

Code•Master 2™ HID Factory Sealed Luminaires

Explosionproof, Dust-Ignitionproof

Integrally Ballasted. 50 W, 70 W, 100 W, 150 W, 250 W, 400 W HPS; 175 W, 250 W, 320 W, 350 W, 400 W PSMH; 175 W, 250 W, 400 W MH ^{UL}.

Mogul Base. For use with threaded metal conduit.

NEC:

Class I, Division 1 and 2, Groups C, D
Class II, Division 1 and 2, Groups E, F, G
Class III
Marine Type Electric Fixtures
Outside Type (Salt Water)

CEC:

Class I, Division 1 and 2, Groups B, C, D
Class I, Zone 1 and 2; IIB, IIA
Class II, Division 1, Groups E, F, G
Class II, Division 2, Groups F, G
Class III

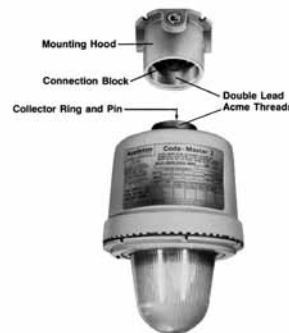
CSA Type 4X
Exd IIB, Zone 1

Applications

- Ideal for use in chemical and petrochemical plants, such as manufacturers of plastics, paints and thinners; in refineries; and in other process areas where ignitable vapors, dust, moisture and corrosive elements may be present.
- Suitable for use in wet locations.

Features

- Fixtures operate safely in high ambient temperatures. For example, in Class I areas the 150 W HPS fixture operates at a maximum temperature of 248 °F/120 °C in a 149 °F/65 °C ambient (212 °F/100 °C temperature in a 104 °F/40 °C ambient).
- Arrangement of heat-producing components results in more efficient heat dissipation for cooler fixture operation.
- Patented “wireless” design. Threading of fixture unit onto mounting hood makes electrical connection. Only wiring required is attaching two wires to connection block in mounting hood.
- Connection block is easily wired: (a) loosen two screws, (b) make wire connections and (c) re-position connection block.
- Safe, easy servicing without disconnecting any wiring. “Wireless” fixture unit easily threads off mounting hood for convenient servicing or for immediate replacement with a “stand-by” unit.
- Acme double-lead threads speed installation and fixture removal from mounting hood – only half as many turns are required as for single-lead threads. The threads do not stick or gall, eliminating the troublesome problems often encountered with single lead threads during fixture unit removal.
- All threaded joints are flame-tight.
- Integrally ballasted HID lighting fixtures; separate ballasts not required.
- Factory sealed. External seals not required.
- Strategic location of lamp socket in combination with the interior prism design of the glass globe provides optimum light distribution and control.
- Superior corrosion resistance, with epoxy powder coat finish.
- Porcelain socket with nickel-plated phosphor bronze screw shell. Assures long trouble-free operation in high ambient areas.
- Choice of mountings: pendant, ceiling, bracket and stanchion.
- Fiberglass-reinforced polyester reflectors, in standard dome, deep dome or 30° angle, are ideal in installations where luminaire is subject to exceptionally severe corrosive atmospheres. The high bay aluminum reflector is indicated in installations where mounting height from work plane ranges from 20 feet/6 meters and higher.
- Optional guards protect globes from damage. Secured to fixture with three screws.
- Light sources: high pressure sodium, pulse start metal halide or metal halide. HPS is excellent where long lamp life is required. HPS provides high lumens per watt and is less expensive to operate. PSMH/MH is desirable where colors of illuminated areas must be close to natural. PSMH/MH provides better color rendition, increased lumen output, longer lamp life, and faster restrike after momentary power interruption.
- A wide range of ballasts and voltages are available for both domestic and export applications.
- Ballasts operate at low temperatures – PSMH: -20 °F/-29 °C; HPS: -40 °F/-40 °C; MH: -31 °F/-35 °C.
- 50 W through 150 W high pressure sodium ballasts are high reactance, high power factor type.



