

REPORT NUMBER: RAB03415

ISSUE DATE: 05/23/17

PAGE: 1 OF 9
DATE SAMPLE TESTED: 05/23/17

CATALOG NUMBER: RAIL400NW/D10, RAILP400NW/D10 (Standard Distribution)

LUMINAIRE: EXTRUDED METAL HOUSING WITH HEAT SINK FINS, FOUR WHITE CIRCUIT BOARD WITH THREE HUNDRED LEDS ON EACH BOARD, METAL REFLECTOR WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.

LAMPS: TWELVE HUNDRED LIGHT EMITTING DIODES (LEDs).

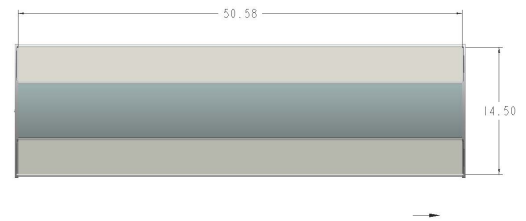
(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0
0	21395	21395	21395	21395	21395
5	21048	21292	21441	21330	21115
15	20015	20149	20200	20254	20194
25	18111	17981	17850	18133	18301
35	15388	15056	14763	15237	15624
45	12198	11790	11367	11937	12430
55	8913	8482	8131	8671	9125
65	5743	5384	5162	5603	6019
75	2767	2671	2615	2819	3017
85	440	820	1056	897	590
90	2	318	529	372	22
95	3	38	152	55	5
105	6	7	7	8	8
115	8	7	7	9	10
125	9	9	8	10	12
135	13	12	12	14	15
145	17	17	17	19	19
155	21	21	22	23	23
165	25	25	26	27	27
175	27	28	32	30	30
180	30	30	30	30	30

FLUX

2019
5687
8308
9471
9155
7682
5467
2951
962
110
7
8
9
10
11
10
7
3



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	16015	30.9
0- 40	25486	49.1
0- 60	42323	81.6
0- 90	51703	99.7
90-120	125	0.2
90-130	134	0.3
90-150	155	0.3
90-180	175	0.3
0-180	51879	100.0

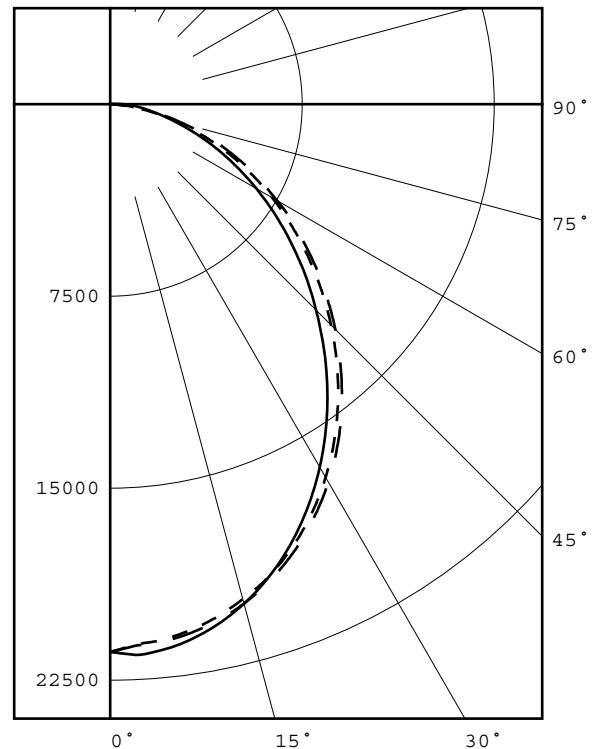
TOTAL INPUT WATTS = 398.3

EFFICACY = 130.3 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 1.2 1.1 1.2



LEGEND:

0-deg: - - - - -

90-deg: —————

180-deg: - - - - -

Checked P. ALBERS

Approved D. WANG-MUNSON

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ADDITIONAL INFORMATION

NOTE: THIS REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 398.26 W AT 120.0 VAC.

