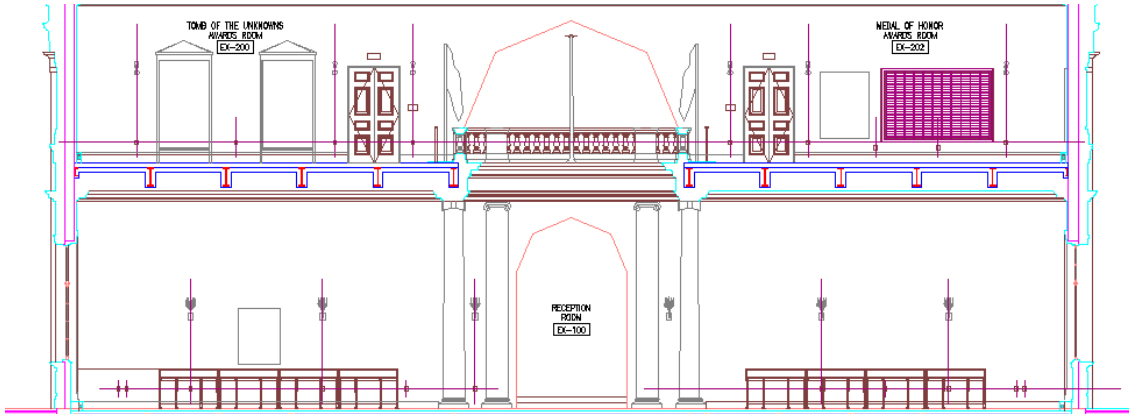


Mid Semester Lighting Submission

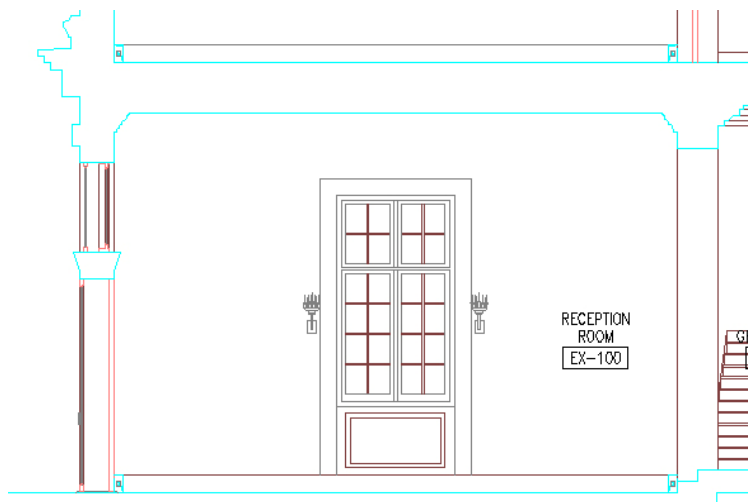
Jennifer Sanborn

Reception Room

Section Looking West:



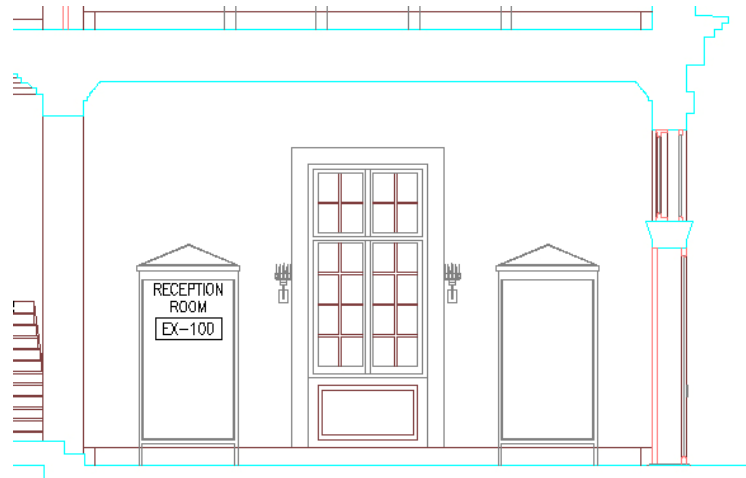
Section Looking South:



Mid Semester Lighting Submission

Jennifer Sanborn

Section Looking North:



Concept Summary:

My main goal for this space is to make the display cases more prominent using light. As of now, the sconces and chandeliers over power the space with their brightness. By making the display cases brighter, this would also grab the attention of the entering occupants and move them into the two side spaces where the artifacts are located. Another goal is to create a more grand entrance. I want the occupants to not only notice the artifacts in the display cases, but to also notice the greatness of the architecture. The architecture in itself is an artifact on display.

To achieve my goal of making the display cases more prominent, I plan on lowering the wattage of the lamps in the sconces and chandeliers to lower the lumen output of these fixtures. I also plan on adding fiber optic lighting into the display cases to evenly light the artifacts which are placed in them. I chose fiber optic lighting for the lower ultra violet and infrared light output they are known to have. All display case lighting will be powered by their adjacent receptacle. By lowering the lumen output of the sconces and chandeliers, I need to add a fixture to increase the ambient light in the room, so I plan on using a bendable track system in the middle of both chandeliers with 4-MR16 heads pointing out at the ceiling. This will increase the ambient light and also light the ceiling as an architectural feature. I also plan on up-lighting the columns in the middle of the room as another architectural feature. By doing this, the occupants will be drawn into the front doors, then into the two side spaces by the ceiling and the display cases.

Mid Semester Lighting Submission

Jennifer Sanborn

Space Properties:

Floor:

Material: Marble
Color: Dirty White
Reflectance: 0.61

Walls:

Material: Plaster
Paint color: Orange-Yellow
Reflectance: 0.71

Ceiling:

Material: Plaster
Paint Color: White
Reflectance: 0.9

Design Criteria:

Tasks:

- Reading
- Writing
- Conversing
- Presenting

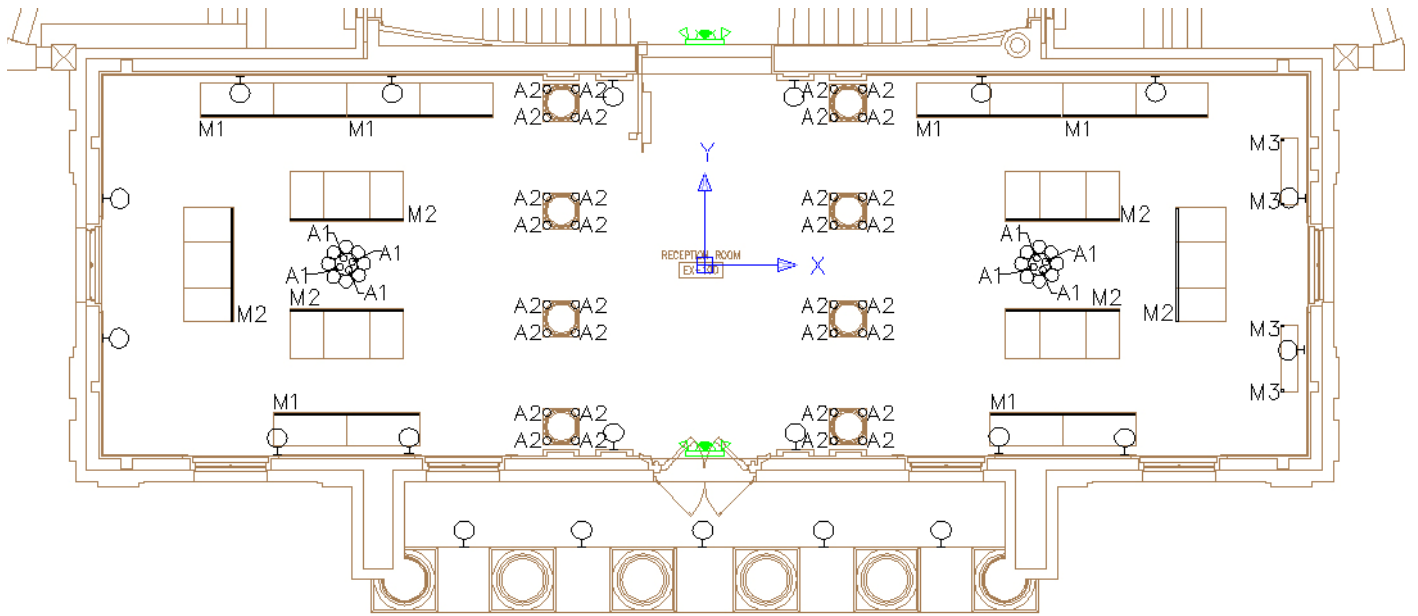
Illuminances:

- E_H (table) Category D-30fc
- E_V (face) Category B-5fc

Mid Semester Lighting Submission

Jennifer Sanborn

Lighting Layout:



This rendering needs some work. The mesh levels on the walls will need to change.