Standard Materials

- Ballast bodies and guards: copperfree (4/10 of 1% max.) aluminum
- Pendant mounting hoods: diecast copperfree (4/10 of 1% max.) aluminum
- Ceiling, bracket and stanchion mounting hoods: sand cast copperfree (4/10 of 1% max.) aluminum
- Reflectors: aluminum or fiberglass reinforced polyester

Standard Finishes

- Ballast bodies, guards and mounting hoods: epoxy powder coat finish, electrostatically applied for complete, uniform corrosion protection

Options

- Fuses for field installation can be ordered by catalog number from fuse kit table.
- Quartz Auxiliary Emergency Lamp for PSMH/MH and HPS fixtures. Relay switch installed in fixture. Add suffix **-E** to fixture catalog number.
- Smart Hot Restrike Option available for 50 W through 150 W HPS only. Add suffix **-SR**.
- Hot Restrike Option available for 50 W through 150 W HPS only. Add suffix **-R**.
- Smart Starter Option available for 50 W through 400 W HPS and PSMH/MH. Add suffix **-S**.

Certifications and Compliances

- UL Standard: UL 1598, UL 844
- UL Listed: E10444
- CSA Standard: C22.2 No. 250, C22.2 No. 137
- CSA Certified: 025428

^{UL} CSA Certification only.

Code•Master 2™ HID Factory Sealed Luminaire Technical Data

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CEC: ¹

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Class I, Zone 1 and 2; IIB, IIA
Class II, Division 1, Groups E, F, G
Class II, Division 2, Groups F, G
Class III

CSA Type 4X

Exd IIB, Zone 1

Classified Area Suitability of Code•Master 2 Series HID Fixtures — Suitability includes use of reflector

Lamp Type	Lamp Watts	Supply Wire (°F/°C)	Ambient Temp (°F/°C)	Class I, Division 1 & 2 With Globe or with Globe & Reflector UL/NEC/CEC Temp. Ident. No.			Class II, Division 1 & 2 With Globe or with Globe & Reflector UL/NEC/CEC Temp. Ident. No. ¹	
				Nameplate Marking	NEC Groups	CEC ¹ Groups	Nameplate Marking	Groups
High Pressure Sodium	50	122/60	104/40	T6	C,D	B, C, D	T4	E,F,G
	50	167/75	131/55	T5	C,D	B, C, D	—	—
	50	185/85	149/65	T5	C,D	B, C, D	—	—
	70	140/60	104/40	T6	C,D	B, C, D	T4	E,F,G
	70	167/75	131/55	T5	C,D	B, C, D	—	—
	70	185/85	149/65	T5	C,D	B, C, D	—	—
	100	122/60	104/40	T5	C,D	B, C, D	T4	E,F,G
	100	167/75	131/55	T5	C,D	B, C, D	—	—
	100	185/85	149/65	T4A	C,D	B, C, D	—	—
	150	122/60	104/40	T5	C,D	B, C, D	T3A	E,F
	150	167/75	131/55	T4A	C,D	B, C, D	T3	—
	250	167/75	104/40	T3C	C,D	B, C, D	—	—
Pulse Start Metal Halide	250	167/75	131/55	T3C	C,D	B, C, D	—	—
	400	185/85	104/40	T3C	C,D	B, C, D	—	—
	175	167/75	104/40	T4	C,D	B, C, D	T3C	E,F,G
	250	167/75	104/40	T4	C,D	B, C, D	T3A	E,F
	320	167/75	104/40	T3C	C,D	B, C, D	—	—
	350	167/75	104/40	T3C	C,D	B, C, D	—	—
Metal Halide ¹	400	167/75	104/40	T3C	C,D	B, C, D	—	—
	175	167/75	104/40	T4	—	B, C, D	T3C	E, F, G
	250	167/75	104/40	T4	—	B, C, D	T3A	E, F
	400	167/75	104/40	T3C	—	B, C, D	—	—

“T” Numbers Represent the Maximum Surface Temperature for Class I, Division 1 Locations and Maximum Surface Temperature Under Dust Blanket for Class II, Division 1 Locations.

“T” Number	T1	350	325	T2	T2A	T2B	T2C	T2D	T3	T3A	T3B	T3C	T4	T4A	T5	T6
Temp. Range (°F)	664-842	619-662	574-617	538-572	502-536	448-500	421-446	394-419	358-392	331-356	322-329	277-320	250-275	214-248	187-12	185
Temp. Range (°C)	351-450	326-350	301-325	281-300	261-280	231-260	216-230	201-215	181-200	166-180	161-165	136-160	121-135	101-120	86-100	85

NOTE: The maximum operating temperature of the fixture must not exceed the ignition temperature of the gas, vapor or dust to be encountered per the National Electrical Code and the Canadian Electrical Code.

