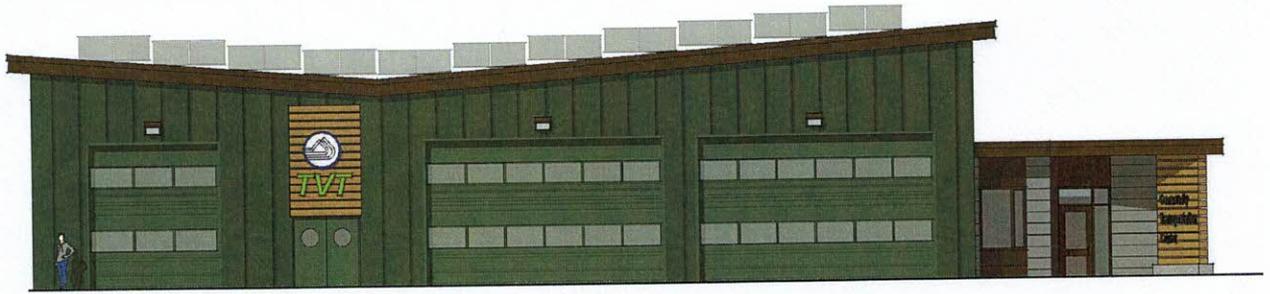


TRARC
Two Rivers-Ottawa-Quebec
REGIONAL COMMISSION

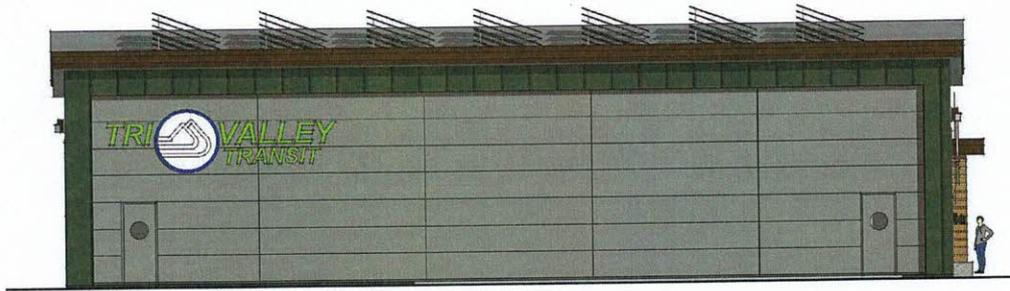
128 King Farm Rd.
Woodstock, VA 05091
802-457-2188

trarc.org

ORFORD



SOUTH ELEVATION

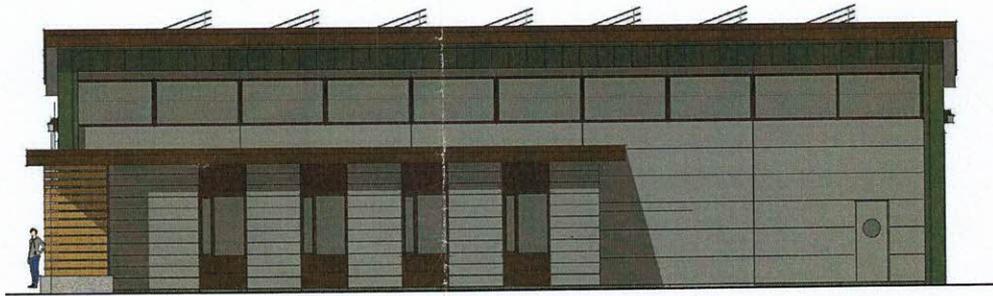


WEST ELEVATION

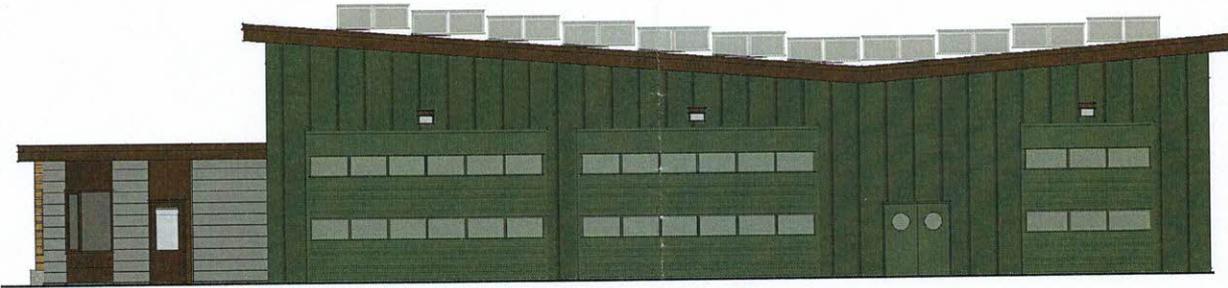


PROPOSED TRANSPORTATION CENTER

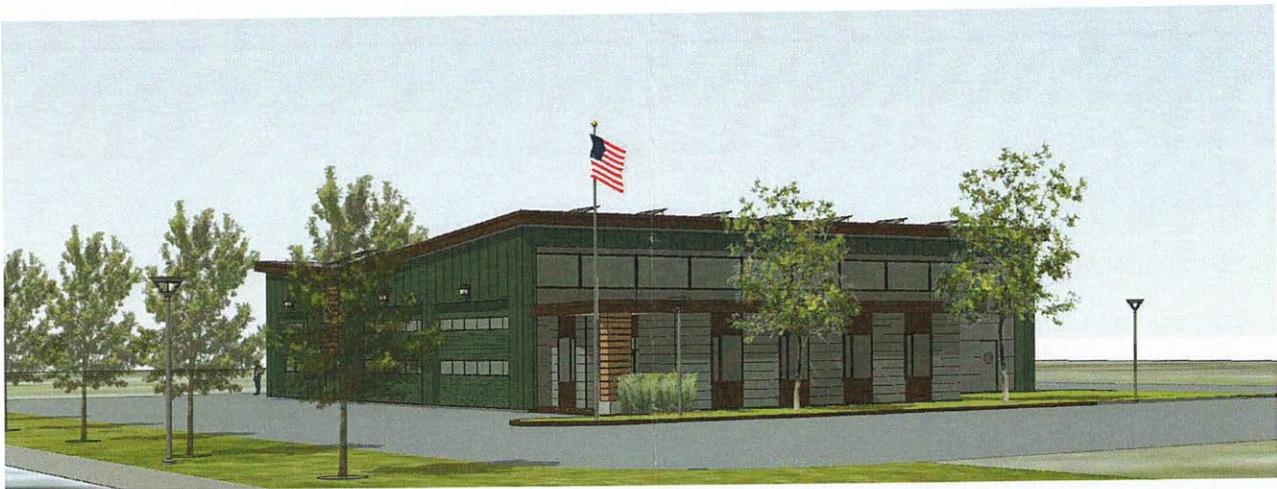
Upper Valley Community Transportation Center
Bradford, VT July 1, 2020



EAST ELEVATION



NORTH ELEVATION



LIGHTOLIER

by @signify

Downlighting

SlimSurface LED

S5R, S7R & S10R Round 5", 7" and 10" Apertures

UVCTC - Bradford
TYPE A



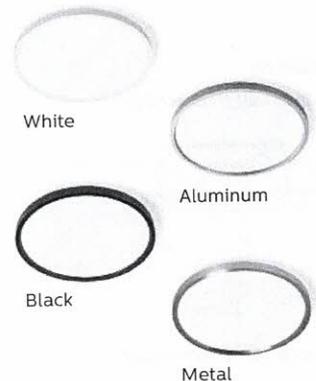
SlimSurface is a 5/8" thick LED surface mounted luminaire with the appearance of a recessed downlight. Easy to install into most standard j-boxes, the SlimSurface round apertures are available as a 5" 650lm, 7" 1000lm and 10" 2200lm fixture.

Project: _____
 Location: _____
 Cat.No: _____
 Type: _____
 Lamps: _____ Qty: _____
 Notes: _____

Ordering guide

example: S5R830K7AL

Series	CRI	CCT	Lumens	Finish	Dimming
S5R SlimSurface 5" Round	8 80 9 90 ¹	27K 2700K 30K 3000K 35K 3500K 40K 4000K	7 650lm	— White AL Aluminum BK Black	blank ELV / Triac (120V)
A1				W White AL Aluminum BK Black	Z10U 0-10V (120V-277V)
S7R SlimSurface 7" Round	8 80 9 90 ¹	27K 2700K 30K 3000K 35K 3500K 40K 4000K	10 1000lm	— White AL Aluminum BK Black	blank ELV / Triac (120V)
A2				W White AL Aluminum BK Black	Z10U 0-10V (120V-277V)
S10R SlimSurface 10" Round ²	8 80 9 90 ¹	27K 2700K 30K 3000K 35K 3500K 40K 4000K	22 2200lm	W White AL Aluminum BK Black MT Metallic	blank ELV / Triac (120V) Z10U 0-10V (120V-277V)
A3					



1. Configurations using 90 CRI are only available with 2700K & 3000K CCT.
 2. SlimSurface LED 10" round installs into 4-11/16" J-box (not wet location listed).

Features

- Flange:** One piece plastic flange. Injection molded white, applied aluminum or black.
- Lens:** High transmittance lens allowing for smooth, comfortable light pattern.
- Power supply:** Integral class 2 driver. Factory wired electronic LED driver (see Electrical section for specifications)
- LED Strip:** Utilizes LEDs.
- Lifetime:** Expected lifetime 50,000 hours and backed by a 5-year warranty*
- Compliance:** Non-conductive fixture for shower light application (not applicable to metal trim model).

Dimming

Intended for ELV/Triac (120V) or 0-10V dimming (120V-277V) based on the configuration. Min 90°C supply conductors.

Electrical

Electronic power supply: RoHS compliant. Class 2 power unit. Unit tolerates sustained open and short circuit output conditions without damage.

Electrical specifications	Dimming	Input volts	Input frequency	Input current	Input Power	THD Factor	Power Factor	Minimum Operating Temp.
Slim 5" 650lm	Triac	120V	50/60Hz	0.08A	9.5W	<15%	>0.9	-20°C
	0-10V	120V	50/60Hz	0.09A	10.1W	<20%	>0.9	-20°C
		277V	50/60Hz	0.04A	10.2W	<20%	>0.9	-20°C
Slim 7" 1000lm	Triac	120V	50/60Hz	0.13A	14.2W	<15%	>0.9	-20°C
	0-10V	120V	50/60Hz	0.12A	14.4W	<20%	>0.9	-20°C
		277V	50/60Hz	0.06A	14.7W	<20%	>0.9	-20°C
Slim 10" 2200lm	Triac	120V	50/60Hz	0.20A	23.2W	<20%	>0.9	-20°C
	0-10V	120V	50/60Hz	0.20A	23.2W	<10%	>0.95	-20°C
		277V	50/60Hz	0.09A	24.6W	<15%	>0.95	-20°C

For more details, please see LED-DIM-DL spec sheet.
 * See Philips.com/warranties for warranty details.

Labels

cULus listed. ENERGY STAR® certified. All models are damp location rated for walls or ceilings. The 5" & 7" are suitable for ceiling mount wet locations when installed per instructions.



S5R, S7R & S10R SlimSurface LED

Round 5", 7" and 10" Apertures

Compatibility

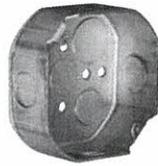
Installs into standard J-box applications for 5" & 7" models (for 10" model fixture install into 4-11/16" J-box):



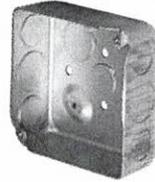
3 1/2" round (plastic)



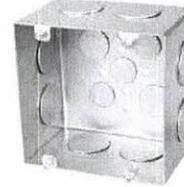
4" square (plastic)
Not compatible with S5R



4" octagonal (metal)



4" square (metal)
Not compatible with S5R



4 11/16" square (metal)
Compatible with S10R only

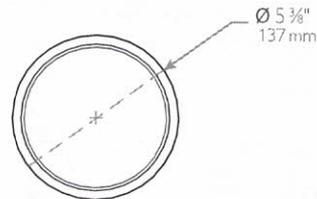
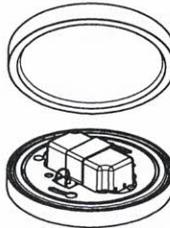
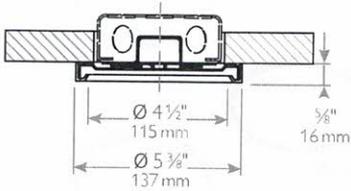


Fire rated J-box
Fire rated classification is per the ceiling and junction box ratings.