Memorial Reception Building

Mid Semester Lighting Submission

Jennifer Sanborn

Light Loss Factors:

Luminaire	Maintenance Category	LLD	LDD	BF	RSDD	Total
Diplay Case (M1,2,3)	IV	0.9	0.89	1.0	0.92	0.74
Uplight (A2)	VI	1.0	0.86	1.0	0.87	0.75
Track (A1)	I	1.0	0.93	1.0	0.92	0.86

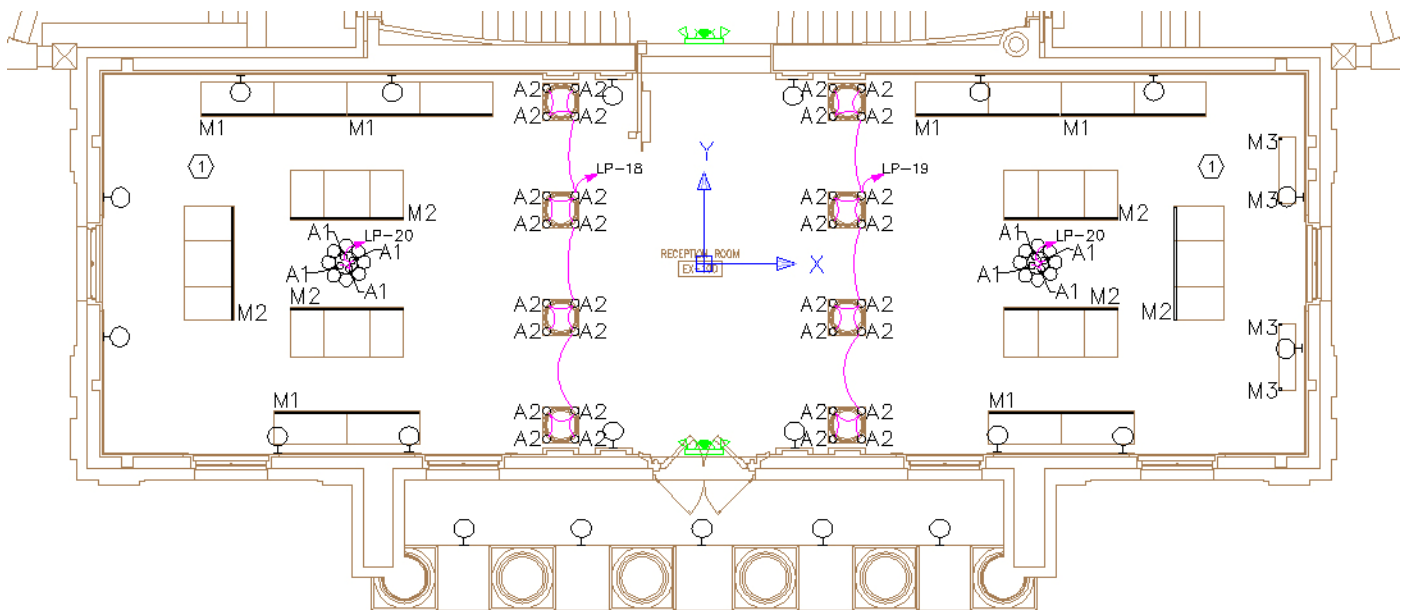
Assumptions: Clean, 12 month cleaning cycle, RCR: 4.5

Power Density:

Luminaire	Watts	Lamp Qty	Total Watts	Room Sq.Ft.	Watts/Sq.Ft.	Allowed
Diplay Case (M1,2,3)	150	16	2400	2168.9	1.1	1.3 + 1.0 Accent
Uplight (A2)	75	26	1950		0.90	
Track (A1)	45	8	360		0.17	
Cendelabra	25	106	2650		1.2	
Total					3.39	2.3

I am over my allotted power density, lower wattage, less fixtures, or different fixtures need to be selected for this design to work while staying under the power density allowed. Not sure what "restoration" means in the ASHRAE 90.1, 2004 handbook which is allowed 1.7 W/sq. ft.

Wiring/Switching Diagram:



① M1, M2, AND M3 FIXTURE TO BE CONNECTED TO RECEPTALCES IN THIS SPACE.

Mid Semester Lighting Submission

Jennifer Sanborn

Panel Board Schedule:

Existing:

PANELBOARD SCHEDULE												
VOLTAGE: 208 SIZE/TYPE BUS: 130A COPPER SIZE/TYPE MAIN: 100A/3P MLO			PANEL TAG: LP PANEL LOCATION: Electrical Room PANEL MOUNTING: SURFACE						MIN. C/B AIC: 12K OPTIONS:			
DESCRIPTION	LOCATION	LOAD (WATTS)	C/B SIZE	POS. NO.	A	B	C	POS. NO.	C/B SIZE	LOAD (WATTS)	LOCATION	DESCRIPTION
Ex. Fxt. 'H5'	Chapel	200	20A/1P	1	*			2	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F9&F9A'	Chapel	300	20A/1P	3		*		4	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F10'	Chapel	500	20A/1P	5			*	6	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F10'	Chapel	500	20A/1P	7	*			8	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F10'	Chapel	500	20A/1P	9		*		10	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'H5A'	Chapel	200	20A/1P	11			*	12	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F9&F9A'	Chapel	300	20A/1P	13	*			14	20A/1P	200	Chapel	Ex. Fxt. 'H5'
Ex. Fxt. 'F8'	Chapel	800	20A/1P	15		*		16	20A/1P	200	Chapel	Ex. Fxt. 'H5'
Ex. Fxt. 'K'	Recept Rm	200	20A/1P	17			*	18	20A/1P	0	0	Spare
Spare	0	0	20A/1P	19	*			20	20A/1P	0	0	Spare
Spare	0	0	20A/1P	21		*		22	20A/1P	500	Award Rm	Ex. Wall Sconce
Spare	0	0	20A/1P	23			*	24	20A/1P	500	Award Rm	Ex. Wall Sconce
	0	0	20A/1P	25	*			26	20A/1P	0		
	0	0	20A/1P	27		*		28	20A/1P	0		
	0	0	20A/1P	29			*	30	20A/1P	0		
	0	0	20A/1P	31	*			32	20A/1P	0		
	0	0	20A/1P	33		*		34	20A/1P	0		
	0	0	20A/1P	35			*	36	20A/1P	0		
	0	0	20A/1P	37	*			38	20A/1P	0		
	0	0	20A/1P	39		*		40	20A/1P	0		
	0	0	20A/1P	41			*	42	20A/1P	0		
CONNECTED LOAD (KW) - A		4.80							TOTAL DESIGN LOAD (KW)		17.27	
CONNECTED LOAD (KW) - B		5.90							POWER FACTOR		1.00	
CONNECTED LOAD (KW) - C		5.00							TOTAL DESIGN LOAD (AMPS)		48	

New:

PANELBOARD SCHEDULE												
VOLTAGE: 208 SIZE/TYPE BUS: 130A COPPER SIZE/TYPE MAIN: 100A/3P MLO			PANEL TAG: LP PANEL LOCATION: Electrical Room PANEL MOUNTING: SURFACE						MIN. C/B AIC: 12K OPTIONS:			
DESCRIPTION	LOCATION	LOAD (WATTS)	C/B SIZE	POS. NO.	A	B	C	POS. NO.	C/B SIZE	LOAD (WATTS)	LOCATION	DESCRIPTION
Ex. Fxt. 'H5'	Chapel	200	20A/1P	1	*			2	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F9&F9A'	Chapel	300	20A/1P	3		*		4	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F10'	Chapel	500	20A/1P	5			*	6	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F10'	Chapel	500	20A/1P	7	*			8	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F10'	Chapel	500	20A/1P	9		*		10	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'H5A'	Chapel	200	20A/1P	11			*	12	20A/1P	1800	Award Rm	Ex. Fxt. 'G'
Ex. Fxt. 'F9&F9A'	Chapel	300	20A/1P	13	*			14	20A/1P	200	Chapel	Ex. Fxt. 'H5'
Ex. Fxt. 'F8'	Chapel	800	20A/1P	15		*		16	20A/1P	200	Chapel	Ex. Fxt. 'H5'
Ex. Fxt. 'K'	Recept Rm	200	20A/1P	17			*	18	20A/1P	1200	Recept Rm	New Fixture 'A2'
New Fixture 'A2'	Recept Rm	1200	20A/1P	19	*			20	20A/1P	400	Recept Rm	New Fixture 'A1'
Spare	0	0	20A/1P	21		*		22	20A/1P	500	Award Rm	Ex. Wall Sconce
Spare	0	0	20A/1P	23			*	24	20A/1P	500	Award Rm	Ex. Wall Sconce
	0	0	20A/1P	25	*			26	20A/1P	0		
	0	0	20A/1P	27		*		28	20A/1P	0		
	0	0	20A/1P	29			*	30	20A/1P	0		
	0	0	20A/1P	31	*			32	20A/1P	0		
	0	0	20A/1P	33		*		34	20A/1P	0		
	0	0	20A/1P	35			*	36	20A/1P	0		
	0	0	20A/1P	37	*			38	20A/1P	0		
	0	0	20A/1P	39		*		40	20A/1P	0		
	0	0	20A/1P	41			*	42	20A/1P	0		
CONNECTED LOAD (KW) - A		6.40							TOTAL DESIGN LOAD (KW)		20.35	
CONNECTED LOAD (KW) - B		5.90							POWER FACTOR		1.00	
CONNECTED LOAD (KW) - C		6.20							TOTAL DESIGN LOAD (AMPS)		57	

Mid Semester Lighting Submission

Jennifer Sanborn

Work Area

Concept Summary:

For this space, my main goal is to make the space comfortable to be in. The guards who are in this space are here for quite a long time and I would like to think they would want a space they can relax in after being on duty. For this space I have chosen to use the Flynn mode of hazy and quiet to achieve my goal. I would also like to create interest in this room to also increase the relaxed feel.