LED DRIVER: 4 x RDD-096-A2450

TEST PROCEDURE: IESNA LM-79-08

LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.6

ACCREDITED LABORATORY CODE 201058-0

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CATALOG NUMBER: RAIL400NW/D10, RAILP400NW/D10 (Standard Distribution)

PLANE : 0-DEG 90-DEG

BEAM ANGLE (50%) : 99.4 X 93.7 DEGREES

FIELD ANGLE (10%): 155.5 X 154.6 DEGREES

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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH :50.580 14.500

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 90-DEG	AVERAGE 180-DEG
45	36444.	33962.	37138.
55	32829.	29949.	33610.
65	28709.	25805.	30089.
75	22586.	21345.	24627.
85	10666.	25597.	14302.

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[illegible]

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ZONAL LUMEN SUMMARY

0- 5	511.
5- 10	1509.
10- 15	2437.
15- 20	3250.
20- 25	3912.
25- 30	4396.
30- 35	4687.
35- 40	4784.
40- 45	4700.
45- 50	4455.
50- 55	4080.
55- 60	3602.
60- 65	3042.
65- 70	2425.
70- 75	1782.
75- 80	1169.
80- 85	659.
85- 90	303.
90- 95	95.
95-100	15.
100-105	4.
105-110	4.
110-115	4.
115-120	4.
120-125	4.
125-130	4.
130-135	5.
135-140	5.
140-145	5.
145-150	5.
150-155	5.
155-160	5.
160-165	4.
165-170	3.
170-175	2.
175-180	1.

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5-DEGREE

ZONAL LUMEN SUMMARY

0- 5	511
5- 10	1509
10- 15	2437
15- 20	3250
20- 25	3912
25- 30	4396
30- 35	4687
35- 40	4784
40- 45	4700
45- 50	4455
50- 55	4080
55- 60	3602
60- 65	3042
65- 70	2425
70- 75	1782
75- 80	1169
80- 85	659
85- 90	303
90- 95	95
95-100	15
100-105	4
105-110	4
110-115	4
115-120	4
120-125	4
125-130	4
130-135	5
135-140	5
140-145	5
145-150	5
150-155	5
155-160	5
160-165	4
165-170	3
170-175	2
175-180	1

10-DEGREE

ZONAL LUMEN SUMMARY

0- 10	2019
0- 20	7706
0- 30	16015
0- 40	25486
0- 50	34641
0- 60	42323
0- 70	47790
0- 80	50741
0- 90	51703
0-100	51813
0-110	51821
0-120	51829
0-130	51837
0-140	51847
0-150	51858
0-160	51869
0-170	51876
0-180	51879

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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	100	97	106	102	99	95	98	95	92	94	92	89	90	88	87	84
2	100	92	85	80	97	90	84	79	86	81	77	83	79	75	80	77	73	71
3	91	81	73	67	89	80	72	66	77	70	65	74	68	64	71	67	63	61
4	84	72	64	57	82	71	63	57	68	62	56	66	60	55	64	59	55	52
5	77	65	56	50	75	64	56	49	62	54	49	60	53	48	58	52	48	46
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	42	40
7	67	53	45	39	65	53	44	39	51	44	38	50	43	38	48	42	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	44	38	34	32
9	58	45	37	32	57	44	37	31	43	36	31	42	36	31	41	35	31	29
10	55	42	34	29	53	41	34	29	40	33	29	39	33	28	38	32	28	27