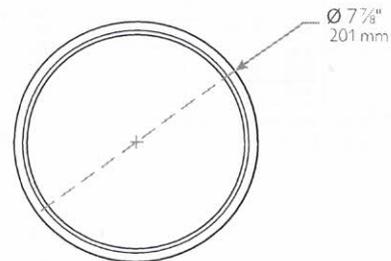
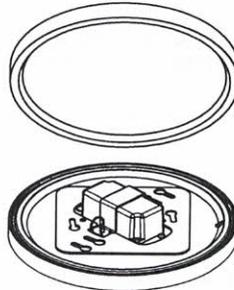
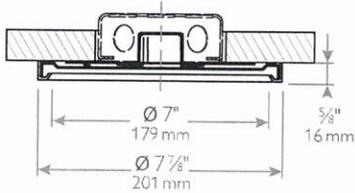
Note: A 2 1/8" deep octagon junction box is recommended for through circuit wiring applications.

Dimensions

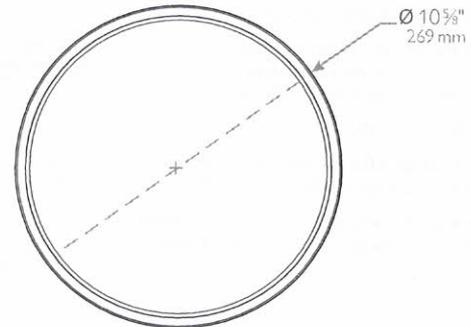
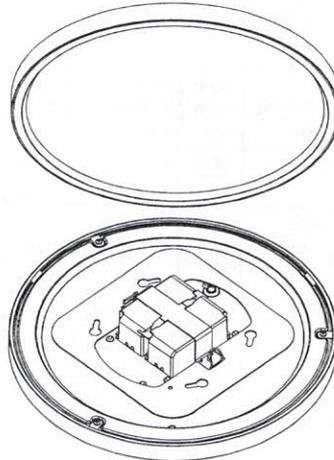
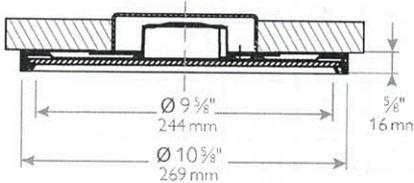
SlimSurface LED 5" downlight



SlimSurface LED 7" downlight



SlimSurface LED 10" downlight

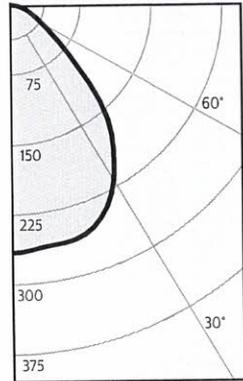


S5R, S7R & S10R SlimSurface LED

Round 5", 7" and 10" Apertures

S5R927K7 • 10W LED, 90CRI, 2700K

Candela Curves



Angle	Mean CP	Lumens
0	266	25
5	263	
10	261	
15	260	736
20	254	
25	239	110
30	217	
35	190	118
40	160	
45	118	91
50	81	
55	55	51
60	40	
65	30	31
70	23	
75	18	18
80	11	
85	4	5
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	11	6.0'
6'	7	7.2'
7'	5	8.4'
8'	4	9.6'
9'	3	10.8'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	21.8	0.40
6'	14.2	0.26
7'	10.2	0.19
8'	8.5	0.16
9'	6.8	0.13

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
Wall	Zonal cavity method - Effective floor reflectance = 20%											
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	105	98	100	95	97	92	88
	2	102	96	90	85	94	84	90	82	87	80	77
	3	95	86	79	73	84	73	82	72	79	70	67
	4	88	78	70	64	76	64	74	63	72	62	60
	5	82	71	63	57	70	57	68	56	66	56	53
	6	76	64	57	51	64	51	62	50	60	50	48
	7	71	59	51	46	58	46	57	45	56	45	43
	8	67	54	47	42	54	41	53	41	51	41	39
	9	63	50	43	38	50	38	49	38	48	37	36
	10	59	47	40	35	46	35	45	34	44	34	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	208	39.8%
0-40	326	62.5%
0-60	469	89.7%
0-90	522	100.0%

CRI and CCT adjustment factors

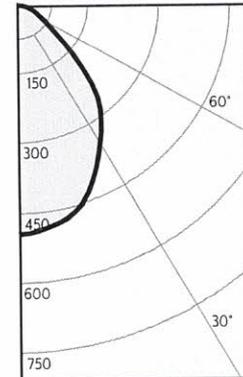
90 CRI 2700K = 84%
80 CRI 2700K = 100%
80 CRI 3000K = 100%
80 CRI 3500K = 105%
80 CRI 4000K = 109%

Report: 1053GFR

Output lumens:	523 lms	Efficacy:	57.4 lm/w
Spacing Criterion:	1.2	CCT ³ :	2700K
Beam Angle:	87°	CRI:	90 min
Input Watts ² :	9.1W		

S7R927K10 • 14W LED, 90CRI, 2700K

Candela Curves



Angle	Mean CP	Lumens
0	496	46
5	490	
10	479	
15	464	130
20	433	
25	391	180
30	348	
35	309	193
40	265	
45	197	152
50	135	
55	92	85
60	68	
65	51	52
70	40	
75	30	32
80	21	
85	9	10
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	20	5.5'
6'	14	6.6'
7'	10	7.7'
8'	8	8.8'
9'	6	9.9'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	21.8	2.89
6'	14.2	1.90
7'	10.2	1.35
8'	8.5	1.13
9'	6.8	0.90

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
Wall	Zonal cavity method - Effective floor reflectance = 20%											
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	104	98	100	95	96	92	88
	2	102	96	90	85	94	84	90	82	87	80	77
	3	95	86	79	74	85	73	82	72	79	71	67
	4	88	78	70	65	77	64	74	63	72	62	60
	5	82	71	63	57	70	57	68	56	66	56	53
	6	76	65	57	51	64	51	62	51	61	50	48
	7	71	59	52	46	59	46	57	46	56	45	43
	8	67	55	47	42	54	42	53	42	52	41	39
	9	63	51	43	38	50	38	49	38	48	38	36
	10	59	47	40	35	47	35	46	35	45	35	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	356	40.5%
0-40	549	62.4%
0-60	786	89.3%
0-90	880	100.0%

CRI and CCT adjustment factors

90 CRI 2700K = 84%
80 CRI 2700K = 100%
80 CRI 3000K = 100%
80 CRI 3500K = 105%
80 CRI 4000K = 109%

Report: 962GFR

Output lumens:	880 lms	Efficacy:	65.2 lm/w
Spacing Criterion:	1.1	CCT ³ :	2700K
Beam Angle:	83°	CRI:	90 min
Input Watts ² :	13.5W		

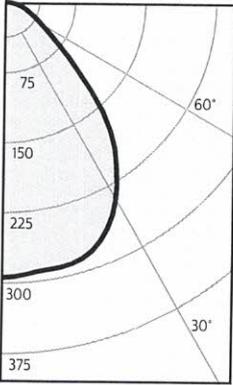
1. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.
2. Wattage: controlled to within 5%
3. Correlated Color Temperature: within specs as defined in ANSI_NEMA_ANSI C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.

S5R, S7R & S10R SlimSurface LED

Round 5", 7" and 10" Apertures

S5R827K7 • 10W LED, 80CRI, 2700K

Candela Curves



Angle	Mean CP	Lumens
0	294	
5	291	28
10	289	
15	288	81
20	281	
25	265	121
30	241	
35	211	131
40	178	
45	131	102
50	91	
55	62	57
60	45	
65	34	34
70	26	
75	20	21
80	13	
85	4	5
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	12	6.0'
6'	8	7.2'
7'	6	8.4'
8'	5	9.6'
9'	4	10.8'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	24.2	2.77
6'	15.8	1.82
7'	11.3	1.30
8'	9.5	1.08
9'	7.5	0.87

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	105	105	100	95	97	92	88
	2	102	96	90	85	94	94	90	82	87	80	77
	3	95	86	79	73	84	84	82	72	79	70	67
	4	88	78	70	64	76	76	74	63	72	62	60
	5	82	71	63	57	70	70	68	56	66	56	53
	6	76	64	57	51	64	64	62	50	60	50	48
	7	71	59	51	46	58	58	57	45	56	45	43
	8	67	54	47	42	54	54	53	41	51	41	39
	9	63	50	43	38	50	50	49	38	48	37	36
	10	59	47	40	35	46	46	45	34	44	34	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	231	39.7%
0-40	362	62.3%
0-60	521	89.6%
0-90	581	100.0%

CRI and CCT adjustment factors

90 CRI 2700K = 84%
80 CRI 2700K = 100%
80 CRI 3000K = 100%
80 CRI 3500K = 105%
80 CRI 4000K = 109%

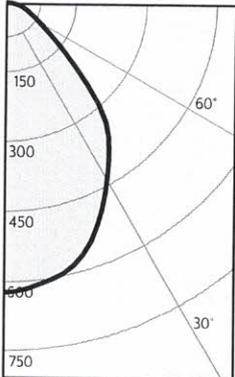
Report: 1054GFR

Output lumens: 581lms
Spacing Criterion: 1.2
Beam Angle: 87°
Input Watts: 9.3W

Efficacy: 62.5lm/w
CCT: 2700K
CRI: 80min

S7R827K10 • 14W LED, 80CRI, 2700K

Candela Curves



Angle	Mean CP	Lumens
0	625	
5	618	59
10	604	
15	584	164
20	546	
25	494	227
30	440	
35	390	244
40	337	
45	250	193
50	170	
55	117	108
60	85	
65	65	65
70	51	
75	39	41
80	27	
85	12	13
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	25	5.5'
6'	17	6.6'
7'	13	7.7'
8'	10	8.8'
9'	8	9.9'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	24.2	3.68
6'	15.8	2.42
7'	11.3	1.73
8'	9.5	1.44
9'	7.5	1.15

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	104	98	100	95	96	92	88
	2	102	96	90	85	94	84	90	82	87	80	77
	3	95	86	79	74	85	73	82	72	79	71	67
	4	88	78	70	65	77	64	74	63	72	62	60
	5	82	71	63	57	70	57	68	56	66	56	53
	6	76	65	57	51	64	51	62	51	61	50	48
	7	71	59	52	46	59	46	57	46	56	45	43
	8	67	55	47	42	54	42	53	42	52	41	39
	9	63	51	43	38	50	38	49	38	48	38	36
	10	59	47	40	35	47	35	46	35	45	35	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	449	40.4%
0-40	693	62.3%
0-60	994	89.3%
0-90	1113	100.0%

CRI and CCT adjustment factors

90 CRI 2700K = 84%
80 CRI 2700K = 100%
80 CRI 3000K = 100%
80 CRI 3500K = 105%
80 CRI 4000K = 109%

Report: 964GFR

Output lumens: 1113lms
Spacing Criterion: 1.1
Beam Angle: 83°
Input Watts: 13.4W

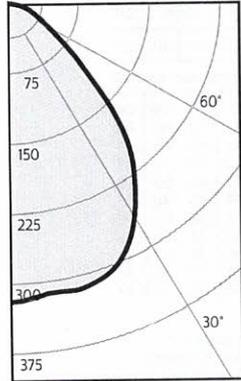
Efficacy: 83.1lm/w
CCT: 2700K
CRI: 80min

S5R, S7R & S10R SlimSurface LED

Round 5", 7" and 10" Apertures

S5R830K7 • 10W LED, 80CRI, 3000K

Candela Curves



Angle	Mean CP	Lumens
0	319	30
5	315	30
10	313	30
15	313	88
20	306	88
25	290	131
30	264	131
35	231	142
40	197	142
45	146	109
50	100	62
55	69	62
60	50	37
65	38	37
70	29	22
75	22	22
80	15	6
85	6	6
90	0	6