To achieve hazy and quiet, I plan on lighting the ceiling indirectly with fluorescent cove fixtures. Right now there is no cove in this space, but there is a drop down ceiling section centered over the conference room table. I plan on removing the drop down ceiling portion and propose a cove instead. Having this over the conference room table, this is a perfect opportunity to light the table indirectly. I plan on also having downlights around this cove to create perimeter lighting to also enforce my Flynn mode, but to also increase flexibility for the occupant during conferences. To create interest in the room, I plan on lighting the shelves of the entertainment center and the weapons display case with built in downlights and display case lighting. These also will be powered by their adjacent receptacles.

Space Properties:

Floor:

Material: Carpet

Color: Atlas Carpet Mills Inc. Chartwell #CE 21 Sunflower

Reflectance: 0.3

Walls:

Material: Gypsum Wall Board

Paint Color:  Benjamin Moore Color

#HC-39 Putman Ivory with Eggshell Finish

Reflectance: 0.75

Ceiling:

Material: Gypsum Board

Paint Color: Benjamin Moore Color

#White Satin 2067-70 with Egg Shell Finish

Reflectance: 0.9

Material: 2x2 Acoustical Tiles

Color: Standard White

Reflectance: 0.9

Mid Semester Lighting Submission

Jennifer Sanborn

Design Criteria:

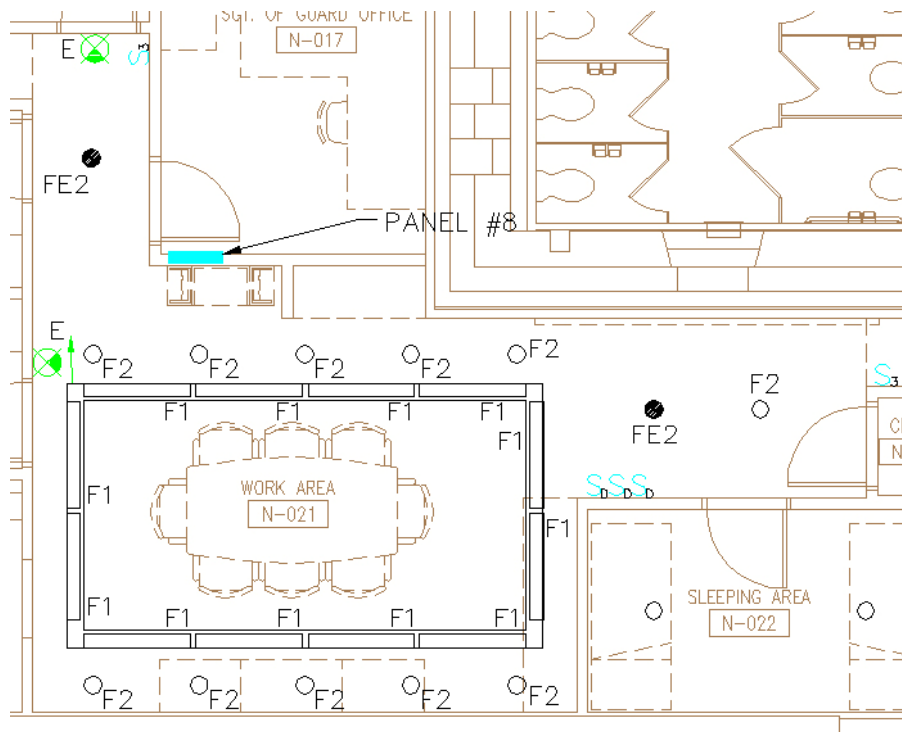
Tasks:

- Viewing
- Conversing
- Reading
- Writing
- Meandering

Illuminance:

- E_H (display cases) Category D-30fc
- E_V (face) Category B-5fc

Lighting Layout:

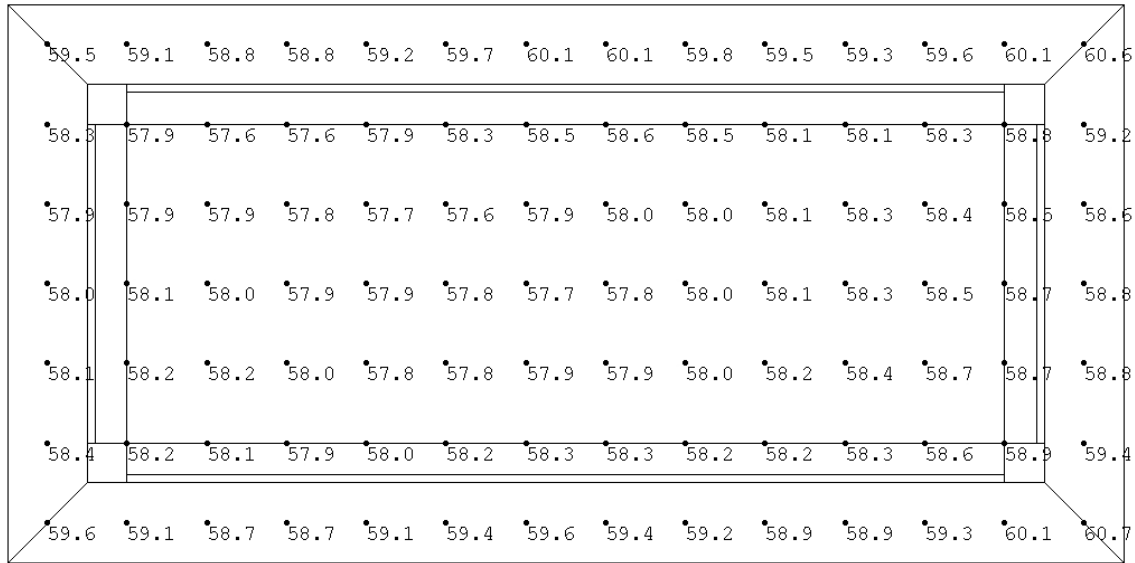


Mid Semester Lighting Submission

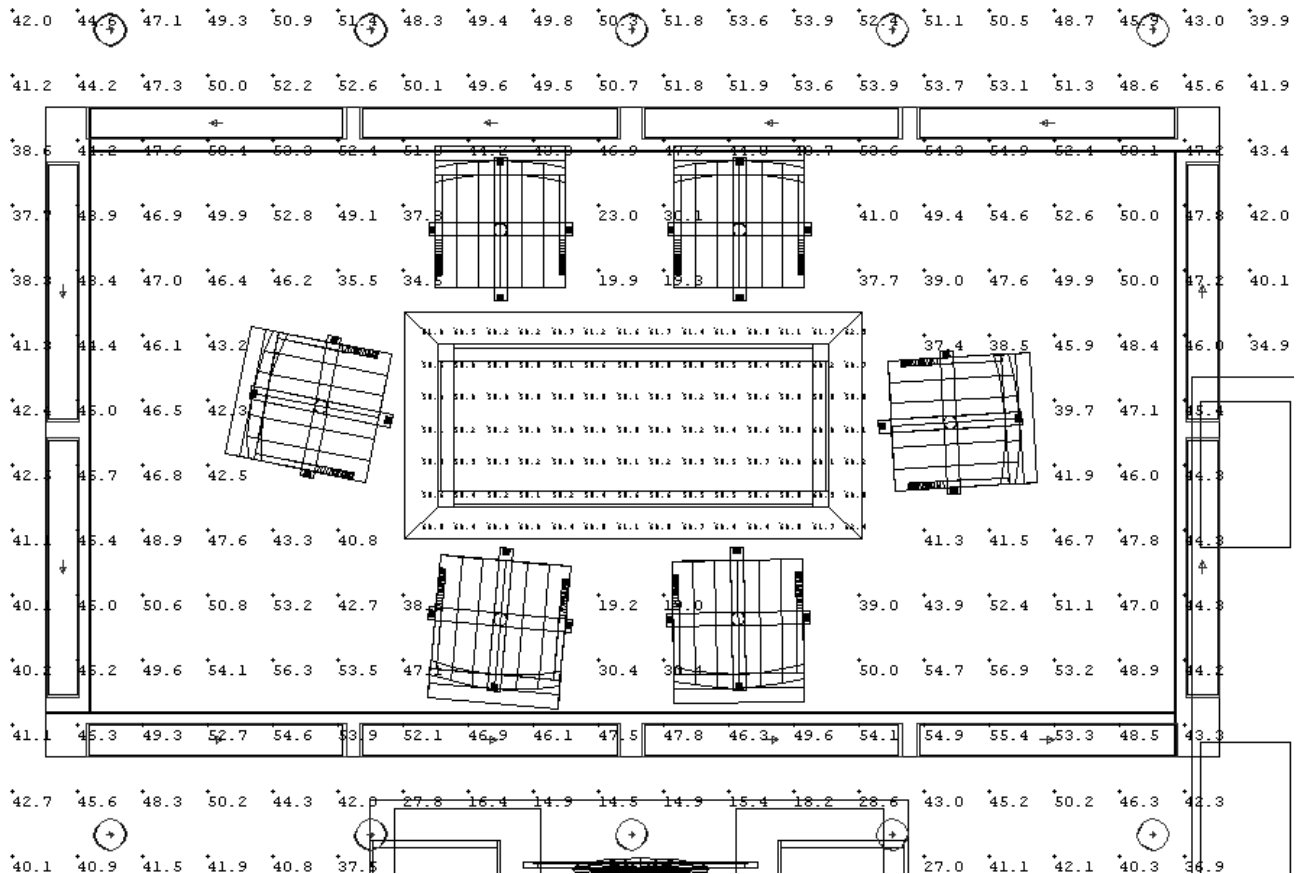
Jennifer Sanborn

Foot Candle Levels:

Conference Room Table with 100% full light output.



