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The City of Vadnais Heights
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Vadnais Heights, MN 55127

Memorandum:

TO: Mayor Gunderson and Council Members

FROM: Jesse Farrell, Director of Public Works / City Engineer

DATE: February 19, 2019

RE: Lighting Improvement Project at Vadnais Heights Commons

Requested Council Action

Approve lighting improvement project at Vadnais Heights Commons undertaken by Voss Lighting at a cost of \$63,800.91.

Background

The Vadnais Heights Commons was originally constructed in 2010. At that point in time, LED lighting was still in its infancy. Since then, LED lighting technology has improved significantly while prices have dropped considerably. Undertaking a \$70,000 lighting improvement project was incorporated into the 2019 budget

Staff has been working closely with Voss Lighting since last summer to identify a solution for the lighting issues at the Commons. Since 2017, we have spent approximately \$7,000 for maintenance level repairs on failed bulbs and ballasts. The repair costs have been kept down by utilizing staff expertise, but that does draw attention from performing other duties. Worst, the florescent lighting has received frequent negative feedback from users due to the inability of the current system to appropriately dim during intimate events, primarily weddings. The new lighting system would be fully dimmable and would be a pleasant color temperature of 3000K, similar to other hospitality venues.

Event season starts ramping up in April. Voss has indicated they can complete the work in a timely fashion. Their prices are competitive and are slightly lower than what was budgeted. It would be difficult to precisely compare their quote competitively as it would require putting together plans, coordinating multiple on site meetings with other contractors, and comparing lighting fixtures from multiple manufacturers. Voss has been assigned the 2019 Minnesota State Lighting Contract for all Philips lighting products which demonstrates competitive prices for products and services. Phillips lighting fixtures have a strong reputation for reliable, high quality fixtures.

Undertaking this project would reduce lighting energy costs by over 50% (from approximately \$4,200 to \$1,800) and nearly eliminate ongoing maintenance costs. It will also improve the experience for our customers. We will work closely with Connexus Energy to apply for all available energy efficiency rebates, which I expect will be approximately \$1,920.

Mayor Gunderson and City Council Members
Page 2

I will be available at the February 19, 2019 City Council meeting if you have any questions.

Attachments-January 31, 2019 project cost quote from Voss Lighting
-Lighting Energy Audit
-Phillips Product Information

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Lighting Energy Audit

Customer: Vadnais Heights

Project: Community Center

	Current System	Proposed
System:	2L T5 HO	LED Fixture
# of Lamps:	96	96
Lamp Wattage:	110	47
Lamp Life:	30000	100000
Lamp Price:	\$8.25	\$540.00
	Less Total Utility Rebate:	\$1,920.00
Annual Lamp Costs:	\$105.60	
Annual Energy Costs:	\$4,224.00	\$1,804.80
Total Annual Costs:	\$4,329.60	\$1,804.80

Cost of Delay

1 Month - \$210.40
 3 Months - \$631.20
 6 Months - \$1,262.40
 12 Months - \$2,524.80

Total System Cost: \$49,920.00

Annual System Savings: \$2,524.80

Payback: 19.77 (years)

Return on Investment: 5.06%

Notes: F54 T5 HO lamp cost: \$4.12 ea.
 Dimming T5 ballast Cost: \$88.65

Contact us to start



*Calculations based on 4000 burn hours per year at \$0.10 kWh energy rate.

*Return on Investment = ((Annual Energy Savings + Annual Lamp Costs) / Total System Cost) x 100

*Payback = Total System Cost / (Annual Energy Savings + Annual Lamp Costs)

*Annual Lamp Costs = (Annual Burn Hours) / (Current Lamp Life) x Current Lamp Cost x # of

Current Lamps

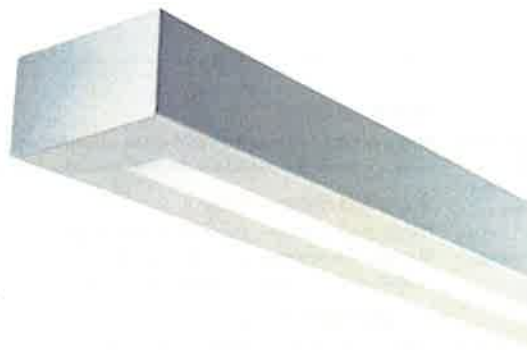
*The figures contained in this analysis including energy costs, rebates, and labor rates are based upon information provided by the customer or upon market level statistics if information was not provided. This is not a quote nor a guarantee of actual savings.



Linear

Chopstick Suspended

4800 lm/4ft
3000/3500/4000K



Project: _____
 Spec Type: _____
 Catalog No: 7505LxCxN _____
 Qty _____
 Line Notes: _____

Fixture scale, performance, lighting quality and budget—why compromise? Chopstick offers small size with big lighting performance and a price point that makes it ideal for use in many different types of spaces.