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	13	6.0'
6'	9	7.2'
7'	7	8.4'
8'	5	9.6'
9'	4	10.8'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	26.2	3.06
6'	17.1	2.01
7'	12.2	1.43
8'	10.2	1.19
9'	8.1	0.96

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
Wall	70	50	30	10	50	10	50	10	50	10	0	
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	105	98	100	95	97	92	88
	2	102	96	90	85	94	84	90	82	87	80	77
	3	95	86	79	73	84	73	82	72	79	70	67
	4	88	78	70	64	76	64	74	63	72	62	60
	5	82	71	63	57	70	57	68	56	66	56	53
	6	76	64	57	51	64	51	62	50	60	50	48
	7	71	59	51	46	58	46	57	45	56	45	43
	8	67	54	47	42	54	41	53	41	51	41	39
	9	63	50	43	38	50	38	49	38	48	37	36
	10	59	47	40	35	46	35	45	34	44	34	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	249	39.7%
0-40	391	62.3%
0-60	562	89.6%
0-90	628	100.0%

CRI and CCT adjustment factors

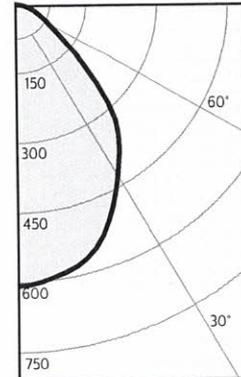
90CRI 2700K = 84%
80CRI 2700K = 100%
80CRI 3000K = 100%
80CRI 3500K = 105%
80CRI 4000K = 109%

Report: 1055GFR

Output lumens:	628 lms	Efficacy:	69.0 lm/w
Spacing Criterion:	1.2	CCT ³ :	3000K
Beam Angle:	87°	CRI:	80min
Input Watts ² :	9.1W		

S7R830K10 • 14W LED, 80CRI, 3000K

Candela Curves



Angle	Mean CP	Lumens
0	607	57
5	601	57
10	588	57
15	568	159
20	531	159
25	480	221
30	427	221
35	379	237
40	328	237
45	243	187
50	165	105
55	113	105
60	83	63
65	63	63
70	49	39
75	37	39
80	26	13
85	12	13
90	0	13

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	24	5.5'
6'	17	6.6'
7'	12	7.7'
8'	9	8.8'
9'	7	9.9'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	26.2	3.55
6'	17.1	2.33
7'	12.2	1.66
8'	10.2	1.39
9'	8.1	1.11

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
Wall	70	50	30	10	50	10	50	10	50	10	0	
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	104	98	100	95	96	92	88
	2	102	96	90	85	94	84	90	82	87	80	77
	3	95	86	79	74	85	73	82	72	79	71	67
	4	88	78	70	65	77	64	74	63	72	62	60
	5	82	71	63	57	70	57	68	56	66	56	53
	6	76	65	57	51	64	51	62	51	61	50	48
	7	71	59	52	46	59	46	57	46	56	45	43
	8	67	55	47	42	54	42	53	42	52	41	39
	9	63	51	43	38	50	38	49	38	48	38	36
	10	59	47	40	35	47	35	46	35	45	35	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	437	40.4%
0-40	674	62.3%
0-60	966	89.4%
0-90	1081	100.0%

CRI and CCT adjustment factors

90CRI 2700K = 84%
80CRI 2700K = 100%
80CRI 3000K = 100%
80CRI 3500K = 105%
80CRI 4000K = 109%

Report: 961GFR

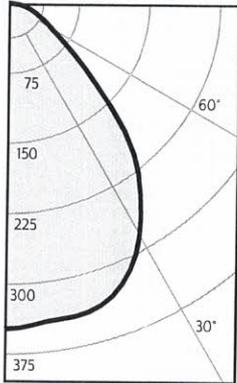
Output lumens:	1081 lms	Efficacy:	80.0 lm/w
Spacing Criterion:	1.1	CCT ³ :	3000K
Beam Angle:	83°	CRI:	80min
Input Watts ² :	13.5W		

S5R, S7R & S10R SlimSurface LED

Round 5", 7" and 10" Apertures

S5R835K7 • 10W LED, 80CRI, 3500K

Candela Curves



Angle	Mean CP	Lumens
0	347	33
5	344	
10	341	
15	340	96
20	332	
25	312	143
30	283	
35	248	155
40	209	
45	154	119
50	107	
55	74	68
60	53	
65	41	41
70	31	
75	23	25
80	15	
85	5	7
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	14	6.0'
6'	10	7.2'
7'	7	8.4'
8'	5	9.6'
9'	4	10.8'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	28.6	3.34
6'	18.7	2.19
7'	13.3	1.56
8'	11.2	1.30
9'	8.9	1.04

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
Wall	Zonal cavity method - Effective floor reflectance = 20%											
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	111	106	100
	1	111	107	103	100	105	98	100	95	95	92	88
	2	102	96	90	85	94	84	90	82	82	80	77
	3	95	86	79	73	84	73	82	72	72	70	67
	4	88	78	70	64	76	64	74	63	63	62	60
	5	82	71	63	57	70	57	68	56	56	56	53
	6	76	64	57	51	64	51	62	50	50	50	48
	7	71	59	51	46	58	46	57	45	45	45	43
	8	67	54	47	42	54	41	53	41	41	41	39
	9	63	50	43	38	50	38	49	38	38	37	36
	10	59	47	40	35	46	35	45	34	34	34	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	272	39.6%
0-40	426	62.2%
0-60	613	89.5%
0-90	685	100.0%

CRI and CCT adjustment factors

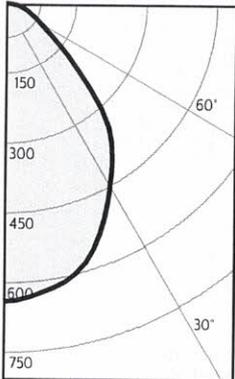
90 CRI 2700K = 84%
80 CRI 2700K = 100%
80 CRI 3000K = 100%
80 CRI 3500K = 105%
80 CRI 4000K = 109%

Report: 1056GFR

Output lumens:	685 lms	Efficacy:	75.3 lm/w
Spacing Criterion:	1.2	CCT ³ :	3500 K
Beam Angle:	87°	CRI:	80 min
Input Watts ² :	9.1W		

S7R835K10 • 14W LED, 80CRI, 3500K

Candela Curves



Angle	Mean CP	Lumens
0	639	60
5	632	
10	618	
15	597	167
20	558	
25	505	232
30	449	
35	399	249
40	345	
45	255	197
50	174	
55	120	111
60	88	
65	67	67
70	52	
75	40	42
80	28	
85	12	13
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	26	5.5'
6'	18	6.6'
7'	13	7.7'
8'	10	8.8'
9'	8	9.9'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	28.6	3.74
6'	18.7	2.45
7'	13.3	1.75
8'	11.2	1.46
9'	8.9	1.17

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
Wall	Zonal cavity method - Effective floor reflectance = 20%											
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	104	98	100	95	96	92	88
	2	102	96	90	85	94	84	90	82	87	80	77
	3	95	86	79	74	85	73	82	72	79	71	67
	4	88	78	70	65	77	64	74	63	72	62	60
	5	82	71	63	57	70	57	68	56	66	56	53
	6	76	65	57	51	64	51	62	51	61	50	48
	7	71	59	52	46	59	46	57	46	56	45	43
	8	67	55	47	42	54	42	53	42	52	41	39
	9	63	51	43	38	50	38	49	38	48	38	36
	10	59	47	40	35	47	35	46	35	45	35	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	459	40.3%
0-40	708	62.2%
0-60	1016	89.2%
0-90	1139	100.0%

CRI and CCT adjustment factors

90 CRI 2700K = 84%
80 CRI 2700K = 100%
80 CRI 3000K = 100%
80 CRI 3500K = 105%
80 CRI 4000K = 109%

Report: 965GFR

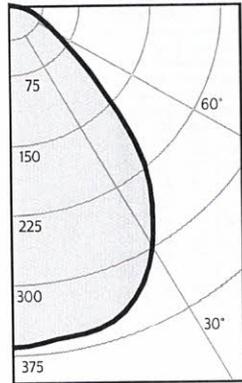
Output lumens:	1139 lms	Efficacy:	84.4 lm/w
Spacing Criterion:	1.1	CCT ³ :	3500 K
Beam Angle:	83°	CRI:	80 min
Input Watts ² :	13.5W		

S5R, S7R & S10R SlimSurface LED

Round 5", 7" and 10" Apertures

S5R840K7 • 10W LED, 80CRI, 4000K

Candela Curves



Angle	Mean CP	Lumens
0	366	35
5	363	
10	360	
15	359	101
20	350	
25	329	151
30	299	
35	262	163
40	221	
45	163	126
50	113	
55	79	72
60	57	
65	44	44
70	34	
75	25	27
80	16	
85	6	7
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	15	6.0'
6'	10	7.2'
7'	7	8.4'
8'	6	9.6'
9'	5	10.8'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	30.3	3.54
6'	19.8	2.32
7'	14.1	1.66
8'	11.8	1.38
9'	9.4	1.10

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
Wall	70	50	30	10	50	10	50	10	50	10	0	
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	105	98	100	95	97	92	88
	2	102	96	90	85	94	84	90	82	87	80	77
	3	95	86	79	73	84	73	82	72	79	70	67
	4	88	78	70	64	76	64	74	63	72	62	60
	5	82	71	63	57	70	57	68	56	66	56	53
	6	76	64	57	51	64	51	62	50	60	50	48
	7	71	59	51	46	58	46	57	45	56	45	43
	8	67	54	47	42	54	41	53	41	51	41	39
	9	63	50	43	38	50	38	49	38	48	37	36
	10	59	47	40	35	46	35	45	34	44	34	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	286	39.5%
0-40	450	62.0%
0-60	648	89.3%
0-90	726	100.0%

CRI and CCT adjustment factors

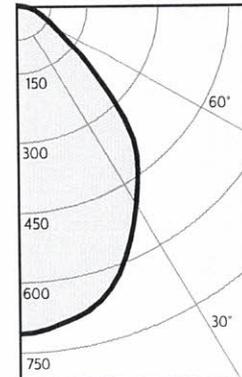
90 CRI 2700K = 84%
80 CRI 2700K = 100%
80 CRI 3000K = 100%
80 CRI 3500K = 105%
80 CRI 4000K = 109%

Report: 1057GFR

Output lumens:	726 lms	Efficacy:	79.8 lm/w
Spacing Criterion:	1.2	CCT ³ :	4000K
Beam Angle:	87°	CRI:	80min
Input Watts ² :	9.1W		

S7R840K10 • 14W LED, 90CRI, 2700K

Candela Curves



Angle	Mean CP	Lumens
0	710	66
5	702	
10	686	
15	663	186
20	620	
25	560	258
30	499	
35	443	276
40	382	
45	283	218
50	193	
55	133	122
60	97	
65	74	74
70	57	
75	44	46
80	30	
85	14	15
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	28	5.5'
6'	20	6.6'
7'	14	7.7'
8'	11	8.8'
9'	9	9.9'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	30.3	4.17
6'	19.8	2.74
7'	14.1	1.96
8'	11.8	1.63
9'	9.4	1.30

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
Wall	70	50	30	10	50	10	50	10	50	10	0	
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	104	98	100	95	96	92	88
	2	102	96	90	85	94	84	90	82	87	80	77
	3	95	86	79	74	85	73	82	72	79	71	67
	4	88	78	70	65	77	64	74	63	72	62	60
	5	82	71	63	57	70	57	68	56	66	56	53
	6	76	65	57	51	64	51	62	51	61	50	48
	7	71	59	52	46	59	46	57	46	56	45	43
	8	67	55	47	42	54	42	53	42	52	41	39
	9	63	51	43	38	50	38	49	38	48	38	36
	10	59	47	40	35	47	35	46	35	45	35	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	510	40.4%
0-40	786	62.3%
0-60	1127	89.3%
0-90	1262	100.0%