Conference Room Floor with 100% full light output.



Mid Semester Lighting Submission

Jennifer Sanborn



This rendering needs some work. The scallops wouldn't have those square images in them in real life.

LLF:

Luminaire	Maintenance Category	LLD	LDD	BF	RSDD	Total
Cove (F1)	VI	0.92	0.86	0.99	0.87	0.68
Downlights (F2, FE2)	IV	0.85	0.89	1.0	0.97	0.73

Assumptions: Clean, 12 month cleaning cycle, RCR: 3.35

Power Density:

Luminaire	Watts	Lamp Qty	Total Watts	Room Sq.Ft.	Watts/Sq.Ft.	Allowed
Cove (F1)	54	12	648	455	1.42	1.3 + 1.0 Accent
Downlights (F2, FE2)	26	26	676	455	1.49	
Total					2.91	2.3

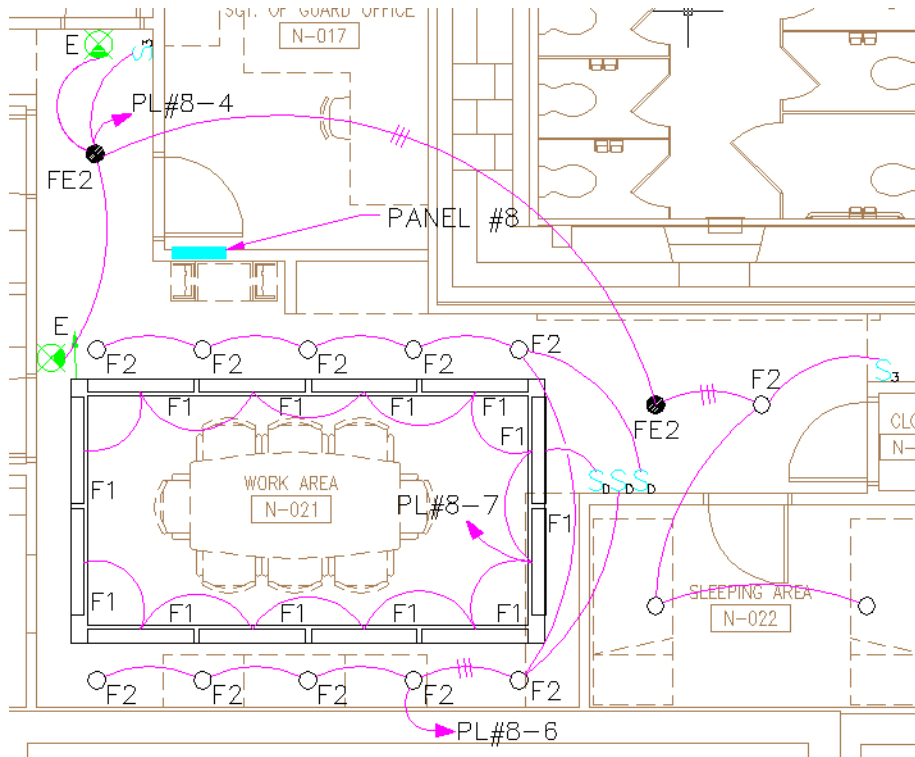
I am over my allotted power density, but this shouldn't be a problem since my footcandle levels are higher than needed. I just need to adjust the number of fixtures that I have in my space or the wattage per fixture.

Memorial Reception Building

Mid Semester Lighting Submission

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Wiring/Switching Diagram:



Mid Semester Lighting Submission

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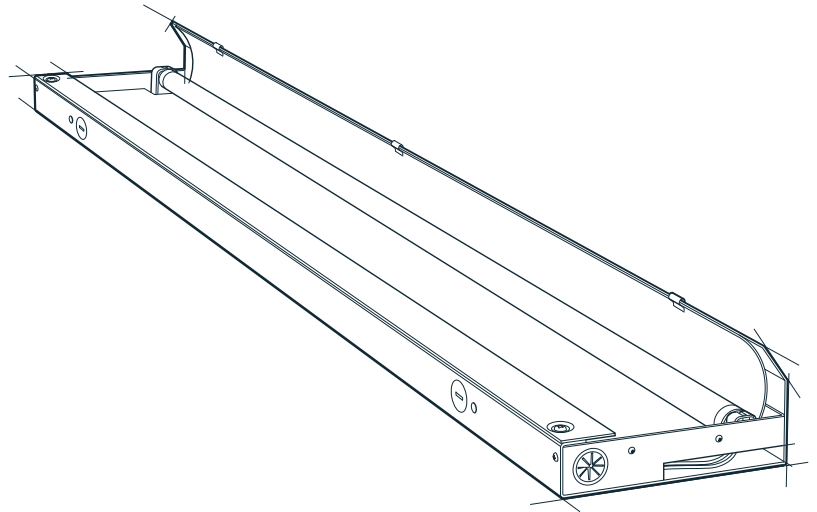
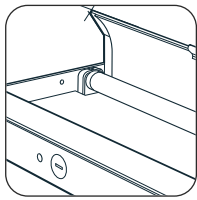
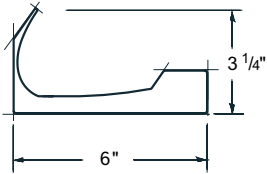
Panel Board Schedules:

Existing:

PANELBOARD SCHEDULE												
VOLTAGE: 208 SIZE/TYPE BUS: 230A COPPER SIZE/TYPE MAIN: 225A/3P MLO			PANEL TAG: 8 PANEL LOCATION: Tomb Guard Quarters PANEL MOUNTING: Recessed						MIN. C/B AIC: 12K OPTIONS:			
DESCRIPTION	LOCATION	LOAD (WATTS)	C/B SIZE	POS. NO.	A	B	C	POS. NO.	C/B SIZE	LOAD (WATTS)	LOCATION	DESCRIPTION
Ex. Receptacles	Room 1	750	20A/1P	1	*			2	20A/1P	1837	Practice Rm	Ex. Lights
Microwave		1000	20A/1P	3		*		4	20A/1P	306		Ex. Emergency Lts
Ex. Lights		816	20A/1P	5			*	6	20A/1P	918	Conf. Area	Ex. Lights
Spare		0	20A/1P	7	*			8	20A/1P	1531	Restroom	Ex. Lights
Ex. Lights		1429	20A/1P	9		*		10	20A/1P	0		Spare
Ex. Receptacles		800	20A/1P	11			*	12	20A/1P	1400	Practice Rm	Ex. Lights
Exhaust Fan (EF-2)		200	20A/1P	13	*			14	20A/1P	750		Ex. Receptacles
Ex. Receptacles		2000	20A/1P	15		*		16	20A/1P	1500		Ex. Receptacles
Ex. Receptacles		1250	20A/1P	17			*	18	20A/1P	500		Ex. Receptacles
Ex. Receptacles		250	20A/1P	19	*			20	20A/1P	1250		Ex. Receptacles
Ex. Receptacles		1000	20A/1P	21		*		22	20A/1P	500		Ex. Receptacles
Dishwasher		1100	20A/1P	23			*	24	20A/1P	1200		Garbage Disposal
Existing Load		0	20A/1P	25	*			26	20A/1P	800		Refrigerator
Existing Load		0	20A/1P	27		*		28	20A/1P	0		Ex. Receptacles
Ex. Receptacles		1250	20A/1P	29			*	30	20A/1P	250		#REF!
		0	20A/1P	31	*			32	20A/1P	0		
		0	20A/1P	33		*		34	20A/1P	0		
		0	20A/1P	35			*	36	20A/1P	0		
		0	20A/1P	37	*			38	20A/1P	0		
		0	20A/1P	39		*		40	20A/1P	0		
		0	20A/1P	41			*	42	20A/1P	0		
CONNECTED LOAD (KW) - A		7.37							TOTAL DESIGN LOAD (KW)		23.07	
CONNECTED LOAD (KW) - B		7.73							POWER FACTOR		0.90	
CONNECTED LOAD (KW) - C		9.48							TOTAL DESIGN LOAD (AMPS)		71	

New:

PANELBOARD SCHEDULE												
VOLTAGE: 208 SIZE/TYPE BUS: 230A COPPER SIZE/TYPE MAIN: 225A/3P MLO			PANEL TAG: 8 PANEL LOCATION: Tomb Guard Quarters PANEL MOUNTING: Recessed						MIN. C/B AIC: 12K OPTIONS:			
DESCRIPTION	LOCATION	LOAD (WATTS)	C/B SIZE	POS. NO.	A	B	C	POS. NO.	C/B SIZE	LOAD (WATTS)	LOCATION	DESCRIPTION
Ex. Receptacles	Room 1	750	20A/1P	1	*			2	20A/1P	1837	Practice Rm	Ex. Lights
Microwave		1000	20A/1P	3		*		4	20A/1P	306	Conf. Area	New Lights
New Lights	Conf. Area	306	20A/1P	5			*	6	20A/1P	612	Conf. Area	Ex. Lights
New Lights	Conf. Area	800	20A/1P	7	*			8	20A/1P	1531	Restroom	Ex. Lights
Ex. Lights		1429	20A/1P	9		*		10	20A/1P	0		Spare
Ex. Receptacles		800	20A/1P	11			*	12	20A/1P	1400	Practice Rm	Ex. Lights
Exhaust Fan (EF-2)		200	20A/1P	13	*			14	20A/1P	750		Ex. Receptacles
Ex. Receptacles		2000	20A/1P	15		*		16	20A/1P	1500		Ex. Receptacles
Ex. Receptacles		1250	20A/1P	17			*	18	20A/1P	500		Ex. Receptacles
Ex. Receptacles		250	20A/1P	19	*			20	20A/1P	1250		Ex. Receptacles
Ex. Receptacles		1000	20A/1P	21		*		22	20A/1P	500		Ex. Receptacles
Dishwasher		1100	20A/1P	23			*	24	20A/1P	1200		Garbage Disposal
Existing Load		0	20A/1P	25	*			26	20A/1P	800		Refrigerator
Existing Load		0	20A/1P	27		*		28	20A/1P	0		Ex. Receptacles
Ex. Receptacles		1250	20A/1P	29			*	30	20A/1P	250		#REF!
		0	20A/1P	31	*			32	20A/1P	0		
		0	20A/1P	33		*		34	20A/1P	0		
		0	20A/1P	35			*	36	20A/1P	0		
		0	20A/1P	37	*			38	20A/1P	0		
		0	20A/1P	39		*		40	20A/1P	0		
		0	20A/1P	41			*	42	20A/1P	0		
CONNECTED LOAD (KW) - A		8.17							TOTAL DESIGN LOAD (KW)		23.05	
CONNECTED LOAD (KW) - B		7.73							POWER FACTOR		0.90	
CONNECTED LOAD (KW) - C		8.67							TOTAL DESIGN LOAD (AMPS)		71	



ordering

series	lamp rows	nominal length	voltage	options
SC				
	1T8	02'	120	PAF
	1T5	03'	277	EML*
	1T5HO	04'	347*	EMH*
		06'	*T8 & T5HO only	DM
		08'		RSE*†
		R__*		10THD†
		*row length		B__
				FH
				QC
				*consult factory for fixture lengths < 4'
				†T8 only

Applications Coves, retail, lobbies, small offices, conference rooms.

Features A low-profile cove lighting system designed for T5/HO or T8 lamps with a unique 3-piece optical system. Formed 95 percent reflective specular aluminum reflector throws light at low angles. Galvanized steel bottom reflector directs and diffuses light on ceiling to eliminate striations while limiting uplight. White backlight reflector fills the cove cavity with light, limiting socket shadow.

Construction The housing, available in 2-, 3-, 4-, 6- or 8-foot standard lengths, and end plates are made of die-formed, 20-gauge steel. The three part reflector system is die-formed from 95 percent reflective specular aluminum, 20-gauge steel and galvanized steel.

Finish The standard exterior body color is white enamel.

Electrical T8 fixtures have instant-start electronic ballasts with less than 20% THD. T5/HO fixtures have programmed-start electronic ballasts with less than 10% THD. Fixtures are U.L. Damp labeled (non-emergency) and I.B.E.W. manufactured. Maximum ballasts size available: 1 5/8" width x 1 1/4" height.

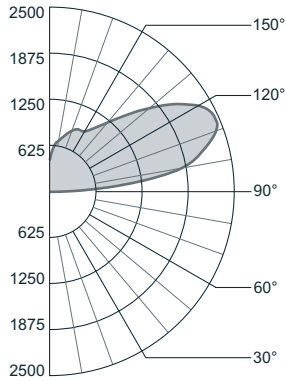
Mounting Fixture is to be surface-mounted within concealed coves.

Options **PAF**: painted after fabrication; **EML**: emergency battery (T5/HO=700 lumens; T8=600 lumens); **EMH**: emergency battery (T5/HO=1200 lumens; T8=1200 lumens); **DM**: dimming (consult factory); **RSE**: rapid-start electronic (T8 only); **10THD**: ballast with < 10% total harmonic distortion; (T8 only); **B_**: specific ballast, specify manufacturer and catalog number (consult factory); **FH**: fixture fusing (slow blow); **QC**: quick-connect circuit assemblies.

photometric data

SC-1T5HO-04

Report # LSI16391 D=0.0% I=100.0%
Lamp Lumens: 4500 Input Watts: 58



Candlepower Summary

Vertical Angle	Horizontal Angle					Output Lumens
	0°	22.5°	45°	67.5°	90°	
90	0	48	35	79	39	
95	10	584	840	1069	911	385
100	37	821	1350	1858	1802	
105	74	753	1615	2064	2149	723
110	111	633	1686	2253	2400	
115	147	567	1557	2225	2455	694
120	183	543	1356	2027	2335	
125	222	564	1154	1759	2076	519
130	256	616	1001	1492	1764	
135	290	646	892	1257	1473	359
140	323	660	835	1082	1230	
145	349	652	838	938	1056	249
150	374	652	848	916	946	
155	395	644	810	905	933	174
160	413	646	761	838	881	
165	427	616	707	756	788	96
170	439	564	671	690	701	
175	446	499	564	575	603	28
180	429	429	429	429	429	

Zonal Lumen Summary

Zone	% Lamp	% Luminaire
0-90	0.00	0.00
0-180	75.74	100.00

Efficiency = 75.7%

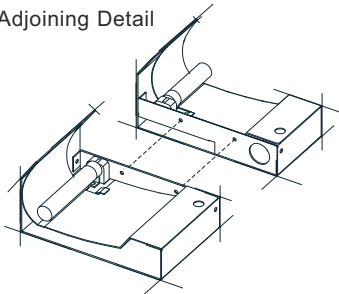
Peak Candela = 2458 @ 112.5°
Peak : Zenith Ratio = 5.7 : 1

Coefficients of Utilization (%)

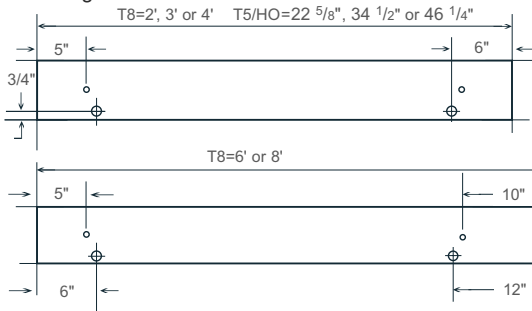
Floor	effective floor cavity reflectance = .20											
	80	70	50	30	10	70	50	30	10	50	30	10
Ceiling												
Wall												
RCR 0	72	72	72	72	62	62	62	62	42	42	42	42
1	66	63	60	57	56	53	51	49	37	35	34	34
2	60	54	50	47	51	47	43	40	32	30	28	28
3	54	48	43	39	46	41	37	34	28	26	24	24
4	50	42	37	33	42	36	32	28	25	22	20	20
5	45	37	32	28	39	32	27	24	22	19	17	17
6	42	33	28	24	35	28	24	21	20	17	15	15
7	38	30	24	20	32	25	21	18	18	15	12	12
8	35	27	21	18	30	23	18	15	16	13	11	11
9	32	24	19	15	28	21	16	13	14	12	09	09

installation

Adjoining Detail



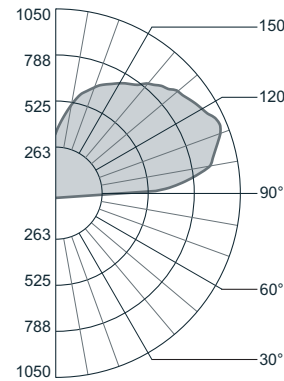
Mounting Locations



photometric data

SC-1T8-04

Report # LSI16088 D=0.0% I=100.0%
Lamp Lumens: 2950 Input Watts: 31



Candlepower Summary

Vertical Angle	Horizontal Angle					Output Lumens
	0°	22.5°	45°	67.5°	90°	
90	2	138	316	518	556	
95	17	258	493	704	757	248
100	44	360	605	855	917	
105	81	373	695	903	974	328
110	118	382	717	959	1042	
115	156	399	699	934	1044	325
120	192	422	685	887	986	
125	227	451	672	852	937	287
130	260	481	669	820	897	
135	292	509	653	798	857	245
140	319	530	660	756	827	
145	349	547	663	739	778	197
150	373	545	664	725	759	
155	393	536	652	709	734	142
160	410	520	637	679	703	
165	424	502	592	635	660	90
170	434	483	538	560	584	
175	440	460	485	486	500	24
180	430	430	430	430	430	