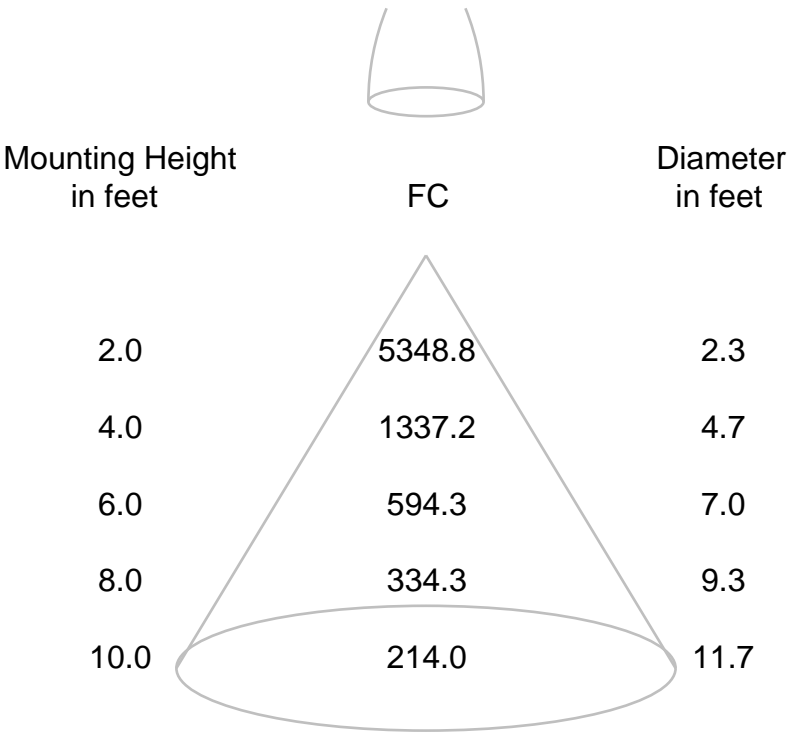
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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CONE OF LIGHT DIAGRAM

(diameter shown is where fc value is half the fc at nadir)



Note: The candela values used to generate this diagram were obtained by averaging the photometric data into a single plane.

REPORT NUMBER: RAB03416
 DATE: 05/23/2017
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: RAIL400NW/D10, RAILP400NW/D10 (Standard Distribution)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: EXTRUDED METAL HOUSING WITH HEAT SINK FINS, FOUR WHITE CIRCUIT BOARD WITH THREE HUNDRED LEDS ON EACH BOARD, METAL REFLECTOR WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.

LAMP: TWELVE HUNDRED LIGHT EMITTING DIODES (LEDs).

DRIVER: 4 x RDD-096-A2450

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (120.0 AND 277.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/01/18
	OCEAN OPTICS QE65PRO Spectroradiometer	05/19/18
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	05/19/18

OBJECT OF TEST: Measure the Absolute Flux in lumens*, Total Radiant Flux*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRIa,1-14), Chromaticity Coordinates (x,y; u'v'), ANSI C78.377 Duv, and electrical data including ANSI C82.77-2002 Power Factor (PF), and Total Harmonic Distortion (THD) to the test sample. Measure electrical data including Total Harmonic Distortion (THD) at maximum nominal rated input voltage. Report Off-State Power.

PROCEDURE: The test sample was mounted inside the integrating sphere, energized, and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the test sample operating at 60 HZ input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). All data are traceable to the National Institute of Standards and Technology. Off-State Power was reported with no voltage applied to the sample.

*NOTE: Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results.

RESULTS: (continued subsequent pages)

Checked X.CAO

Approved D.WANG-MUNSON
 Lighting Engineer

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	51879 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3774
Chromaticity Ordinate y	0.3699
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2258
Chromaticity Ordinate v'	0.4981
Correlated Color Temp CCT (K)	4034
ANSI C78.377-2008 Duv	-0.002
Total Radiant Flux (milliWatts)	153630 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	3.32
Input Power (Watts)	398.3
Input Power Factor (%)	99.9
Input Current THD (%)	2.6
Input Voltage THD (%)	0.3
EFFICACY (Lumens/Watt)	
	130.3
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	1.46
Input Power (Watts)	386.0
Input Power Factor (%)	95.4
Input Current THD (%)	7.1
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	78
R1 Light greyish red	75
R2 Dark greyish yellow	87
R3 Strong yellowish green	93
R4 Moderate yellowish green	74
R5 Light bluish green	76
R6 Light blue	81
R7 Light violet	81
R8 Light reddish purple	55
R9 Strong red	-16
R10 Strong yellow	68
R11 Strong green	71
R12 Strong blue	54
R13 Light yellowish pink (skin)	78
R14 Moderate olive green (leaf)	97