CRI and CCT adjustment factors

90 CRI 2700K = 84%
80 CRI 2700K = 100%
80 CRI 3000K = 100%
80 CRI 3500K = 105%
80 CRI 4000K = 109%

Report: 963GFR

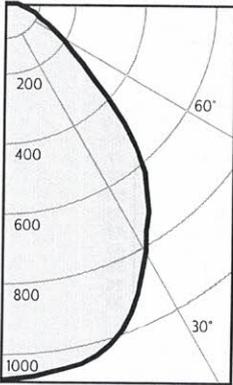
Output lumens:	1262 lms	Efficacy:	94.2 lm/w
Spacing Criterion:	1.1	CCT ³ :	4000K
Beam Angle:	83°	CRI:	80min
Input Watts ² :	13.4W		

S5R, S7R & S10R SlimSurface LED

Round 5", 7" and 10" Apertures

S10R830K22 • 24 W LED, 80CRI, 3000 K

Candela Curves



Angle	Mean CP	Lumens
0	1027	
5	1017	97
10	1008	
15	992	279
20	947	
25	871	399
30	776	
35	685	429
40	597	
45	459	351
50	313	
55	223	204
60	161	
65	122	122
70	93	
75	70	74
80	46	
85	20	23
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	41	5.5'
6'	29	6.6'
7'	21	7.7'
8'	16	8.8'
9'	13	9.9'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	83.4	1.04
6'	54.8	0.68
7'	39.1	0.49
8'	32.6	0.41
9'	26.1	0.33

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	104	98	100	95	96	92	88
	2	102	95	90	85	93	84	90	82	87	80	76
	3	95	86	79	73	84	72	81	71	79	70	67
	4	88	77	70	64	76	63	74	63	71	62	59
	5	82	70	62	56	69	56	67	56	65	55	53
	6	76	64	56	50	63	50	61	50	60	49	47
	7	71	59	51	45	58	45	57	45	55	45	43
	8	66	54	46	41	53	41	52	41	51	41	39
	9	62	50	43	37	49	37	48	37	47	37	35
	10	59	47	39	34	46	34	45	34	44	34	32

Report: S10R927K22BK

Output lumens: 1977 lms
 Spacing Criterion: 1.1
 Beam Angle: 87°
 Input Watts: 23.5W

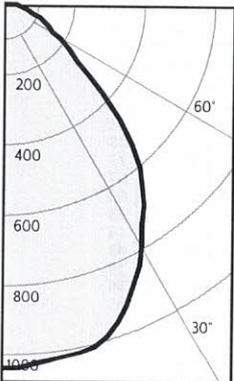
Efficacy: 84.1lm/w
 CCT: 3000K
 CRI: 80min

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	775	39.2%
0-40	1203	60.9%
0-60	1758	88.9%
0-90	1977	100.0%

S10R835K22 • 24 W LED, 80CRI, 3500K

Candela Curves



Angle	Mean CP	Lumens
0	1000	
5	990	94
10	981	
15	966	271
20	922	
25	847	388
30	754	
35	664	416
40	579	
45	442	339
50	300	
55	212	195
60	153	
65	117	117
70	89	
75	67	71
80	44	
85	20	22
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	40	5.5'
6'	28	6.6'
7'	20	7.7'
8'	16	8.8'
9'	12	9.9'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	80.8	1.06
6'	53.0	0.70
7'	37.9	0.50
8'	31.6	0.41
9'	25.2	0.33

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	104	98	100	95	96	92	88
	2	102	95	90	85	94	84	90	82	87	80	76
	3	95	86	79	73	84	72	81	71	79	70	67
	4	88	77	70	64	76	64	74	63	72	62	59
	5	82	70	62	57	69	56	67	56	65	55	53
	6	76	64	56	51	63	50	62	50	60	50	47
	7	71	59	51	45	58	45	57	45	55	45	43
	8	67	54	47	41	54	41	52	41	51	41	39
	9	62	50	43	38	50	38	49	37	48	37	35
	10	59	47	39	35	46	34	45	34	44	34	32

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	754	39.4%
0-40	1170	61.2%
0-60	1703	89.0%
0-90	1913	100.0%

Report: 963GFR

Output lumens: 1913 lms
 Spacing Criterion: 1.1
 Beam Angle: 87°
 Input Watts: 23.9W

Efficacy: 80.0lm/w
 CCT: 3500K
 CRI: 80min

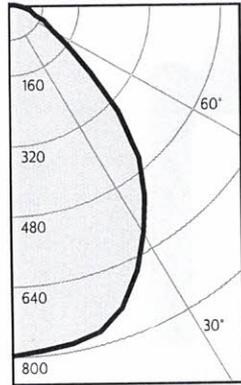
1. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.
2. Wattage: controlled to within 5%
3. Correlated Color Temperature: within specs as defined in ANSI_NEMA_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.

S5R, S7R & S10R SlimSurface LED

Round 5", 7" and 10" Apertures

S10R927K22 • 23 W LED, 90 CRI, 2700 K

Candela Curves



Angle	Mean CP	Lumens
0	794	
5	788	75
10	781	
15	769	216
20	732	
25	669	307
30	595	
35	525	328
40	453	
45	344	265
50	238	
55	162	149
60	116	
65	87	87
70	66	
75	49	52
80	32	
85	13	15
90	0	

Single unit data

Height to Lighted Plane	Initial center beam foot-candles	Beam dia. (ft)*
5'	32	5.5'
6'	22	6.6'
7'	16	7.7'
8'	12	8.8'
9'	10	9.9'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq.ft.
5'	63.3	1.01
6'	41.5	0.66
7'	29.7	0.47
8'	24.7	0.39
9'	19.8	0.32

38'x38'x10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
	70	50	30	10	50	10	50	10	50	10	0	
Wall	Zonal cavity method - Effective floor reflectance = 20%											
RCR												
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	111	107	103	100	105	98	100	95	97	93	88
	2	103	96	90	85	94	84	90	82	87	80	77
	3	95	86	79	74	85	73	82	72	79	70	67
	4	88	78	70	64	77	64	74	63	72	62	60
	5	82	71	63	57	70	57	68	56	66	56	53
	6	76	65	57	51	64	51	62	50	60	50	48
	7	71	59	51	46	58	46	57	45	56	45	43
	8	67	55	47	42	54	42	53	41	52	41	39
	9	63	51	43	38	50	38	49	38	48	38	36
	10	59	47	40	35	46	35	46	35	45	35	33

Zonal lumens & percentages

Zone	Lumens	%Luminaire
0-30	598	40.0%
0-40	925	62.0%
0-60	1339	89.7%
0-90	1493	100.0%

Report: S10R927K22BK

Output lumens:	1493 lms	Efficacy:	65.5 lm/w
Spacing Criterion:	1.1	CCT:	2700 K
Beam Angle:	86°	CRI:	90 min
Input Watts:	22.8 W		



VIPER S

SMALL VIPER LUMINAIRE

FEATURES

- Small size companion to Viper Large
- Wide choice of different LED wattage configurations
- Nine optical distributions
- Designed to replace HID lighting up to 400W MH or HPS
- Suitable for wet locations



*3000K and warmer CCTs only

18' OVERALL HEIGHT
16' POLE, 2' CONCRETE
BASE
277V OPERATION

CONTROL TECHNOLOGY



SPECIFICATIONS

CONSTRUCTION

- Manufactured with die cast aluminum
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements
- IFS polyester powder-coat electrostatically applied and thermocured. IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish
- The finish meets the AAMA 2604 performance specification which includes passing a 3,000-hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds
- External hardware is corrosion resistant

OPTICS

- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one-piece optical system
- One-piece silicone gasket ensures a weatherproof seal around each individual optic
- One-piece optical cartridge system consisting of an LED engine, optics, gasket and stainless steel bezel

INSTALLATION

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included

ELECTRICAL

- Luminaire accepts 100V through 277V, 347V or 480V input 50 Hz to 60 Hz (UNV)
- Power factor is $\geq .90$ at full load
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only
- Fixture electrical compartment contains all LED driver components and a push-button terminal block for AC power connections
- Optional 7-pin ANSI C136.41-2013 Twist-Lock® photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices
- Ambient operating temperature -40°C to 25°C
- Surge protection: 20kA
- Lifeshield™ Circuit (see Electrical Data)

CONTROLS

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the motion response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if

OPTICS
STRIKE



RELATED PRODUCTS

 Viper Large

project requirements vary from standard configuration

- Available with [Energeni](#) for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night
- In addition, Viper can be specified with [SiteSync™ wireless control system](#) for reduction in energy and maintenance costs while optimizing light quality 24/7

CERTIFICATIONS

- DLC® (DesignLights Consortium) Qualified. Please refer to the DLC website for specific product qualifications at www.designlights.org
- Certified to UL 1598 and UL 8750
- 3G rated for ANSI C136.31 high vibration applications with MAF mounting
- IDA approved
- This product is approved by the Florida Fish and Wildlife Conservation Commission. [Separate spec available online](#)

WARRANTY

- 5 year warranty
- See [HLI Commercial and Industrial Outdoor Lighting Warranty](#) for additional information

KEY DATA	
Lumen Range	5400–16,216
Wattage Range	55–136
Efficacy Range (LPW)	100–124
Reported Life (Hours)	L70>377,000
Input Current Range (Amps)	0.1–1.1

DATE: _____ LOCATION: _____
 TYPE: _____ PROJECT: _____
 CATALOG #: _____

**UVCTC - Bradford
TYPE SA3, SA4**



DATE: _____ LOCATION: _____
 TYPE: _____ PROJECT: _____
 CATALOG #: _____

VIPER S

SMALL VIPER LUMINAIRE

ORDERING GUIDE

Example: VPS-24L-55-4K7-4W-UNV-A-DB-TL-GENI-04-BC

CATALOG #

VPS	LED Engine	CCT/CRI ⁷	Distribution	Rotation	Voltage	WILL OPERATE 277V
Series						
VPS Viper Small	24L-55 55W, LED array	3K7 3000K, 70 CRI	FR Type 1/Front Row	Blank No rotation	UNV 120-277V	
	36L-65 65W, LED array	4K7 4000K, 70 CRI	2 Type 2	L Optic rotation left ⁵	347 347V	
	36L-80 80W, LED array	5K7 5000K, 70 CRI	3 Type 3	R Optic rotation right ⁵	480 480V	
	48L-110 110W, LED array		4 Type 4			
	60L-136 136W, LED array		4W Type 4 Wide			
			5QM Type 5QM			
			5R Type 5R (rectangular)			
			5W Type 5W (round wide)			
			TC Tennis Court			

Mounting	Color	Control Options	Options
A Rectangular Arm (formerly RA) for square or round pole	BL Black Textured	7PR 7-Pin Receptacle only (shorting cap, photo control, or wireless control provided by others)	F Fusing
MAF Mast Arm Fitter (formerly SF2) for 2 3/4" OD horizontal arm	DB Dark Bronze Textured	7PR-SC 7-Pin Receptacle w/Shorting Cap	BSP Bird Spikes
K Knuckle (formerly PK2) limit to 30° tilt or 2 3/4" OD horizontal arm or vertical tenon	GYS Light Gray Smooth	7PR-TL 7-Pin Receptacle w/Twist-Lock® photo control	BC Backshield (available for FR, 2, 3, 4, 4W Optics)
WB Wall Bracket	PS Platinum Silver Smooth	SCP/_F Programmable Occupancy Sensor w/ daylight control ^{1,2,6}	
AD Universal Arm for square pole	WH White Textured	GENI-XX ENERGENI ³	
AD3 Adapter for 2.4"-4.1" round pole	CC Custom Color	SWP SiteSync Pre-Commission ^{1,4}	
AD4 Adapter for 4.2"-5.3" round pole		SWPM_F SiteSync Pre-Commission w/ Sensor ^{1,2,4}	
AD5 Adapter for 5.5"-5.9" round pole			
AD6 Adapter for 6.0"-6.5" round pole			

House Side Shield Accessories

- HSS/VP-S/90-FB/XXX 90° shield front or back
- HSS/VP-S/90-LR/XXX 90° shield left or right
- HSS/VP-S/270-FB/XXX 270° shield front or back
- HSS/VP-S/270-LR/XXX 270° shield left or right
- HSS/VP-S/360/XXX Full shield

Replace XXX with notation for desired finish color. Refer to page 8 for shield images.