Ordering guide

Product Type	Source	Color Temp *	Lumens *	Lower Optics	Upper Optics	Run Length	Wiring †	Voltage	Driver	Finish
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Chopstick Susp Semi-Indirect	L LED	A 4000K B 3500K C 3000K	E 3400 lm/4ft C 4800 lm/4ft	S MesoOptics Lens Q MesoOptics Lens	N Lightguide	04 4' 06 6' 08 8' Total run length (2' increments)	7 1 cct Dimming E 2 cct A/B Dimming M 1 cct Dimming+ EM Wiring N 1 cct Dimming+ EM Batt. Pack	1 120V 2 277V 3 347V	E Philips Advance 0-10V (1% dim)	W Standard White T Titanium Silver B Black C Custom

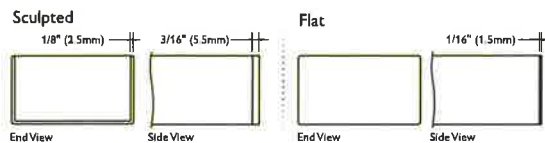
* Nominal values within a range. Consult photometry data for color temp, lumens & distribution of chosen configuration.
 † Not all wiring types are available with all configurations. Consult Philips Ledalite for a complete list of available options.

Mounting Hardware

Mount Type
Consult separate mounting spec sheet for mount type options

Suspension Length
Distance from ceiling to top of luminaire in inches

Endcaps -



Integrated Controls Please indicate with check mark.

Response Daylight Single Zone (DS)



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Optical System

A low-profile light guide panel is edge lit by an LED array. The light guide couples and transmits the light via total internal reflection, then the etched surface of the panel optimizes the light extraction to create a semi-indirect (suspended) or direct/indirect (wall) distribution. Light is purified and controlled by MesoOptics film as it passes through the non-glare acrylic lens.

Endcaps

Diecast aluminum endcaps, available in flat (standard) or edge sculpted.

Finish

High quality powder coated, available in matte white, black or titanium silver. Other factory and custom colors available on request.

Housing

Precision formed 20 gauge cold-rolled steel.

Weight

Maximum 3.0lb/ft.

Electrical

Factory pre-wired to section ends with quick-wire connectors.

Standard Driver

Philips Advance Xitanium 0-10V, 1-100%. Class 2 rated output. Consult Philips Ledalite for other available drivers.

Standard Battery Pack

Philips Bodine, 90 min, 10W, Class 2 rated output, Emergency lumen output = 10W x (luminaire efficacy x 1.1). Typical output: suspended 1100lm, wall 900lm.

Lumen Maintenance

LEDs have been tested by the manufacturer in accordance with IESNA LM-80-08. At an ambient temperature of 25°C, the LED lumen maintenance expectation according to IES TM-21-11 is: L90 (10k) >60,000 hrs (Reported methodology)

Source Color

LEDs rated for color rendering CRI >80, R9 >0 and fixture to fixture color accuracy within 2 SDCM.

Controls

Available with the following integrated controls:
Response daylight sensor (for single zone).

Mounting

Suspended: tamper-resistant aircraft cable grippers provide infinite vertical adjustment capability. Aircraft cable, crimp and cable gripper are independently tested to meet stringent safety requirements. Wall: Steel mounting brackets provided, spaced 4ft on center, fixture held 3/4" from wall.

Joints

Self-aligning joining system with hands-free pre-joining wire access.

Approvals

Certified to UL, CSA and IES standards.

Warranty

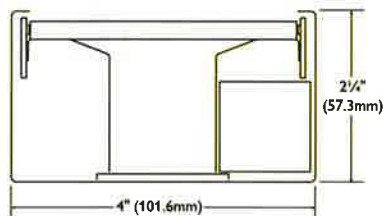
Philips indoor professional luminaires 5 year LED warranty: <http://www.philips.com/warranties>

Environment

Rated for dry or damp locations in operating ambient temperatures 0-40°C (32-104°F). Certain luminaire components may be adversely affected by contaminants. Damage caused by sulfur, chlorine, petroleum based solutions or other contaminants in the area of operation are not covered under warranty. Not suitable for natatorium environments.

Due to continuing product improvements, Philips Ledalite reserves the right to change the specifications without notice.

Dimensions - Cross Section

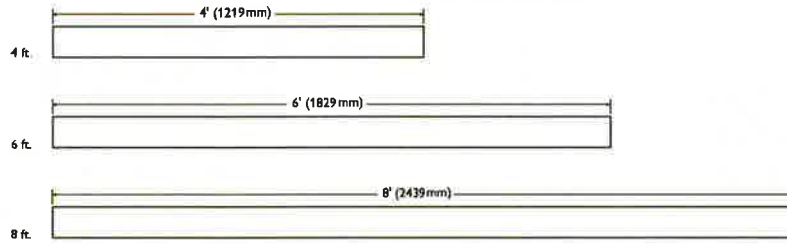


Chopstick Suspended

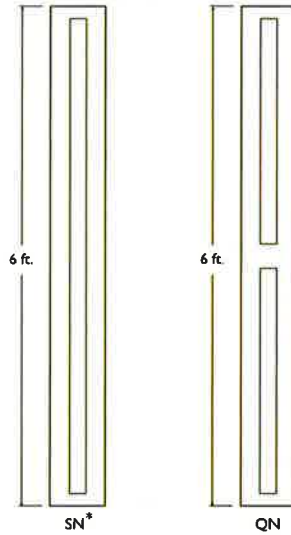
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Dimensions - Modules