Zonal Lumen Summary

Zone	% Lamp	% Luminaire
0-90	0.00	0.00
0-180	71.58	100.00

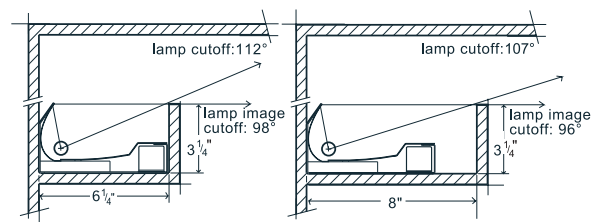
Efficiency = 71.6%

Peak Candela = 1053 @ 112.5°
Peak : Zenith Ratio = 2.4 : 1

Coefficients of Utilization (%)

Floor	effective floor cavity reflectance = .20											
	80	70	50	30	10	70	50	30	10	50	30	10
Ceiling												
Wall												
RCR 0	68	68	68	68	58	58	58	58	40	40	40	40
1	62	59	57	54	53	51	49	46	35	33	32	32
2	56	51	47	44	48	44	41	38	30	28	26	26
3	51	45	41	37	44	39	35	32	27	24	22	22
4	47	40	35	31	41	34	30	27	23	21	19	19
5	43	35	30	26	36	30	26	23	21	18	16	16
6	39	31	26	22	33	27	23	19	19	16	14	14
7	36	28	23	19	31	24	20	17	17	14	12	12
8	33	25	20	17	28	22	17	14	15	12	10	10
9	31	23	18	14	26	20	15	13	14	11	09	09

Mounting Details



Distance from wall along ceiling

cove to ceiling	Peak Candela @ 112.5°	6 1/4" cove		8" cove	
		lamp	lamp image	lamp	lamp image
12"	27"	27"	70"	37"	91"
18"	42"	42"	112"	57"	148"
24"	57"	57"	155"	77"	205"

In an effort to continually provide the highest quality products, Prudential reserves the right to change design specifications and/or materials, without notice.



- 54W/835 Min Bipin T5 HO ALTO UNP

Product family description
Powerful, environmentally- responsible
ultra- slim lamps.

Features/Benefits

- Miniaturization: slim profile lamp and ballast.
- Operated on programmed start electronic ballasts.
- Low mercury: TCLP* compliant.
- Energy efficient.
- Long life.
- Less mercury and fewer lamps in landfills, combined with energy efficiency reduces the impact on the environment.
- 85 CRI in 3000, 3500, 4100 and 5000K.
- 20,000 hours rated average life.

Applications

- Ideal for medium and high bay retail. Ideal for

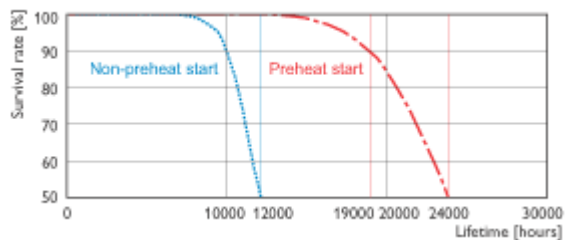
industrial applications.

Note

- Philips Lighting warrants T5 HO lamps when used with ballasts that are designed to meet the proposed IEC (International Electrotechnical Commission) dimming requirements and all other industry standards, ie: NEC, UL, IEC and ANSI. Please work with your Philips representative to get dimming approval before installation.
- Silhouette™ T5 nominal lamp lengths are shorter than standard sizes. See dimension chart for details.

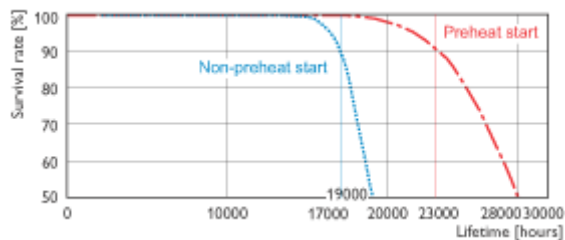
Product data	
Product Number	290288
Full product name	- 54W/835 Min Bipin T5 HO ALTO UNP
Ordering Code	F54T5/835/HO/ALTO
Pack type	Unpacked
Pieces per Sku	1
Skus / Case	40
Pack UPC	046677290283
EAN2US	
Case Bar Code	50046677290288
Successor Product number	
Watts[W]	54W
Color Code	835 [CCT of 3500K]
Base	Min Bipin [Miniature Bipin]
Bulb	T5 [16mm]
Special packing	ALTO
Packing Type	UNP [Unpacked]
System Description	High Output
Base Information	Green[Green Base]

Product data	
Packing Configuration	40
Rated Avg. Life[hr]	24000
Dimmable	Yes
Mercury (Hg) Content[mg]	
Color Rendering Index[Ra8]	85
Color Temperature[K]	3500
Initial Lumens[Lm]	-
Overall Length C[mm]	1163.2
Diameter D[mm]	17



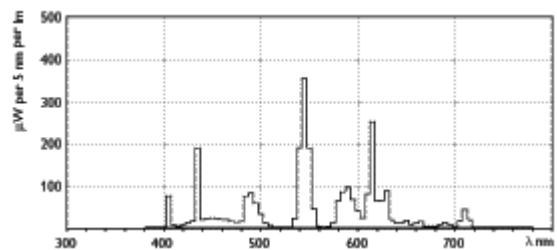
Life Expectancy 3h cycle

TL5

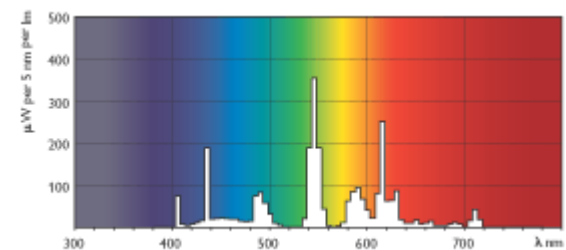


Life Expectancy 12h cycle

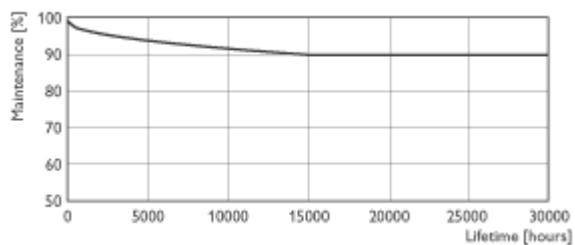
TL5



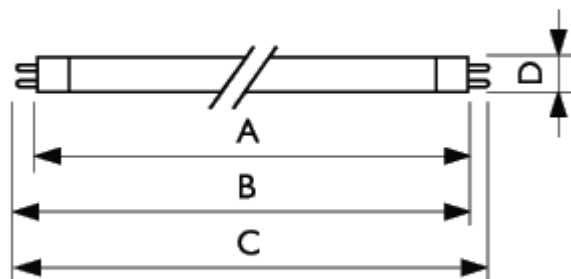
TL5/835



TL5/835



TL5



TL5

	A		B		C	D
Full product name	Max	Min	Max	Max	Max	Max
- 54W/ 835 Min Bipin T5 HO ALTO UNP	1149.0	1153.7	1156.1	1163.2	17	



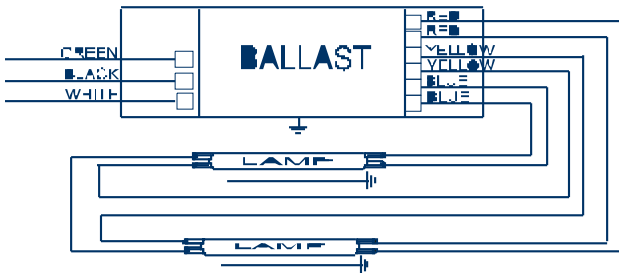


ICN4S5490C2LSG@120	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series/Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
F54T5/HO	1	54	-20/-29	0.52	62	0.99	10	0.98	1.7	1.60
* F54T5/HO	2	54	-20/-29	0.99	118	0.99	10	0.98	1.7	0.84
F54T5/HO	3	54	-20/-29	1.52	182	1.00	10	0.98	1.7	0.55
F54T5/HO	4	54	-20/-29	2.00	240	1.00	10	0.98	1.7	0.42

Wiring Diagram

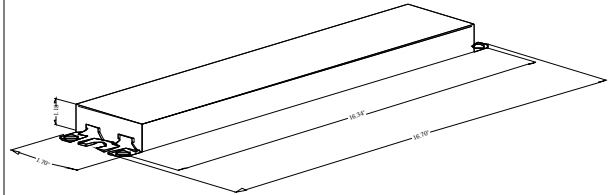


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	32	81.3	Yellow/Blue		0
White	32	81.3	Blue/White	42	106.7
Blue	54	137.2	Brown	60	152.4
Red	51	129.5	Orange	42	106.7
Yellow	60	152.4	Orange/Black		0
Gray	32	81.3	Black/White		0
Violet		0	Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
16.7 "	1.7 "	1.18 "	16.34 "
16 7/10	1 7/10	1 9/50	16 17/50
42.4 cm	4.3 cm	3 cm	41.5 cm

Revised 01/31/2007



Data is based upon tests performed by Advance Transformer in a controlled environment and representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

ADVANCE

O'HARE INTERNATIONAL CENTER · 10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
 Customer Support/Technical Service: Phone: 800-372-3331 · Fax: 630-307-3071
 Corporate Offices: Phone: 800-322-2086



ICN4S5490C2LSG@120	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series/Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be provided with integral leads or poke-in wire trap connectors color-coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 50/60 Hz input source of _____ (120V through 277V or 347V through 480V) with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 20% for Standard models and THD of less than 10% for Centium models when operated at nominal line voltage with primary lamp.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of _____ {-18C (0F) or -28C (-20F)} for primary lamp. Consult lamp manufacturer for temperature versus light output characteristics.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.
- 2.13 Ballast shall have a hi-low switching option when operating (4) F54T5/HO lamps to allow switching from 4-2 lamps, 3-2 lamps or 3-1 lamp.
- 2.14 Four-lamp ballast shall have semi-independent lamp operation.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with UL Type CC rating.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a "90C" designation in their catalog number shall also carry a three-year warranty at a maximum case temperature of 90C.
- 4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be Advance part # _____ or approved equal.