Mounting Accessories

- VPL-AD-RPA3 2.4"-4.1" Round Pole Adapter for AD arm
- VPL-AD-RPA4 4.2"-5.3" Round Pole Adapter for AD arm
- VPL-AD-RPA5 5.5"-5.9" Round Pole Adapter for AD arm
- VPL-AD-RPA6 6.0"-6.5" Round Pole Adapter for AD arm

Notes:

- 1 Not available with other wireless control or sensor options
- 2 Specify mounting height; 8 = 8' or less, 40 = 9' to 40'
- 3 Specify routine setting code (example GENI-04). See [ENERGENI brochure](#) and [instructions](#) for setting table and options. Not available with sensor or SiteSync options
- 4 Specify group and zone at time of order. See [www.hubbelllighting.com/sitesync](#) for further details. Order at least one SiteSync interface accessory SWUSB or SWTAB. Each option contains SiteSync License, GUI, and Bridge Node
- 5 Only available with FR, 2, 3, 4, 4W and 5R distributions
- 6 Order at least one SCP-REMOTE per project location to program and control the occupancy sensor

Accessories and Services (Ordered Separately)

- SCP-REMOTE Remote Control for SCP/_F option. Order at least one per project to program and control the occupancy sensor
- SWUSB* SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node
- SWTAB* Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node
- SWBRG SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested
- SW7PR+ SiteSync 7-Pin on fixture module On/Off/Dim, Daylight Sensor 120-480VAC

* When ordering SiteSync at least one of these two interface options must be ordered per project.
 + Available as a SiteSync retrofit solution for fixtures with an existing 7-pin receptacle.

Hubbell Control Solutions — Accessories (Sold Separately)

NX Distributed Intelligence™

- NXOFM-1R1D-UNV On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120-480VAC

wISCAPE® Lighting Control

- WIR-RME-L On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wISCAPE Radio, 110-480VAC

For additional information related to these accessories please visit [www.hubbellcontrolsolutions.com](#). Options provided for use with integrated sensor, please view specification sheet ordering information table for details.

VIPER S

SMALL VIPER LUMINAIRE

DATE: _____	LOCATION: _____
TYPE: _____	PROJECT: _____
CATALOG #: _____	

CONTROLS

SiteSync — Precommissioned Ordering Information:

When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit [the SiteSync family page on our website](#) or contact Hubbell Lighting tech support at 800-888-8006.



SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VP-L/80L-235/4K7/3/UNV/A/DB/SWP/
 VP-L/80L-235/4K7/3/UNV/A/DB/SWPM-40F/

SiteSync only
 SiteSync with Motion Control

SiteSync 7-Pin Module:

- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)
- Does not interface with occupancy sensors



SW7PR

NX Distributed Intelligence™ Lighting Controls:

Supports both indoor and outdoor applications in a variety of deployment options: wired, wireless and hybrid. Integrates with and enables a wide array of luminaires including those with SpectraSync Color Tuning Technology.



NX Integrated Controls Reference								
NX Option	Sensor	Networkable	Scheduling	Occupancy	Daylight Harvesting	0–10V Dimming	On/off Control	Bluetooth® App Programming
NX Networked – Wireless								
NXOFM-1R1D-UNV	SCLNX	Yes	Yes	Yes	Yes	Yes	Yes	Yes, Bluetooth App

wiSCAPE™:

Supports remote management, monitoring and metering of outdoor wireless lighting applications such as smart campuses, smart cities, parking lots, parking lots and roadways.



wiSCAPE Reference								
wiSCAPE Option	Sensor	Networkable	Scheduling	Occupancy	Daylight Harvesting	0–10V Dimming	On/off Control	Bluetooth® App Programming
Networked – Wireless								
WIR-RME-L	WIR-RME-L	Yes	Yes	No	Yes	Yes	Yes	wiSCAPE Gateway



DATE: _____ LOCATION: _____

TYPE: _____ PROJECT: _____

CATALOG #: _____

VIPER S

SMALL VIPER LUMINAIRE

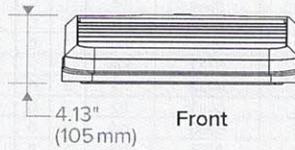
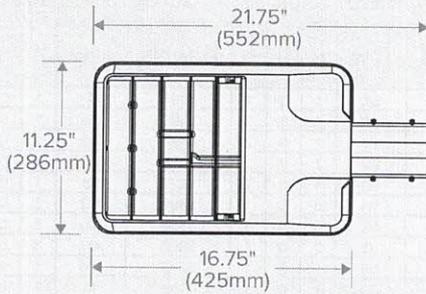
DELIVERED LUMENS

# of LEDs	DRIVE CURRENT (mA)	SYSTEM WATTS	DISTRIBUTION TYPE	5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
				LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G
24	700 mA	55W	FR	6357	118	1	0	1	6486	120	1	0	1	5804	107	1	0	1
			2	6132	114	1	0	1	6257	116	1	0	2	5599	104	1	0	1
			3	6015	111	1	0	2	6137	114	1	0	2	5492	102	1	0	2
			4	5921	110	1	0	2	6034	112	1	0	2	5400	100	1	0	2
			4W	5793	108	1	0	2	5909	110	1	0	2	5272	98	1	0	2
			5QM	6022	112	2	0	1	6145	114	2	0	1	5499	102	2	0	1
			5R	6063	112	3	0	3	6187	115	3	0	3	5536	103	3	0	3
			5W	5908	109	3	0	1	6028	112	3	0	1	5908	102	3	0	1
			TC	6183	113	1	0	1	6309	118	1	0	1	5645	105	1	0	1
						FR	7864	121	1	0	1	8041	124	1	0	1	7189	111
36	560 mA	65W	2	7586	117	1	0	2	7757	119	1	0	2	6934	107	1	0	2
			3	7441	114	1	0	2	7609	117	1	0	2	6802	105	1	0	2
			4	7317	110	1	0	2	7482	112	1	0	2	6688	100	1	0	2
			4W	8690	108	1	0	2	8864	110	1	0	2	7908	98	1	0	2
			5QM	7450	115	3	0	1	7618	117	3	0	1	6810	105	3	0	1
			5R	7501	115	3	0	3	7670	118	3	0	3	6857	105	3	0	3
			5W	7309	112	3	0	2	7473	115	3	0	2	6681	103	3	0	1
			FR	9535	118	1	0	1	9730	120	1	0	1	8706	107	1	0	1
			2	9197	114	1	0	2	9385	116	1	0	2	8398	104	1	0	2
			3	9022	111	1	0	2	9206	114	1	0	2	8238	102	1	0	2
36	700 mA	80W	4	8871	110	1	0	2	9052	112	1	0	2	8100	100	1	0	2
			4W	11587	108	1	0	3	11819	110	1	0	3	10544	98	1	0	3
			5QM	9033	112	3	0	1	9217	114	3	0	1	8248	102	3	0	1
			5R	9095	112	3	0	3	9280	115	3	0	3	8304	103	3	0	3
			5W	8861	109	3	0	2	9043	112	3	0	2	8092	100	3	0	2
			TC	9275	115	1	0	1	9464	118	1	0	1	8468	105	1	0	1
			FR	12713	118	1	0	1	12973	120	2	0	1	11608	107	1	0	1
			2	12263	114	2	0	2	12513	116	2	0	2	11197	104	2	0	2
			3	12029	111	2	0	2	11275	114	2	0	2	10984	102	1	0	2
			4	11828	110	1	0	3	12069	112	1	0	3	10800	100	1	0	2
48	700 mA	110W	4W	14484	108	2	0	4	14774	111	2	0	4	13180	98	2	0	3
			5QM	12044	112	3	0	2	12290	114	3	0	2	10997	102	3	0	1
			5R	12126	112	3	0	3	12374	115	3	0	3	11072	103	3	0	3
			5W	12126	109	4	0	2	12057	112	4	0	2	10789	100	4	0	2
			TC	12366	115	1	0	2	12619	118	1	0	2	11290	105	1	0	2
			FR	15891	117	2	0	2	16216	120	2	0	2	14511	107	2	0	1
			2	15329	113	2	0	2	15642	116	2	0	2	13997	103	2	0	2
			3	15037	111	2	0	3	15344	113	2	0	3	13730	101	2	0	3
			4	14784	109	1	0	3	15086	111	1	0	3	13500	100	1	0	3
			4W	14802	109	2	0	3	15104	112	2	0	3	13515	100	2	0	3
60	700 mA	136W	5QM	15055	111	3	0	2	15362	114	3	0	2	13747	102	3	0	2
			5R	15158	112	4	0	4	15469	114	4	0	4	13841	102	4	0	4
			5W	14781	109	4	0	2	15083	111	4	0	2	13495	100	4	0	2
			TC	15458	115	1	0	2	15834	118	1	0	2	14113	105	1	0	2

VIPER S

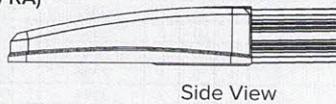
SMALL VIPER LUMINAIRE

DIMENSIONS

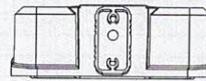


Weight	15.0 lbs (6.8 kg)
EPA	.67 ft ²

A Arm (formerly RA)

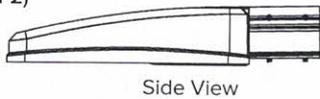


Side View

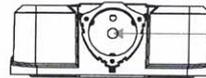


Back View

MAF (formerly SF2)



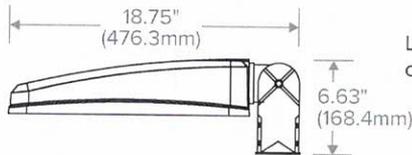
Side View



Back View

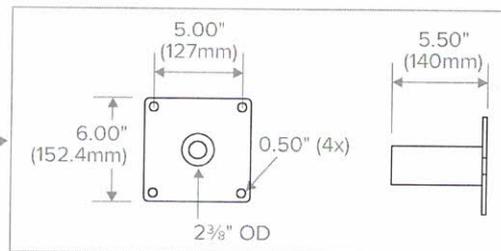
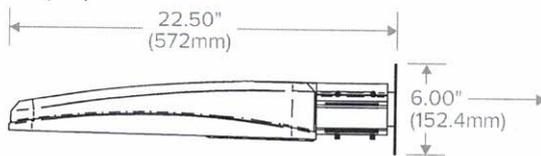
Accepts 2 3/8" OD tenon, min 5" long.

2 3/8" Adjustable Knuckle (K) (formerly PK2)

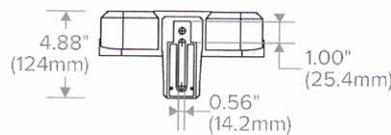
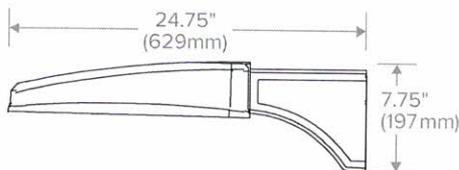


Limit to 30° tilt. Sensor, photocell and wireless controls should not be tilted above horizontal.

Wall Bracket (WB)



AD Decorative Arm



See page 9 for mounting details.

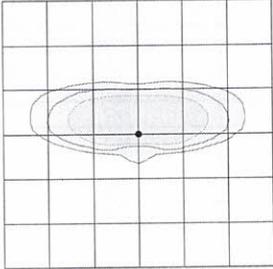
VIPER S

SMALL VIPER LUMINAIRE

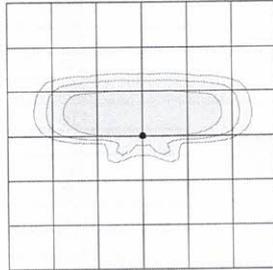
PHOTOMETRY

The following diagrams represent the general distribution options offered for this product. For detailed information on specific product configurations, see [website photometric test reports](#).