¹ Applies to Code•Master 2 only.

¹ CSA Certification only.

Code•Master 2™ HID Factory Sealed Luminaire Mounting Hoods and Fixture Units

Explosionproof, Dust-Ignitionproof

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Class III

CSA Type 4X

Exd IIB, Zone 1

Mounting Hoods

	Hub Size (Inches)	Catalog Number
Pendant — One Hub		
	3/4	CAP-75
	1	CAP-100
Ceiling — Four Hubs, Three Close-Up Plugs		
	3/4	CAC-75
	1	CAC-100
Bracket — Four Hubs, Three Close-Up Plugs		
	3/4	CALB-75
	1	CALB-100
25° Stanchion — One Hub		
	1-1/4 or 1-1/2 ❶	CAS-150
Mounting Adapter with Connection Block		
	Permits use of existing A-51 mounting hoods (AAC Ceiling or AALB Bracket) with the new Code•Master 2 Fixture Unit. After removing existing fixture unit and adapter, screw in the new CMAD-1 Adapter. Then thread new fixture unit into the CMAD-1.	CMAD-1

Fixture Units

Ballast body with globe. Indicate voltage desired by adding voltage suffix to fixture unit catalog number listed below.

Type	Lamp Watts	Fixture Unit Number	Add Voltage Suffixes		
			120/208/240/277	120/277/347 ¹ / ₂ ❸	480 V
High Pressure Sodium High Power Factor (Min. P.F. 90%)	50	CMBL50	MT	TTCN	—
	70	CMBL70	MT	TTCN	48
	100	CMBL100	MT	TTCN	48
	150	CMBL150	MT	TTCN	48
	250	CMBL250	MT	TTCN	48
	400	CMBL400	MT	TTCN	48
Pulse Start Metal Halide Constant Wattage (Min. P.F. 90%)	175	CMBP175	MT	TTCN	48
	250	CMBP250	MT	TTCN	48
	320	CMBP320	MT	TTCN	48
	350	CMBP350	MT	TTCN	48
	400	CMBP400	MT	TTCN	48
Metal Halide ¹ / ₂ Constant Wattage (Min. P.F. 90%)	175	CMBH175	MT	TT	C6
	250	CMBH250	MT	TT	C6
	400	CMBH400	MT	TT	C6

❶ 1-1/2" Tapped hub furnished with 1-1/2" to 1-1/4" reducer.

❷ Add suffix **-R** for "Hot Restrike" and **-S** for "Smart Starter" options.

❸ Change voltage suffix **-TTCN** to **-MTCN** for 120/208/240/277 V, **-C2** for 208 V, **-C3** for 240 V, **-C6** for 480 V, or **-C7** for 600 V, ¹/₂.

¹/₂ CSA Certification only.

♦ Shaded items are suitable for Class I, Group D ONLY.

Code•Master 2™ HID Factory Sealed Luminaire Ballast and Fuse Data

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CEC: ¹/₂

Class I, Division 1 and 2, Groups B, C, D ♦
Class I, Zone 1 and 2; IIB, IIA
Class II, Division 1, Groups E, F, G
Class II, Division 2, Groups F, G
Class III