Revised 01/31/2007



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ADVANCE TRANSFORMER CO.
 O'HARE INTERNATIONAL CENTER - 10275 WEST HIGGINS ROAD
 ROSEMONT, ILLINOIS 60018
 TELEPHONE: (847) 390-5000 FAX: (847) 390-5109

FEATURES & SPECIFICATIONS

INTENDED USE

For use in Non-IC application with the LF6 frame-in.

CONSTRUCTION

Aluminum one-piece reflector.

White polyester powder coat paint.

White integral flange.

Diffuse or specular finishes have matching integral flange.

INSTALLATION

Rough-ins utilize yoke for mechanical trim retention.

Socket housing attaches securely to reflector.

Reflectors accommodate ceilings up to 1-1/2" thick.

LISTING

UL listed to US and Canadian safety standards.

Damp location listed.

Catalog Number	FIXTURE 'F2, FE2'
Notes	Type

6" Finishing Trims

F602

OPEN REFLECTOR

Horizontal Lamp

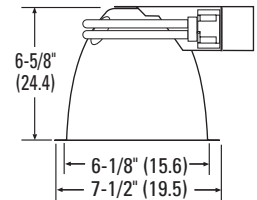


Specifications

Aperture Size (Inside diameter): 6-1/8" (15.6)

Overlap Trim (Outside Diameter): 7-1/2" (19)

Height: 6-5/8" (16.8)



All dimensions are inches (centimeters).

ORDERING INFORMATION

Example: **F602A**

Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line. Order accessories as separate catalog numbers.

F602		
Series	Finish	Options
F602	(blank) White A Clear Diffuse G Gold Diffuse PR Pewter GZ Gold Specular WTZ Wheat Specular	TRW White flange with anodized trims.

Accessories

Order as separate catalog number.

CTR6 Oversize Trim Ring

Compatibility

Used On	Lamp Type	Maximum Lamp	
		Wattage	IC/Non-IC
LF6	Compact Fluorescent	2/13W TT	Non-IC
LF6	Compact Fluorescent	2/26W DTT	Non-IC

F602 Open Reflector

Distribution curve	Distribution data	Output data	Coefficient of utilization	Single luminaire data 30" above floor									
F602 , (2) Philips PL-C 26W/27SH lamp, 1.0 s/mh, 3600 rated lumens, Test no. 2195072501													
	From 0°	cp. Lumens	Zone Lumens %lamp	rf rc rw	80% 50% 30%	20% 50% 30%	50% Beam angle 51.6°	10% Beam angle 87.9°					
	0°	1073	0°-30° 726 20.18	1	47 46	44 43	43 42	Mount height	Initial fc at beam center	fc at beam edge	Beam diameter	fc at beam edge	
	5°	1071	102	2	43 41	41 39	39 38	8'	35.5	5.3	17.8	10.6	3.6
	15°	980	275	3	39 37	37 35	36 35	10'	19.1	7.3	9.5	14.5	1.9
	25°	757	349	4	36 33	35 32	34 32	12'	11.9	9.2	5.9	18.3	1.2
	35°	495	311	5	33 30	32 30	31 29	14'	8.1	11.1	4.1	22.2	.8
	45°	268	214	6	31 28	30 27	29 27	16'	5.9	13.1	2.9	26.0	.6
	55°	159	145	7	28 25	28 25	27 25						
	65°	96	96	8	26 23	26 23	25 23						
	75°	48	51	9	25 22	24 21	23 21						
	85°	9	13	10	23 20	22 20	22 19						
90°	0	0											
			*Total Efficiency										

Distribution curve	Distribution data	Output data	Coefficient of utilization	Single luminaire data 30" above floor									
F602A , (2) Philips PL-C 26W/27SH lamp, 1.2 s/mh, 3600 rated lumens, Test no. 2195110901													
	From 0°	cp. Lumens	Zone Lumens %lamp	rf rc rw	80% 50% 30%	20% 50% 30%	50% Beam angle 58.6°	10% Beam angle 98.8°					
	0°	937	0°-30° 737 20.48	1	52 51	49 48	48 47	Mount height	Initial fc at beam center	fc at beam edge	Beam diameter	fc at beam edge	
	5°	961	47	2	48 46	46 44	45 43	8'	31.0	6.2	15.5	12.8	3.1
	15°	981	138	3	44 42	42 40	41 40	10'	16.7	8.4	8.3	17.5	1.7
	25°	842	195	4	41 38	39 37	38 36	12'	10.4	10.7	5.2	22.2	1.0
	35°	675	212	5	38 34	36 34	35 33	14'	7.1	12.9	3.5	26.8	.7
	45°	485	185	6	34 31	33 31	33 30	16'	5.1	15.2	2.6	31.5	.5
	55°	183	88	7	31 28	30 28	30 27						
	65°	31	19	8	29 26	28 25	27 25						
	75°	9	5	9	26 23	26 23	25 22						
	85°	2	1	10	24 21	24 21	23 20						
90°	0	0											
			*Total Efficiency										

Distribution curve	Distribution data	Output data	Coefficient of utilization	Single luminaire data 30" above floor									
F602AZ , (2) Philips PL-C 26W/27SH lamp, 1.2 s/mh, 3600 rated lumens, Test no. 2193120701													
	From 0°	cp. Lumens	Zone Lumens %lamp	rf rc rw	80% 50% 30%	20% 50% 30%	50% Beam angle 58.6°	10% Beam angle 98.8°					
	0°	887	0°-30° 741 20.60	1	54 52	53 51	51 50	Mount height	Initial fc at beam center	fc at beam edge	Beam diameter	fc at beam edge	
	5°	903	87	2	50 48	49 47	47 46	8'	29.3	6.7	14.7	13.8	2.9
	15°	960	269	3	46 43	45 42	44 42	10'	15.8	9.1	7.9	18.8	1.6
	25°	841	387	4	42 39	41 39	40 38	12'	9.8	11.5	4.9	23.8	1.0
	35°	666	424	5	39 35	38 35	37 35	14'	6.7	13.9	3.4	28.8	.7
	45°	569	424	6	35 32	35 32	34 31	16'	4.9	16.4	2.4	33.8	.5
	55°	144	162	7	32 29	32 29	31 28						
	65°	7	9	8	29 26	29 26	29 26						
	75°	1	2	9	27 23	27 23	26 23						
	85°	0	1	10	25 21	24 21	24 21						
90°	0	0											
			*Total Efficiency										

Electrical Characteristics

Lamp	120 Volt HPF		277 Volt HPF		347 Volt HPF	
	Maximum current	Input watts	Maximum current	Input watts	Maximum current	Input watts
(2) 9TT	0.280	22.0	0.340	28.0	0.380	30.0
(2) 13TT/DTT	0.570	34.0	0.680	44.0	0.660	48.0
(2) 18TT/DTT	0.450	50.0	0.170	45.0	0.480	52.0
(2) 26TT/DTT	0.590	68.0	0.260	62.0	0.780	76.0

Tested to current IES and NEMA standards under stabilized laboratory conditions. Various operating factors can cause differences between laboratory data and actual field measurements. Dimensions and specifications are based on the most current available data and are subject to change without notice.

Energy (Calculated in accordance with NEMA standard LE-5.)

Fixture/ Reflector	LER	Annual* Energy Cost	Lamps	Lamp Lumens	Ballast Factor	Input Watts
LF6 DTT/F602AZ	35.29	\$6.80	(2) 18W DTT	2500	.95	35
LF6 DTT/F602AZ	34.59	\$6.94	(2) 26W DTT	3600	1	51
LF6 DTT/F602GZ	33.93	\$7.07	(2) 18W DTT	2500	.95	35
LF6 DTT/F602	30.35	\$7.91	(2) 26W DTT	3600	1	51
LF6 DTT/F602A	33.88	\$7.08	(2) 26W DTT	3600	1	51
LF6 DTT/F602A	31.27	\$7.68	(2) 18W DTT	2500	.95	35

*Comparative yearly lighting energy cost per 1000 lumens

Conversion Factor

Use multiplier to determine candlepower, lumens and footcandles for gold (F602G) finish from F602A data.