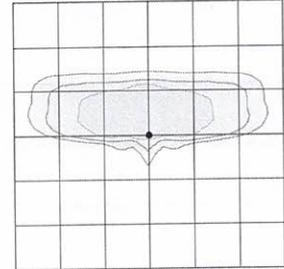
Type FR – Front Row/Auto Optic



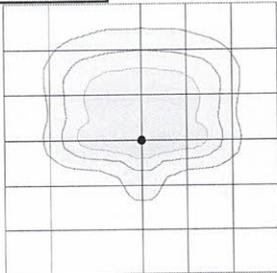
Type 2



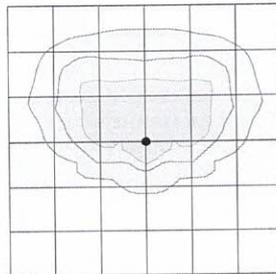
Type 3



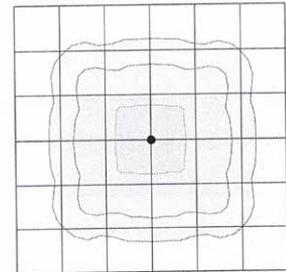
Type 4



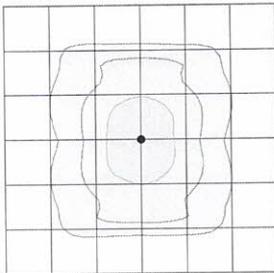
Type 4 Wide



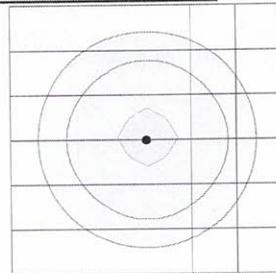
Type 5QM



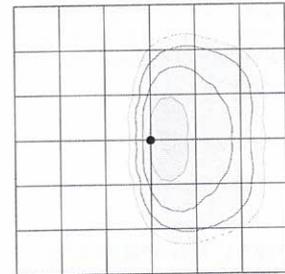
Type 5R (rectangular)



Type 5W (round wide)



Type TC



VIPER S

SMALL VIPER LUMINAIRE

ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	1	700 mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
		525 mA	120	65	0.65
			277		0.28
			347		0.22
			480		0.16
36	1	700 mA	120	80	0.7
		277	0.3		
		347	0.2		
		480	0.2		
48	1	700 mA	120	110	0.9
			277		0.4
			347		0.3
			480		0.2
60	1	700 mA	120	136	1.1
			277		0.5
			347		0.4
			480		0.3

PROJECTED LUMEN MAINTENANCE						
Ambient Temp.	0	25,000	50,000	TM-21-11 60,000 ¹	100,000	Calculated L70 (HOURS)
25°C / 77°C	1	0.97	0.95	0.95	0.92	>377,000

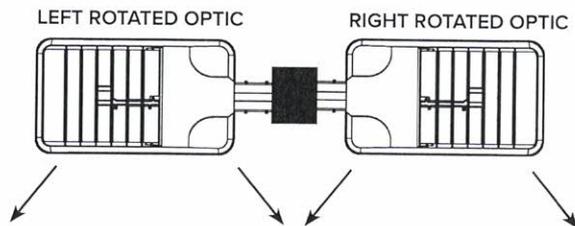
¹ Projected per IESNA TM-21-11.
Data references the extrapolated performance projections for the 60 LED base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

LIFESHIELD™ CIRCUIT

Protects luminaire from excessive temperature. The device activates at a specific, factory-preset temperature and progressively reduces power over a finite temperature range. Operation is smooth and undetectable to the eye. Thermal circuit is designed to “fail on”, allowing the luminaire to revert to full power in the event of an interruption of its power supply or faulty wiring connection to the drivers. The device can co-exist with other 0–10V control devices (occupancy sensors, external dimmers, etc.)

ADDITIONAL INFORMATION

ROTATION OPTIONS

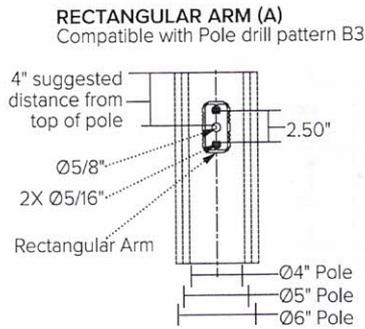


VIPER S

SMALL VIPER LUMINAIRE

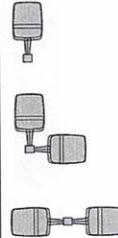
ADDITIONAL INFORMATION (CONTINUED)

DRILL PATTERN



EPA

Config.	EPA
1	.67
2 @ 90°	1.06
2 @ 180°	1.34



Config.	EPA
3 @ 120°	1.68
3 @ 90°	1.73
4 @ 90°	2.12



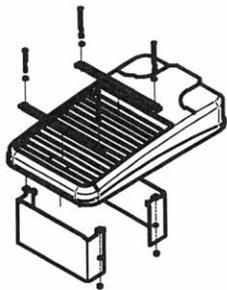
TENON TOP POLE BRACKET ACCESSORIES (ORDER SEPARATELY)

(2 3/8" OD tenon)

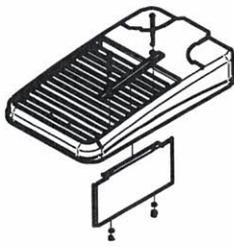
TENON TOP POLE BRACKET ACCESSORIES (Order Separately)

- SETAVP-XX Square tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only
- RETAVP-XX Round tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only
- SETA2XX Square tenon adapter (4 at 90°) for AD - Universal Arm mounting option only
- RETA2XX Round tenon adapter (4 at 90°) for AD3 - Universal Arm mounting option only
- TRETA2XX Hexagonal tenon adapter (3 at 120°) for AD - Universal Arm mounting option only

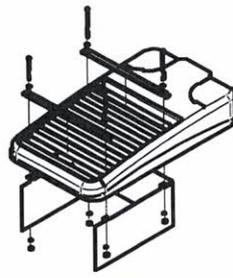
HOUSE SIDE SHIELD FIELD INSTALL ACCESSORIES



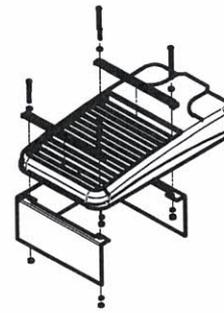
HSS/VP-S/90-FB/XXX
 90° shield front or back
 (2 shields shown)



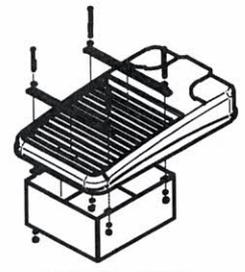
HSS/VP-S/90-LR/XXX
 90° shield left or right
 (1 shield shown in left orientation)



HSS/VP-S/270-FB/XXX
 270° shield front or back
 (1 shield shown in back orientation)



HSS/VP-S/270-LR/XXX
 270° shield left or right
 (1 shield shown in right orientation)



HSS/VP-S/360/XXX
 Full shield
 (1 shield shown)

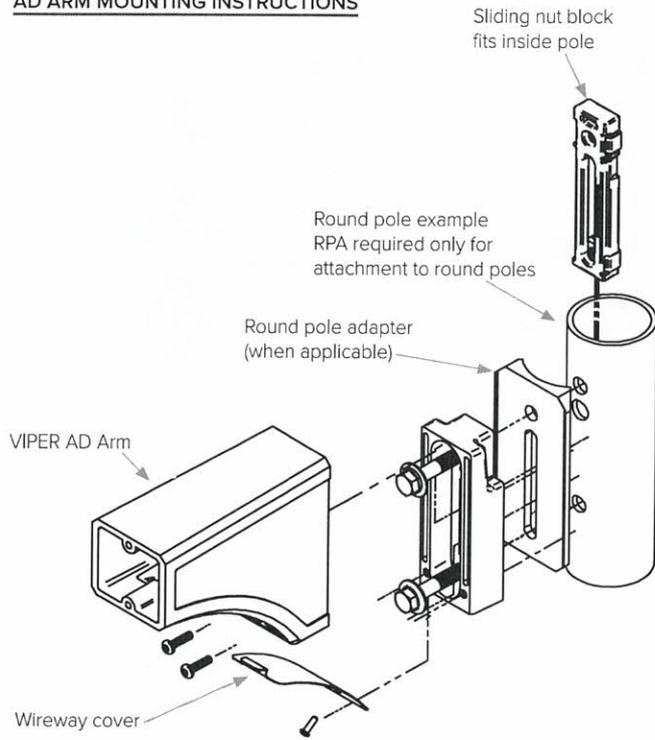
VIPER S

SMALL VIPER LUMINAIRE

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

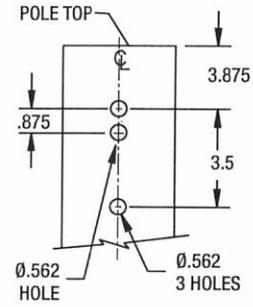
ADDITIONAL INFORMATION (CONTINUED)

AD ARM MOUNTING INSTRUCTIONS



DECORATIVE ARM (AD)

Compatible with pole drill pattern S2



LAREDO SERIES

LMC - 30LEDs

Cat.#
Job

UVCTC - Bradford
TYPE SB



HUBBELL
Outdoor Lighting

Approvals

SPECIFICATIONS

Intended Use:

Full cut-off IDA compliant perimeter or entry lighting for 10-18ft mounting heights that require high light output and maximum energy efficiency. Laredo LMC-30 LED wallpack provides low installation costs with little or no maintenance and up to 80% energy savings. Ideal for schools, factories, hospitals, warehouses and retail applications.

Construction:

Decorative die-cast aluminum housing and door. Rugged design protects internal components and provides excellent thermal management for over 70% lumen maintenance at 50,000 hours minimum LED life. Lektrocote® series powder paint finishes provide lasting appearance in outdoor environments. Five standard finishes include: Bronze, Black, Gray, White and Platinum.

Optics/Electrical

LED:

30 High power LEDs delivers up to 7300 lumens at 700mA and up to 3489 lumens at 350mA. Variety of distributions – Types II, III and IV (Forward throw). High CRI LEDs provide excellent color rendition with up to 100 lumens per watt efficiency.

- CCT- 5000K/ 70 CRI, 4000K/ 70 CRI, 3000K/70 CRI
- Electronic driver 71w system (2 drivers, 2 circuits), 0.4 AMPS max, or 35w (1 driver, 2 circuits), 0.3 amps max, 120-277V and 347V and 480V, 50/60Hz
- Surge protection – 20KA; Turns fixture off at end of life; Includes LED for end of life indication (see surge suppressor page 2)

Lenses:

Full cut-off distribution - individual acrylic LED optics provide IES Type II, III and IV distributions.

Installation:

Quick mount system provides rigid mounting over recessed junction boxes – fixture does not require opening for mounting. Foam gasket for sealing to smooth surfaces provided. Superior performance with 5 to 1 spacing to mounting height ratio. Minimum operating temperature is -40°C/ -40°F.

Controls:

Drivers are 0-10V dimming standard. Photocontrol and occupancy sensor options available for complete on/off and dimming control.