Modules



Optics and Styles

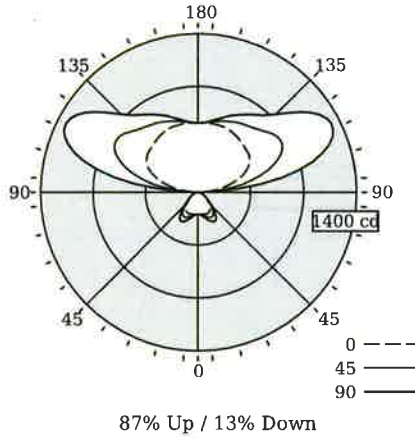


*SN optic is only available in 6ft modules

Chopstick Suspended

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Photometry - 3500K



Candela Distribution

Vertical Angle	Horizontal Angle					Zonal Lumens
	0	22.5	45	67.5	90	
0	194	194	194	194	194	0
5	197	194	197	198	198	19
15	201	204	217	230	233	62
25	205	215	244	272	282	112
35	189	202	237	268	279	145
45	136	142	158	172	178	122
55	85	87	94	98	98	84
65	51	52	55	55	55	54
75	22	25	25	25	26	27
85	4	6	7	7	8	8
90	0	0	0	0	0	0
95	96	117	180	290	345	220
105	316	383	574	885	1047	656
115	429	571	810	1142	1315	838
125	553	644	856	1099	1222	778
135	574	636	776	912	971	603
145	600	636	727	805	835	454
155	618	637	688	733	750	318
165	618	625	647	663	669	183
175	614	611	616	618	616	59
180	612	612	612	612	612	0

Values per 4ft unit

Fixture photometry has been conducted in accordance with IESNA LM-79-08

IES files for this and other photometric options can be downloaded online at www.lightingproducts.philips.com

Coefficients of Utilization (%)

RCR	Ceiling		80		70		50		0		
	Wall	70	50	30	10	70	50	30	10	0	
0	98	98	98	98	88	86	86	63	63	63	13
1	90	86	82	79	78	75	72	55	53	52	11
2	82	75	69	64	71	66	61	48	45	43	10
3	75	66	59	54	65	58	52	43	39	36	8
4	68	58	51	45	59	51	45	38	34	31	7
5	62	52	44	38	54	45	39	34	29	26	6
6	57	46	38	33	50	41	34	30	26	23	6
7	53	41	34	29	46	36	30	27	23	20	5
8	49	37	30	25	42	33	27	25	20	17	4
9	45	34	27	22	39	30	24	22	18	15	4
10	42	31	24	19	37	27	21	20	16	14	4

Avg. Luminance (cd/m2)

Vertical Angle	Horizontal Angle		
	0	45	90
55	4357	4790	5001
65	3537	3824	3824
75	2498	2810	2765
85	1391	2318	2781

Distribution

Hemisphere	87% Up / 13% Down
Peak/Zenith	2.16
Peak Output	1322 cd
Glare Control	Meets RP-1-12 recommendations for VDT-Critical spaces

LED lighting facts
A Program of the U.S. DOE

Light Output (Lumens) 4740
Watts 46.6
Lumens per Watt (Efficacy) 101

Color Accuracy
Color Rendering Index (CRI) 83

Light Color 3402 (Bright White)
Correlated Color Temperature (CCT)

2700K 3000K 4500K 6500K

Warranty** Yes

** See www.lightingfacts.com/products for details.

Registered Number: F 012 7040261320298
Model Number: Philips LF48
Type: Luminaire - Linear

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Optical Performance

Flux (lm)	4871	4740	4526
Efficacy (lm/W)	104.3	101.7	97.5
Power (W)	46.7	46.6	46.4
CCT (K)	3927	3402	3031
CRI	82	83	82
R9	10	9	8
x	0.3852	0.4120	0.4361
y	0.3839	0.3962	0.4062
Duv	0.0020	0.0010	0.0010

Electrical Performance - 3500K

Input Voltage	120V	277V	347V
Input Power	46.6W	46.0W	35.4W
Input Current	0.39A	0.18A	0.11A
Power Factor	0.988	0.930	0.967
Total Harm. Distortion	13.2%	18.9%	9.0%

Tested values – contact technical support for rated values. Off-state power zero unless certain controls are specified.

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www.philips.com/luminaires

ChopstickSusp_48lm_xN 12.17 page 5 of 5



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