CSA Type 4X

Exd IIB, Zone 1

Lamp		High Pressure Sodium ¹ / ₂		Ballast Amps		Metal Halide		Fuse Quantity Required	Fuse Kit Catalog Number		
		Start	Operating	Pulse Start	Metal Halide Super CWA	Start	Operating		HPS	PSMH	MH ¹ / ₂
50	120	0.58	0.58	—	—	—	—	1	CF-5	—	—
	208	0.35	0.33	—	—	—	—	2	CF-3	—	—
	240	0.31	0.29	—	—	—	—	2	CF-3	—	—
	277	0.25	0.25	—	—	—	—	1	CF-2	—	—
	347	—	—	—	—	—	—	—	—	—	—
	480	—	—	—	—	—	—	—	—	—	—
70	120	0.90	0.82	—	—	—	—	1	CF-5	—	—
	208	0.50	0.48	—	—	—	—	2	CF-3	—	—
	240	0.44	0.44	—	—	—	—	2	CF-3	—	—
	277	0.35	0.36	—	—	—	—	1	CF-2	—	—
	347	0.30	0.30	—	—	—	—	1	CF-2	—	—
	480	0.21	0.21	—	—	—	—	2	CF-2	—	—
100	120	1.30	1.15	—	—	—	—	1	CF-8	—	—
	208	0.76	0.67	—	—	—	—	2	CF-5	—	—
	240	0.66	0.58	—	—	—	—	2	CF-5	—	—
	277	0.60	0.50	—	—	—	—	1	CF-3	—	—
	347	0.45	0.39	—	—	—	—	1	CF-3	—	—
	480	0.33	0.29	—	—	—	—	2	CF-3	—	—
150	120	2.00	1.66	—	—	—	—	1	CF-10	—	—
	208	1.16	0.96	—	—	—	—	2	CF-5	—	—
	240	1.00	0.83	—	—	—	—	2	CF-5	—	—
	277	0.88	0.75	—	—	—	—	1	CF-5	—	—
	347	0.52	0.56	—	—	—	—	1	CF-5	—	—
	480	0.50	0.44	—	—	—	—	2	CF-3	—	—
175	120	—	—	1.10	1.86	1.30	1.80	1	—	CF-5	CF-5
	208	—	—	0.75	1.23	0.75	1.10	2	—	CF-3	CF-3
	240	—	—	0.65	0.98	0.65	0.90	2	—	CF-3	CF-3
	277	—	—	0.55	0.87	0.55	0.80	1	—	CF-2	CF-2
	347	—	—	0.25	0.65	0.50	0.65	1	—	CF-2	CF-2
	480	—	—	0.25	0.50	—	—	2	—	CF-2	—
250	120	1.75	2.70	1.96	2.50	1.20	2.60	1	CF-8	CF-8	CF-8
	208	1.00	1.50	1.13	1.45	0.65	1.50	2	CF-5	CF-5	CF-5
	240	0.85	1.30	0.98	1.25	0.60	1.30	2	CF-5	CF-5	CF-5
	277	0.75	1.15	0.85	1.10	0.50	1.12	1	CF-5	CF-3	CF-3
	347	0.60	0.93	0.62	0.90	0.80	0.90	1	CF-5	CF-3	CF-3
	480	0.40	0.65	0.32	0.67	—	—	2	CF-2	CF-2	—
320	120	—	—	3.30	3.25	—	—	1	—	CF-8	—
	208	—	—	1.90	1.90	—	—	2	—	CF-6	—
	240	—	—	1.60	1.65	—	—	2	—	CF-5	—
	277	—	—	1.40	1.40	—	—	1	—	CF-5	—
	347	—	—	0.70	1.10	—	—	1	—	CF-5	—
	480	—	—	0.45	0.85	—	—	2	—	CF-3	—
350	120	—	—	3.60	3.70	—	—	1	—	CF-10	—
	208	—	—	2.10	2.10	—	—	2	—	CF-8	—
	240	—	—	1.80	1.80	—	—	2	—	CF-5	—
	277	—	—	1.60	1.60	—	—	1	—	CF-5	—
	347	—	—	0.70	1.01	—	—	1	—	CF-5	—
	480	—	—	0.60	0.90	—	—	2	—	CF-3	—
400	120	3.10	3.90	3.50	4.00	3.25	4.00	1	CF-15	CF-10	CF-10
	208	1.80	2.25	2.00	2.30	1.90	2.30	2	CF-8	CF-8	CF-8
	240	1.60	1.95	1.75	2.00	1.65	2.00	2	CF-5	CF-5	CF-5
	277	1.35	1.70	1.50	1.75	1.40	1.75	1	CF-5	CF-5	CF-5
	347	1.00	1.32	1.10	1.35	1.20	1.40	1	CF-5	CF-5	CF-5
	480	0.80	1.00	0.75	1.00	—	—	2	CF-5	CF-3	—