Listings:

- Listed to UL1598 for wet locations
- 40° C ambient environments
- U.S. Patent No. D563,587
- DesignLights Consortium (DLC) qualified, Consult DLC website for more details: <http://www.designlights.org/QPL>

LMC-30LU Egress Wallpack:

Designed to meet strict 1fc minimum requirements. At 12ft mounting height 1fc covers 16x16ft area, well beyond the 10x10ft standard; No uplight, external test button; 120V or 277V only; Rated -20° C to 35° C

Warranty:

Five year limited warranty (for more information visit: <http://www.hubbelloutdoor.com/resources/warranty/>)

PRODUCT IMAGE(S)

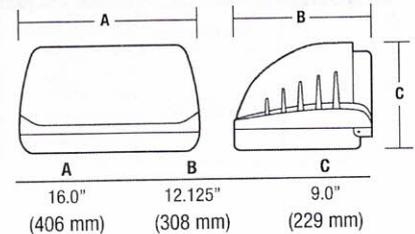


LMC-30LU

LMC-30LU Motion Sensor

LMC-30LU BBU

DIMENSIONS



*3000K and warmer CCTs only

ORDERING INFORMATION

ORDERING EXAMPLE: LMC-30LU-5K-3-1-PC(4)

SERIES	NUMBER OF LEDS/SOURCE/VOLTAGE	CCT	IES DISTRIBUTION	DRIVE CURRENT	FINISH	OPTIONS
LMC	30LU	3K	2 Type II	BLANK STD 700MA	1 Bronze	BBU ¹ Integral battery for 120 or 277V rated for -20° C ambient; Available in 350mA (035) drive current only
Laredo Medium Cut-off	30L1 30 LEDs, 120V	4K 4000K nominal	3 Type III	035 350MA	2 Black	PC ¹ Button photocontrol (must specify voltage per footnote 1, not available in 480V)
	30L2 30 LEDs, 208V	5K 5000K nominal	4 Type IV (Forward throw)		3 Gray	F ¹ Fusing (specify voltage per footnote)
	30L3 30 LEDs, 240V				4 White	SCP ^{2,3} Programmable motion control, factory default is 10% light output
	30L4 30 LEDs, 277V				5 Platinum	
	30LF 30 LEDs, 347V					
	30L5 30 LEDs, 480V					

SPECIFY SCP HEIGHT

- 8F Up to 8ft mount height
- 20F Up to 20ft mount height

1 Specify voltage, for PC(X) and F(X), replace X with 1-120V, 2-208V, 3-240V, 4-277V, 6-347V, 5-480V
2 Must order minimum of one SCP-REMOTE to program dimming settings, 0-10V fully adjustable dimming with automatic daylight calibration and different time delay settings, 120V-277V only
3 PC option not applicable, included in sensor



HUBBELL
Outdoor Lighting

Hubbell Outdoor Lighting • 701 Millennium Boulevard • Greenville, SC 29607 • Phone: 864-678-1000
Due to our continued efforts to improve our products, product specifications are subject to change without notice.



HUBBELL
Lighting

© 2019 Hubbell Outdoor Lighting, All Rights Reserved • For more information visit our website: www.hubbelloutdoor.com • Printed in USA LMC-SPEC February 22, 2019 11:08 AM

ACCESSORIES/REPLACEMENT PARTS - Order Separately

Catalog Number	Description
LMC-SPC	Polycarbonate shield
PBT-1	120V button photocontrol
PBT-234	208/240/277V button photocontrol
93044764	40w, 700mA, 120-277V, 0-10V dimming driver
93052458	20KA surge protection with an end of life LED indicator
SCP-REMOTE	Remote control for SCP option; order at least one per project to program and control

PERFORMANCE DATA

# OF LEDS	DRIVE CURRENT	SYSTEM WATTS	DIST. TYPE	5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 80 CRI)					
				LUMENS	LPW ¹	B	U	G	LUMENS	LPW ¹	B	U	G	LUMENS	LPW ¹	B	U	G	
30	BBU*	-	3	1546*	-	-	-	-	1405*	-	-	-	-	-	1101*	-	-	-	-
			2	3870	111	1	0	1	3813	109	1	0	1	3622	103	1	0	1	
			3	3972	113	1	0	1	3913	112	1	0	1	3717	106	1	0	1	
			4	3903	112	1	0	2	3845	110	1	0	2	3653	104	1	0	2	
	350mA	35w	2	7064	101	2	0	2	6960	99	2	0	2	6612	94	2	0	2	
			3	7315	105	1	0	2	7207	103	1	0	2	6847	98	1	0	2	
			4	7141	102	1	0	3	7035	101	1	0	3	6683	95	1	0	2	
			2	7064	101	2	0	2	6960	99	2	0	2	6612	94	2	0	2	
	700mA	70w	2	7064	101	2	0	2	6960	99	2	0	2	6612	94	2	0	2	
			3	7315	105	1	0	2	7207	103	1	0	2	6847	98	1	0	2	
			4	7141	102	1	0	3	7035	101	1	0	3	6683	95	1	0	2	
			2	7064	101	2	0	2	6960	99	2	0	2	6612	94	2	0	2	

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application. Please consult IES files for BUG ratings.
¹BBU emergency mode lumen output.

ELECTRICAL DATA

# OF LEDS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	CURRENT (Amps)	SYSTEM POWER (w)
30	-035 (350mA)	120	0.33	35.00
		277	0.14	35.00
	STD. (700mA)	120	0.60	70.00
		208	0.35	70.00
		277	0.26	70.00
		347	0.22	70.00
		480	0.16	70.00
		480	0.16	70.00

PROJECTED LUMEN MAINTENANCE

Ambient Temp.	OPERATING HOURS					
	0	25,000	50,000	TM-21-11 ¹ L96 60,000	100,000	L70 (hours)
25°C / 77°F	1.00	0.97	0.95	0.95	0.92	>539,000

1. Projected per IESNA TM-21-11 * (Nichia 219B, 700mA, 85°C Ts, 10,000hrs)
 Data references the extrapolated performance projections for the LMC-30LU-5K base model in a 40°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

AMBIENT TEMPERATURE	LUMEN MULTIPLIER	
0° C	32° F	1.02
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	1.00
40° C	104° F	0.99
50° C	122° F	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

SURGE PROTECTION

- Field replaceable surge protection device (SPD) provides 20KA and 10KV protection meeting ANSI/IEEE C62.41.2 Category C High and Surge Location Category C3
- The SPD is designed with a clamping voltage of 1600V at 20KA using industry standard 8/20µs waveform
- Max surge current = 20,000 Amps (see table)
- LED Indicator – Green LED is unlit at end of life

Pulse Rating (8 x 20 µSec)	
Strikes	Surge
1	20,000 A
2	15,000 A
15	10,000 A
120	3,000 A

	cRUus	CE
I _n	10KA	5KA

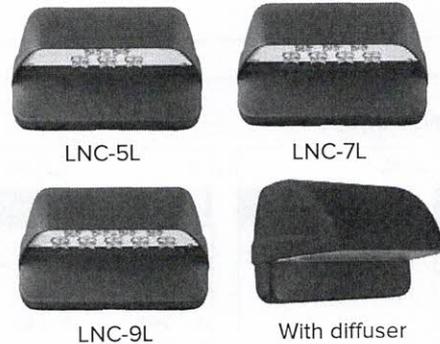
DATE:	LOCATION:	UVCTC - Bradford TYPE SC
TYPE:	PROJECT:	
CATALOG #:		

LNC

COMPACT LED LITEPAK

FEATURES

- Compact LNC LED is designed for perimeter illumination and available in 3 lumen packages for safety, security and identity
- 3000K, 4000K, 5000K and Amber color temperatures
- Up to 4:1 spacing to mounting height ratio means fewer fixtures to install
- Acrylic diffuser included! Use for applications near entrances or locations where reduced brightness is desired. (Maximum spacing with diffuser 30ft)
- Die-cast aluminum housing with decorative Laredo styling
- Full cut-off neighbor friendly
- Listed to UL1598 for use in wet locations



*3000K and warmer CCTs only

RELATED PRODUCTS

- ⌘ [LNC2](#)
- ⌘ [INC3](#)
- ⌘ [LNC4](#)

SPECIFICATIONS

CONSTRUCTION

- Decorative die-cast aluminum housing and door
- Rugged design protects internal components and provides excellent thermal management for long life
- Powder paint finishes provide lasting appearance in outdoor environments
- Full cut-off distribution; Ambient diffuser included, use for applications near entrances or locations where reduced brightness is desired

OPTICS

- Drivers are 120-277V, 50/60Hz Type II, III and Type IV lenses provide wide lateral spread
- 3000K - 80 CRI, 4000K - 70 CRI, and 5000K - 70 CRI, CCT nominal
- Drivers have greater than .90 power factor and less than 20% Total Harmonic Distortion

INSTALLATION

- Quick mount adapter provides quick installation, designed for recessed box 4" square junction box

ELECTRICAL

- 60,000 hours minimum LED life at L96 rating per IESNA TM-21-11
- Minimum operating temperature is -40°C/-40°F
- 0-10V dimming 120-277V only
- LNC5L – 5 LEDs, Types II, III or IV available, see page 2 for electrical details
- LNC7L – 7 LEDs, Type II, III or IV available, see page 2 for electrical details
- LNC9L – 9 LEDs, Types II, III or IV available, see page 2 for electrical details

CONTROLS

- Photocontrol option is available to provide dusk-to-dawn control for additional energy savings

CERTIFICATIONS

- DLC® DesignLights Consortium Qualified, with some Premium Qualified configurations. Please refer to the DLC website for specific product qualifications at www.designlights.org
- Listed and labeled to UL 1598 for wet locations, 25°C ambient environments

WARRANTY

- 5 year limited warranty
- See [HLI Standard Warranty](#) for additional information

KEY DATA	
Lumen Range	800–2100
Wattage Range	13–22
Efficacy Range (LPW)	64–95
Fixture Projected Life (Hours)	L96>60K
Weights lbs. (kg)	9.6 (24.5)

LNC

COMPACT LED LITEPAK

ORDERING GUIDE

Example: LNC-5L-U-3K-2-1-PCU

 CATALOG #

ORDERING INFORMATION

LNC	5L	U	3K	4	Finish	Mounting
Series	# LEDs	Voltage	CCT/CRI	IES Distribution		
LNC LNC Zero Uplight	5L 5 LEDs 7L 7 LEDs 9L 9 LEDs	U 120-277V 1 120V 2 208V 3 240V 4 277V	3K 3000K nominal, 70 CRI 4K 4000K nominal, 70 CRI 5K 5000K nominal, 70 CRI AM Amber (590 μm available for "Turtle Friendly"/ observatory applications, 350mA (consult factory) ¹	2 Type II 3 Type III 4 Type IV	1 Bronze 2 Black 3 Gray 4 White 5 Platinum	PCU Universal Button Photocell

Notes:
¹ Amber LEDs only available on 7L and 9L configurations, 350mA

REPLACEMENT PARTS AND ACCESSORIES

Catalog Number	Description
<input checked="" type="checkbox"/> 93039574	Frosted comfort shield, improved uniformity with only 5% reduction

PERFORMANCE DATA

# Of LEDs	Nominal Wattage	System Watts	Dist. Type	5K (5000K NOMINAL 70 CRI)		4K (4000K NOMINAL 70 CRI)		3K (3000K NOMINAL 80 CRI)		AM (<580 nm wave-length)		
				Lumens	LPW*	Lumens	LPW	Lumens	LPW	Lumens	System Watts	LPW*
5	13W		2	1,150	88.5	1,052	81	883	68	-	-	-
			3	1,132	87	1,077	83	833	64	-	-	-
			4	1,146	88	1,053	81	849	65	-	-	-
7	STD. (700mA) AM (350mA) 17W		2	1,515	89	1,369	80.5	1,272	75	-	-	-
			3	1,500	88	1,539	90.5	1,392	82	268	6.6	59
			4	1,557	91.5	1,535	90	1,425	84	-	-	-
9	22W		2	2,069	94	2,033	92	1,588	72	-	-	-
			3	2,024	92	1,989	90	1,623	74	-	-	-
			4	2,095	95	2,059	93.5	1,680	76	382	8.3	46

* Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application. Please consult IES files for BUG ratings.

PROJECTED LUMEN MAINTENANCE

Ambient Temperature	OPERATING HOURS					
	0	25,000	50,000	TM-21-11* L96 60,000	100,000	L70 (Hours)
25°C / 77°F	1.00	0.97	0.97	0.96	0.95	>791,000
40°C / 104°F	0.99	0.96	0.96	0.96	0.94	>635,000

* Projected per IESNA TM-21-11 * (Nichia 219B, 700mA, 85°C Ts, 10,000hrs) Data references the extrapolated performance projections for the LNC-12LU-5K base model in a 40°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08

ELECTRICAL DATA

# OF LEDs	Drive Current (mA)	Input Voltage (V)	Oper. Current (Amps)	System Power (W)
9	STD. (700mA)	120	0.11	13
		277	0.05	
12	STD. (700mA)	120	0.14	17
		277	0.07	
12	STD. (700mA)	120	0.17	22
		277	0.09	

LNC
COMPACT LED LITEPAK

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

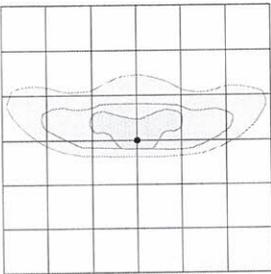
Ambient Temperature		Lumen Multiplier
0° C	32° F	1.02
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	1.00
40° C	104° F	0.99
50° C	122° F	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

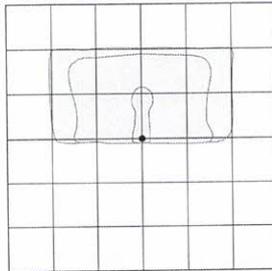
PHOTOMETRY

The following diagrams represent the general distribution options offered for this product. For detailed information on specific product configurations, see [website photometric test reports](#).