*NOTE:

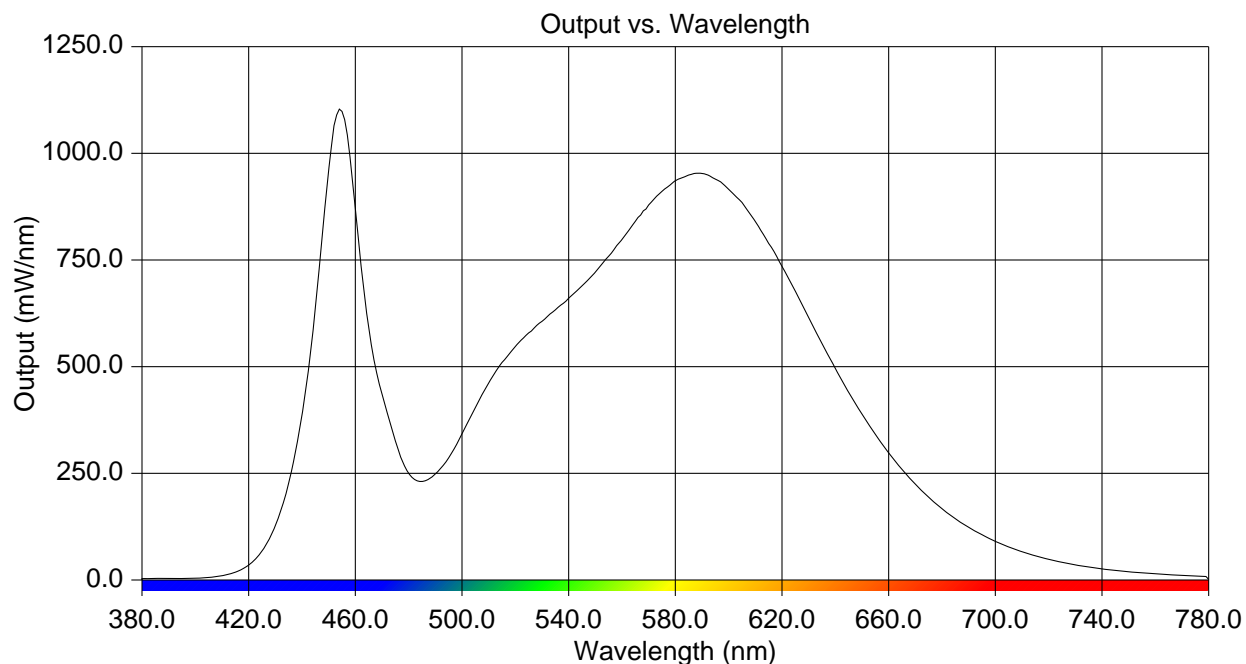
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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	3.150	515	509.819	650	389.217
385	3.416	520	547.292	655	341.523
390	3.397	525	579.147	660	298.238
395	3.623	530	606.199	665	259.001
400	4.384	535	633.096	670	224.811
405	5.918	540	660.483	675	193.609
410	9.761	545	689.629	680	166.770
415	18.141	550	721.426	685	143.373
420	34.919	555	758.869	690	123.227
425	67.308	560	798.085	695	106.246
430	127.070	565	840.666	700	90.561
435	227.261	570	879.009	705	77.508
440	387.120	575	910.941	710	66.112
445	637.338	580	936.117	715	56.427
450	958.316	585	949.135	720	48.474
455	1098.270	590	953.115	725	41.497
460	870.609	595	939.593	730	35.501
465	591.147	600	915.798	735	30.630
470	434.659	605	884.910	740	26.138
475	326.240	610	840.239	745	22.420
480	250.382	615	788.810	750	19.247
485	230.837	620	734.933	755	16.642
490	248.154	625	676.933	760	14.339
495	286.241	630	614.768	765	12.399
500	342.538	635	554.977	770	10.640
505	403.968	640	495.738	775	9.289
510	461.569	645	439.939	780	1.388



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CIE Chromaticity Diagram