Fuse Kit includes fuse, fuse holder and necessary hardware for field installation. Mounts easily in ballast body with one screw. Order one fuse for 120 and 277 V, and 2 fuses for 208, 240 and 480 V. CF-2 = 2 amp; CF-3 = 3 amp; CF-5 = 5 amp; CF-6 = 6 amp; CF-8 = 8 amp; CF-10 = 10 amp

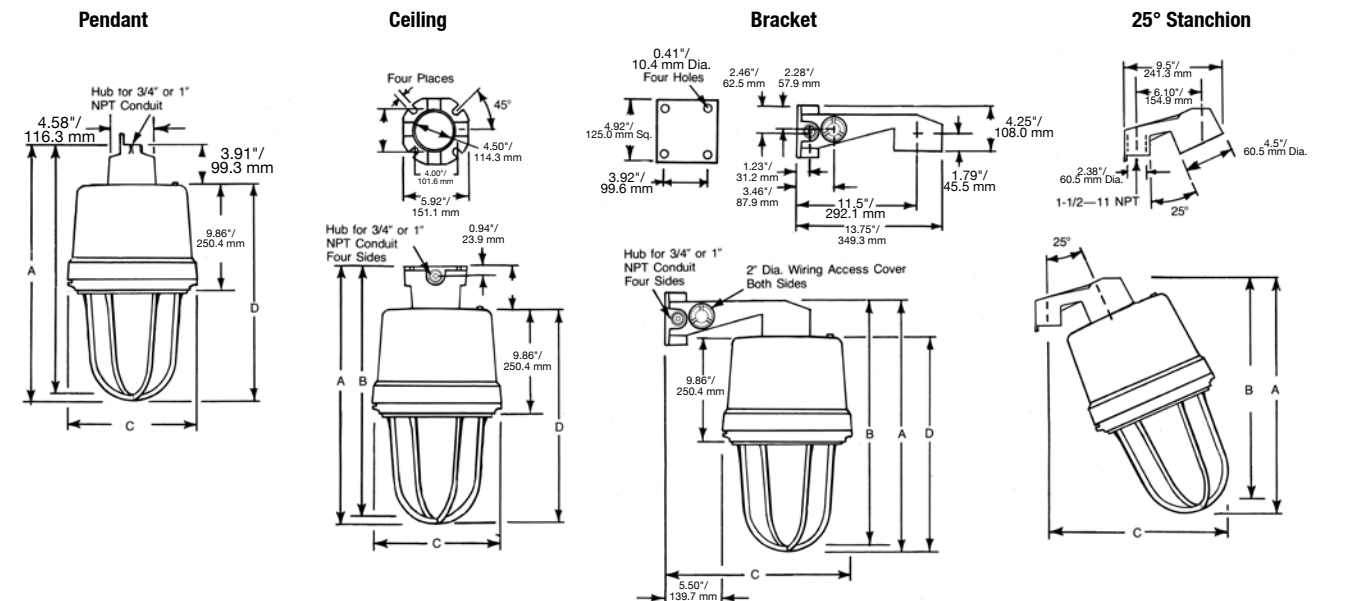
¹/₂ 50 through 150 W HPS have H.P.F. High Reactance ballasts; 250 W and 400 W HPS have CWA ballasts.

¹/₂ CSA Certification only.

Code•Master 2™ HID Factory Sealed Luminaire Dimensions

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Mogul Base. For use with threaded metal conduit.



Dimensions in In/mm

	Pendant				Ceiling				Bracket				25° Stanchion		
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C
50–250 W ¹	21.50/ 546.1	20.50/ 520.7	12.00/ 304.8	17.61/ 447.3	21.61/ 548.9	20.61/ 523.5	12.00/ 304.8	17.61/ 447.3	21.86/ 555.2	20.86/ 529.8	17.50/ 444.5	17.61/ 447.3	19.50/ 495.3	18.70/ 475.0	16.00/ 406.4
250–400 W ²	24.50/ 522.3	23.50/ 596.9	12.00/ 304.8	20.36/ 507.1	24.36/ 618.7	23.36/ 570.1	12.00/ 304.8	20.36/ 507.1	24.61/ 625.1	23.61/ 599.7	17.50/ 444.5	20.36/ 507.1	22.20/ 563.9	21.20/ 538.5	17.50/ 444.5