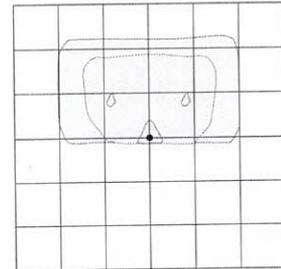
LNC9LU – Type II



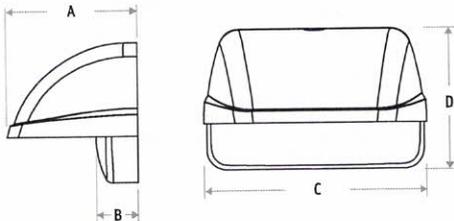
LNC9LU – Type III



LNC9LU – Type IV



DIMENSIONS



A	B	C	D
4.81" (122 mm)	1.55" (39 mm)	8.22" (209 mm)	5.25" (133 mm)

ADDITIONAL INFORMATION

SHIPPING INFORMATION

Catalog Number	G.W(kg)/CTN	Carton Dimensions			Carton Qty. per Master Pack
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)	
LNC-5LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2
LNC-7LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2
LNC-9LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2

USE OF TRADEMARKS AND TRADE NAMES

All product and company names, logos and product identifies are trademarks ™ or registered trademarks ® of Hubbell Lighting, Inc. or their respective owners. Use of them does not necessarily imply any affiliation with or endorsement by such respective owners.

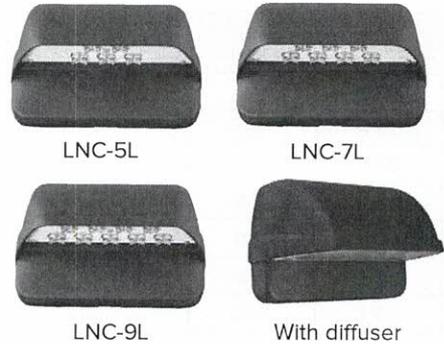
LNC
COMPACT LED LITEPAK

FEATURES

- Compact LNC LED is designed for perimeter illumination and available in 3 lumen packages for safety, security and identity
- 3000K, 4000K, 5000K and Amber color temperatures
- Up to 4:1 spacing to mounting height ratio means fewer fixtures to install
- Acrylic diffuser included! Use for applications near entrances or locations where reduced brightness is desired. (Maximum spacing with diffuser 30ft)
- Die-cast aluminum housing with decorative Laredo styling
- Full cut-off neighbor friendly
- Listed to UL1598 for use in wet locations



DATE: _____ LOCATION: **UVCTC - Bradford**
 TYPE: _____ PROJECT: **TYPE SD**
 CATALOG #: _____



RELATED PRODUCTS

- ⌘ [LNC2](#) ⌘ [INC3](#) ⌘ [LNC4](#)

SPECIFICATIONS

CONSTRUCTION

- Decorative die-cast aluminum housing and door
- Rugged design protects internal components and provides excellent thermal management for long life
- Powder paint finishes provide lasting appearance in outdoor environments
- Full cut-off distribution; Ambient diffuser included, use for applications near entrances or locations where reduced brightness is desired

OPTICS

- Drivers are 120-277V, 50/60Hz Type II, III and Type IV lenses provide wide lateral spread
- 3000K - 80 CRI, 4000K - 70 CRI, and 5000K - 70 CRI, CCT nominal
- Drivers have greater than .90 power factor and less than 20% Total Harmonic Distortion

INSTALLATION

- Quick mount adapter provides quick installation, designed for recessed box 4" square junction box

ELECTRICAL

- 60,000 hours minimum LED life at L96 rating per IESNA TM-21-11
- Minimum operating temperature is -40°C/-40°F
- 0-10V dimming 120-277V only
- LNC5L – 5 LEDs, Types II, III or IV available, see page 2 for electrical details
- LNC7L – 7 LEDs, Type II, III or IV available, see page 2 for electrical details
- LNC9L – 9 LEDs, Types II, III or IV available, see page 2 for electrical details

CONTROLS

- Photocontrol option is available to provide dusk-to-dawn control for additional energy savings

CERTIFICATIONS

- DLC® DesignLights Consortium Qualified, with some Premium Qualified configurations. Please refer to the DLC website for specific product qualifications at www.designlights.org
- Listed and labeled to UL 1598 for wet locations, 25°C ambient environments

WARRANTY

- 5 year limited warranty
- See [HLI Standard Warranty](#) for additional information

KEY DATA	
Lumen Range	800–2100
Wattage Range	13–22
Efficacy Range (LPW)	64–95
Fixture Projected Life (Hours)	L96>60K
Weights lbs. (kg)	9.6 (24.5)

LNC
 COMPACT LED LITEPAK

ORDERING GUIDE

Example: LNC-5L-U-3K-2-1-PCU

CATALOG #

ORDERING INFORMATION

LNC	9L	U	3K	4		
Series	# LEDs	Voltage	CCT/CRI	IES Distribution	Finish	Mounting
LNC LNC Zero Uplight	5L 5 LEDs 7L 7 LEDs 9L 9 LEDs	U 120-277V 1 120V 2 208V 3 240V 4 277V	3K 3000K nominal, 70 CRI 4K 4000K nominal, 70 CRI 5K 5000K nominal, 70 CRI AM Amber (590 μm available for "Turtle Friendly"/ observatory applications, 350mA (consult factory) ¹)	2 Type II 3 Type III 4 Type IV	1 Bronze 2 Black 3 Gray 4 White 5 Platinum	PCU Universal Button Photocell

Notes:
 1 Amber LEDs only available on 7L and 9L configurations, 350mA

REPLACEMENT PARTS AND ACCESSORIES

Catalog Number	Description
<input checked="" type="checkbox"/> 93039574	Frosted comfort shield, improved uniformity with only 5% reduction

PERFORMANCE DATA

# Of LEDs	Nominal Wattage	System Watts	Dist. Type	5K (5000K NOMINAL 70 CRI)		4K (4000K NOMINAL 70 CRI)		3K (3000K NOMINAL 80 CRI)		AM (<580 nm wave-length)		
				Lumens	LPW*	Lumens	LPW	Lumens	LPW	Lumens	System Watts	LPW*
5	STD. (700mA) AM (350mA)	13W	2	1,150	88.5	1,052	81	883	68	-	-	-
			3	1,132	87	1,077	83	833	64	-	-	-
			4	1,146	88	1,053	81	849	65	-	-	-
7	STD. (700mA) AM (350mA)	17W	2	1,515	89	1,369	80.5	1,272	75	-	-	-
			3	1,500	88	1,539	90.5	1,392	82	268	6.6	59
			4	1,557	91.5	1,535	90	1,425	84	-	-	-
9	STD. (700mA) AM (350mA)	22W	2	2,069	94	2,033	92	1,588	72	-	-	-
			3	2,024	92	1,989	90	1,623	74	-	-	-
			4	2,095	95	2,059	93.5	1,680	76	382	8.3	46

* Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application. Please consult IES files for BUG ratings.

PROJECTED LUMEN MAINTENANCE

Ambient Temperature	OPERATING HOURS					
	0	25,000	50,000	TM-21-11* L96 60,000	100,000	L70 (Hours)
25°C / 77°F	1.00	0.97	0.97	0.96	0.95	>791,000
40°C / 104°F	0.99	0.96	0.96	0.96	0.94	>635,000

* Projected per IESNA TM-21-11 * (Nichia 219B, 700mA, 85°C Ts, 10,000hrs) Data references the extrapolated performance projections for the LNC-12LU-5K base model in a 40°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08

ELECTRICAL DATA

# OF LEDs	Drive Current (mA)	Input Voltage (V)	Oper. Current (Amps)	System Power (W)
9	STD. (700mA)	120	0.11	13
		277	0.05	
12	STD. (700mA)	120	0.14	17
		277	0.07	
12	STD. (700mA)	120	0.17	22
		277	0.09	

LNC

COMPACT LED LITEPAK

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

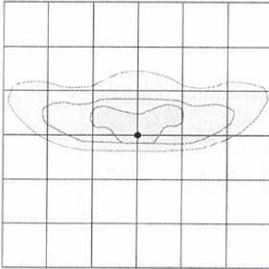
Ambient Temperature		Lumen Multiplier
0° C	32° F	1.02
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	1.00
40° C	104° F	0.99
50° C	122° F	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

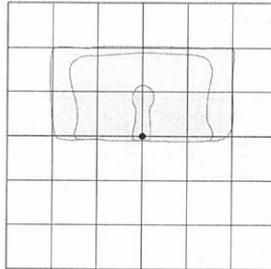
PHOTOMETRY

The following diagrams represent the general distribution options offered for this product. For detailed information on specific product configurations, see [website photometric test reports](#).

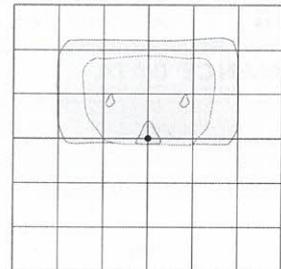
LNC9LU – Type II



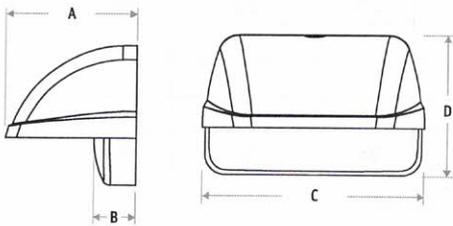
LNC9LU – Type III



LNC9LU – Type IV



DIMENSIONS



A	B	C	D
4.81" (122 mm)	1.55" (39 mm)	8.22" (209 mm)	5.25" (133 mm)

ADDITIONAL INFORMATION

SHIPPING INFORMATION

Catalog Number	G.W(kg)/CTN	Carton Dimensions			Carton Qty. per Master Pack
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)	
LNC-5LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2
LNC-7LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2
LNC-9LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2

USE OF TRADEMARKS AND TRADE NAMES

All product and company names, logos and product identifies are trademarks ™ or registered trademarks ® of Hubbell Lighting, Inc. or their respective owners. Use of them does not necessarily imply any affiliation with or endorsement by such respective owners.

Bradford Water & Sewer Commission

172 North Main Street - P.O. Box 603
Bradford, Vermont 05033

June 15, 2020

State of Vermont
Vermont Department of Environmental Conservation
Drinking Water & Groundwater Protection Division
Permit Specialist
1 National Life Drive, Main 2
Montpelier VT 05620-3521

Re: Brent Rakowski
Otter Creek Engineering
PO Box 712
404 East Main Street
East Middlebury, VT 05740

To Whom It May Concern:

The Bradford Water & Sewer Commission received notification from Mr. Rakowski letting them know of his plans to hook on to the Municipal Water and Sewer Systems here in Bradford, Vermont.

On June 2th 2020, The Commission received an allocation request from Mr. Rakowski for Tri-Valley Transit. The request was reviewed by Chief Water/Sewer Operator, Jonathan Thornton and has been approved for town sewer at 1,990 gpd. And town water flows 2,020 gpd.
Please feel free to contact us should you have any questions or if you need anything further from us.

Thank you!

Regards,

Jesse Meyer

Administrative Assistant
Bradford Water & Sewer Commission
water-sewer-admin@bradford-vt.us
802-222-4315 direct
802-222-4319 fax
802-356-3552 mobile