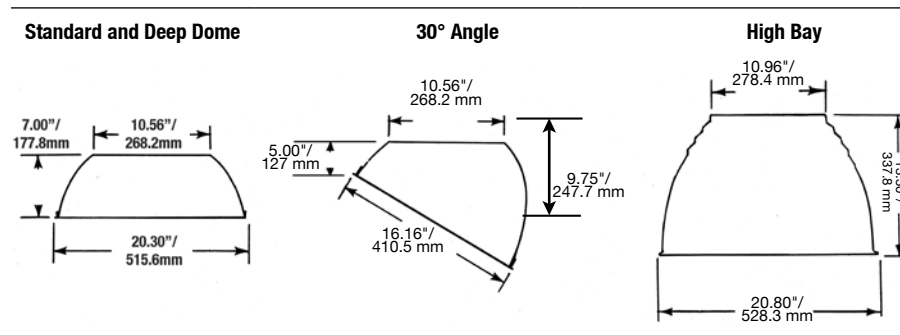
Fixture and Accessory Weights lbs/kgs

Fixture Size	Fixture Weight	Reflector Weight	Guard Weight
50 W through 175 W	32/14.5	3/1.4	1/5
250 W PSMH/MH	37/16.9	3/1.4	1/5
250 W HPS	40/18.1	3/1.4	2/9
320 W, 350 W and 400 W PSMH, 400 W MH	45/20.4	3/1.4	2/9

Mounting Hood Weights lbs/kgs

Pendant	Ceiling	Bracket	Stanchion
2/0.9	4/1.8	6/2.7	2/0.9

Reflector Dimensions in In/mm



- ¹ 50, 70, 100 and 150 W HPS; 175 W PSMH; 175 and 250 W MH.
² 250 and 400 W HPS; 250, 320, 350 and 400 W PSMH; 400 W MH.

Code•Master 2™ HID Factory Sealed Luminaire Photometric Data

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Mogul Base. For use with threaded metal conduit.

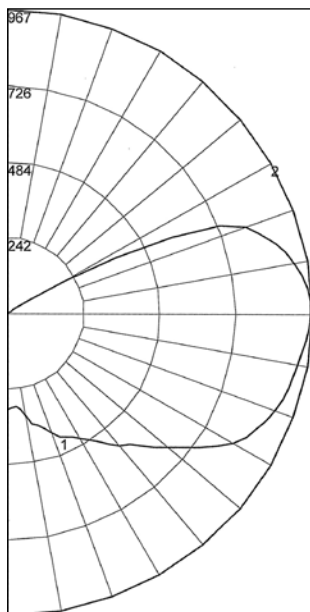
* Photometric data is based on a 100-watt clear HPS lamp (9,500 lumens). For candlepower values of fixtures with other lamps, use the following multipliers: 50 W HPS – 0.42 (4,000 lumens); 70 W HPS – 0.61 (6,300 lumens); and 150 W HPS – 1.68 (16,000 lumens).

Total Luminaire Efficiency = 76.4%

CIE Type – Semi-Direct

Plane	Spacing Criteria
0-180	2.66
90-270	2.66
Diagonal	2.84

Zone	Lumens
0-10	29.80
10-20	106.54
20-30	202.92
30-40	318.52
40-50	468.31
50-60	670.49
60-70	866.67
70-80	976.61
80-90	1038.41
90-100	1042.18
100-110	927.00
110-120	551.82
120-130	51.82
130-140	2.51
140-150	0.25
150-160	0.00
160-170	0.00
170-180	0.00



REPORT NUMBER: **CL10G**

Lamps: 100 W High Pressure Sodium with Globe only

Coefficients of Utilization – Zonal Cavity Method

Effective Floor Cavity Reflectance 0.20

% Ceiling	Rcc	80				70				50				30				10				0
% Walls	Rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
	0	84	84	84	84	79	79	79	79	70	70	70	61	61	61	53	53	53	49	49	49	49
	1	72	66	61	56	66	61	57	52	53	49	46	45	42	40	38	36	34	30	30	30	30
	2	63	54	47	41	58	51	44	39	43	38	34	37	32	29	30	27	24	21	21	21	21
	3	56	46	38	32	52	43	36	30	36	31	26	31	26	22	25	22	18	15	15	15	15
	4	51	40	32	26	47	37	30	24	31	25	21	26	22	18	22	18	14	12	12	12	12
	5	46	35	27	21	42	32	25	20	28	22	17	23	18	14	19	15	12	9	9	9	9
	6	42	31	23	18	39	29	22	17	24	19	14	21	16	12	17	13	10	7	7	7	7
	7	39	28	20	15	36	26	19	14	22	16	12	18	14	10	15	11	8	6	6	6	6
	8	36	25	18	13	33	23	17	12	20	14	10	17	12	9	14	10	7	5	5	5	5
	9	33	23	16	11	31	21	15	11	18	13	9	15	11	8	13	9	6	4	4	4	4
	10	31	21	14	10	29	19	13	9	17	12	8	14	10	7	12	8	6	4	4	4	4

Zonal Lumen Summary

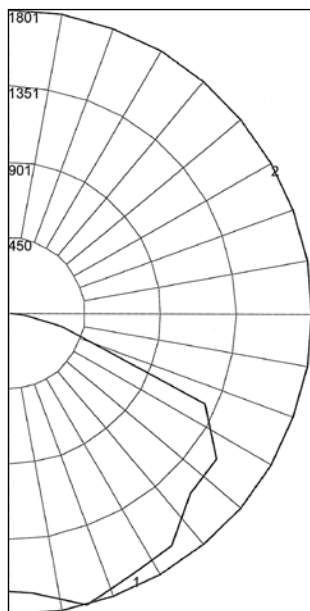
Zone	Lumens	% Lamp	% Fixture	Zone	Lumens	% Lamp	% Fixture
0-30	339.26	3.6	4.7	90-120	2521.83	26.5	34.8
0-40	657.79	6.9	9.1	90-130	2572.83	27.1	35.5
0-60	1796.59	18.9	24.8	90-150	2575.59	27.1	35.5
0-90	4678.28	49.2	64.5	90-180	2575.59	27.1	35.5
				0-180	7253.87	76.4	100.0

Total Luminaire Efficiency = 71.3%

CIE Type – Direct

Plane	Spacing Criteria
0-180	1.54
90-270	1.54
Diagonal	1.66

Zone	Lumens
0-10	40.00
10-20	331.02
20-30	660.22
30-40	934.51
40-50	1131.33
50-60	1272.76
60-70	1322.68
70-80	826.95
80-90	254.44
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00



REPORT NUMBER: **CL10ST**

Lamps: 100 W High Pressure Sodium with Standard Dome Reflector

Coefficients of Utilization – Zonal Cavity Method

Effective Floor Cavity Reflectance 0.20

% Ceiling	Rcc	80				70				50				30				10				0
% Walls	Rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
	0	85	85	85	85	83	83	83	83	79	79	79	76	76	76	73	73	73	71	71	71	71
	1	76	71	68	64	74	70	66	63	67	64	61	64	61	59	61	59	57	56	56	56	56
	2	67	60	54	49	65	59	53	49	56	51	47	54	50	46	51	48	45	43	43	43	43
	3	60	51	44	39	58	50	44	38	48	42	38	46	41	37	44	40	36	34	34	34	34
	4	54	44	37	31	52	43	36	31	41	35	31	40	34	30	38	33	30	28	28	28	28
	5	49	39	31	26	48	38	31	26	36	30	25	35	29	25	33	29	25	23	23	23	23
	6	45	34	27	22	43	33	27	22	32	26	21	31	25	21	30	25	21	19	19	19	19
	7	41	30	23	19	40	30	23	18	29	23	18	28	22	18	27	22	18	16	16	16	16
	8	38	27	21	16	37	27	20	16	26	20	16	25	20	16	24	19	16	14	14	14	14
	9	35	25	18	14	34	24	18	14	24	18	14	23	18	14	22	17	14	12	12	12	12
	10	33	23	17	12	32	22	16	12	22	16	12	21	16	12	20	15	12	11	11	11	11

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture	Zone	Lumens	% Lamp	% Fixture
0-30	1031.23	10.9	15.2	90-120	0.00	0.0	0.0
0-40	1965.74	20.7	29.0	90-130	0.00	0.0	0.0
0-60	4369.83	46.0	64.5	90-150	0.00	0.0	0.0
0-90	6773.90	71.3	100.0	90-180	0.00	0.0	0.0
				0-180	6773.90	71.3	100.0