Gold = .90

To calculate light levels for other wattage lamps, multiply the footcandle levels by the ratio of desired-lamp lumens to displayed-lamp lumens.

Example: fc level at 8' nadir for F602 (2)26DTT is 35.5. With (2)18DTT, fc level is 35.5 x .69 = 24.5fc.

Compact Fluorescent

Lamp	Lumens	Multiplier
(2)26DTT	3600	1.00
(2)18DTT	2500	0.69
(2)13DTT	1720	0.48
(2)9DTT	1150	0.32





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97604 – F26DBX/E/835/ECO

GE Ecolux® Biax® T4 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse

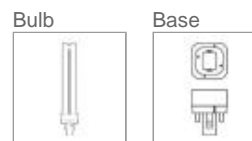


High Color Rendering
Energy Savings



GENERAL CHARACTERISTICS

Lamp type	Compact Fluorescent - Plug-In
Bulb	T4
Base	G24d-3
Wattage	26
Voltage	105
Rated Life	10000 hrs
Starting Temperature (MIN)	-20 °C (-4 °F)
Additional Info	TCLP compliant
Primary Application	Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse



[View Larger](#)

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1710
Mean Lumens	1460
Nominal Initial Lumens per Watt	65
Color Temperature	3500 K
Color Rendering Index (CRI)	82

ADDITIONAL RESOURCES

[Catalogs](#)

[Testimonials](#)

[Disposal Policies & Recycling Information](#)

ELECTRICAL CHARACTERISTICS

Lamp Current	0.325 A
Current Crest Factor (MAX)	1.7

DIMENSIONS

Maximum Overall Length (MOL)	6.6700 in (169.4 mm)
Nominal Length	6.700 in (170.1 mm)

PRODUCT INFORMATION

Product Code	97604
Description	F26DBX/E/835/ECO
ANSI Code	60901-IEC-0526-2
Standard Package	BUNDLE
Standard Package Quantity	50
Sales Unit	Unit
No Of Items Per	1

Sales Unit

No Of Items Per Standard Package 50

UPC 043168976046

COMPATIBLE GE BALLASTS

Product Code	Description	# of Bulbs	Power Factor	Ballast Factor
87700	GEM2CF24PH277	2	97.0	0.9

 CAUTIONS & WARNINGS

[See list of cautions & warnings.](#)

NOTES

- Based on 60Hz reference circuit.
 - Fluorescent lamp lumens decline during life
 - This lamp is only recommended for use with single lamp ballasts or parallel wired 2-lamp ballasts
-

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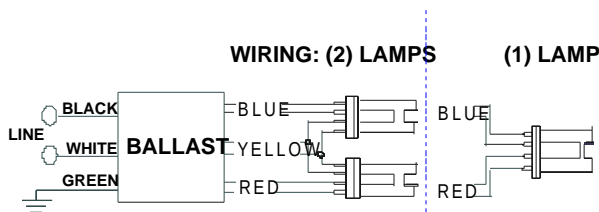


ICF-2S26-H1-LD@120	
Brand Name	SMARTMATE
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
CFM26W/GX24Q	1	26	0/-18	0.24	29	1.10	10	0.98	1.5	3.79
* CFM26W/GX24q	2	26	0/-18	0.45	54	1.00	10	0.99	1.5	1.85
CFM32W/GX24q	1	32	0/-18	0.31	36	0.98	10	0.98	1.5	2.72
CFM42W/GX24q	1	42	0/-18	0.38	46	0.98	10	0.98	1.5	2.13
CFQ26W/G24q	1	26	0/-18	0.23	27	1.00	10	0.98	1.5	3.70
CFQ26W/G24q	2	26	0/-18	0.43	51	1.00	10	0.99	1.5	1.96
CFS21W/GR10q	2	21	0/-18	0.42	51	1.12	10	0.99	1.5	2.20
FT24W/2G11	2	24	0/-18	0.41	48	0.93	10	0.99	1.5	1.94

Wiring Diagram



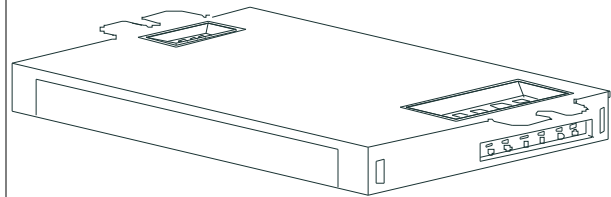
Green Terminal must be Grounded

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	0.0		Yellow/Blue		
White	0.0		Blue/White		
Blue	0.0		Brown		
Red	0.0		Orange		
Yellow	0		Orange/Black		
Gray			Black/White		
Violet			Red/White		

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	2.4 "	1.0 "	4.6 "
4 49/50	2 2/5	1	4 3/5
12.6 cm	6.1 cm	2.5 cm	11.7 cm

Revised 09/02/2004



Data is based upon tests performed by Advance Transformer in a controlled environment and representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

ADVANCE

O'HARE INTERNATIONAL CENTER · 10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018

Customer Support/Technical Service: Phone: 800-372-3331 · Fax: 630-307-3071

Corporate Offices: Phone: 800-322-2086



ICF-2S26-H1-LD@120	
Brand Name	SMARTMATE
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements.
- 1.3 Ballast shall be provided with poke-in wire trap connectors color coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start except for ballasts with -QS suffix, which shall be Rapid Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the IntelliVolt ballast. RCF models shall operate from 60 Hz input source of 120V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of -18C (0F) for primary lamp. Ballasts for PL-H lamps shall have a minimum starting temperature of -30C (-20F) for primary lamp.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall be Underwriters Laboratories (UL) rated for use in air-handling spaces.
- 3.4 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.5 Ballast shall comply with ANSI C82.11 where applicable.
- 3.6 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated) except for RCF models which shall be Consumer (Class B).

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 75C and three-years for a maximum case temperature of 85C (90C 3year warranty for ICF1H120-M4-XX, ICF2S42-90C-M2-XX and ICF2S70-M4-XX models).
- 4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be Advance part # _____ or approved equal.

Revised 09/02/2004



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ADVANCE TRANSFORMER CO.
 O'HARE INTERNATIONAL CENTER - 10275 WEST HIGGINS ROAD
 ROSEMONT, ILLINOIS 60018
 TELEPHONE: (847) 390-5000 FAX: (847) 390-5109

John

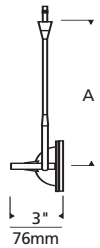
ARCHITECTURAL HEAD

FreeJack	MonoRail	Two-Circuit MonoRail	Wall MonoRail	Kable Lite	TwinRail	T-trak™
				N/A		



JOHN

Shown approximately 60% actual size.



Socket terminates with FreeJack male connector, which may be installed into a system connector. Elements ordered with a system prefix include a connector for that system.

DESCRIPTION

Adjustable head tilts and rotates infinitely. Integral louver lens holder can hold a single glass lens (sold separately) or an eggcrate louver (included).

SYSTEM

Available for FreeJack, MonoRail, Two-Circuit MonoRail, Wall MonoRail, and TwinRail. For use on T-trak, order FreeJack version and T-trak FreeJack Connector (sold separately).

COLOR

None.

FINISH

Chrome, satin nickel.
TwinRail available in chrome only.

LAMP

Low-voltage MR16 lamp up to 50 watts (not included).

ACCESSORIES AND OPTICAL CONTROLS

Glass Lens (sold separately).

WEIGHT

0.20 lb./0.09 kg. ±

ORDERING INFORMATION

700	SYSTEM	JON	LENGTH (A)	FINISH
	FJ	FREEJACK	03 3"	C CHROME
	MO	MONORAIL	06 6"	S SATIN NICKEL
	MO2	TWO-CIRCUIT MONORAIL	12 12"	
			18 18"	
	WMO	WALL MONORAIL	24 24"	
	TW	TWINRAIL		

700 _____ JON _____ _____

FIXTURE TYPE: _____

JOB NAME: _____



TECH LIGHTING®

7400 Linder Avenue T 847.410.4400
Skokie, Illinois 60077 F 847.410.4500

www.techlighting.com

hds_john_spec.pdf

August 2005 Specifications subject to change without notice.





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20835 – Q50MR16/C/NFL25

GE MR16

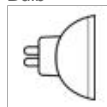


GENERAL CHARACTERISTICS

Lamp type	Halogen - MR
Bulb	MR16
Base	2-Pin (GX5.3)
Filament	C-6
Wattage	50
Voltage	12
Rated Life	6000 hrs
Lamp Enclosure Type (LET)	Open or enclosed fixtures



Bulb



Base



Filament



[View Larger](#)

PHOTOMETRIC CHARACTERISTICS

Center Beam Candlepower (CBCP)	3200
Color Temperature	3050 K

DIMENSIONS

Maximum Overall Length (MOL)	1.8750 in (47.6 mm)
Bulb Diameter (DIA)	2.000 in (50.8 mm)

PRODUCT INFORMATION

Product Code	20835
Description	Q50MR16/C/NFL25
ANSI Code	EXZ
Standard Package	BUNDLE
Standard Package GTIN	00043168208352
Standard Package Quantity	20
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	20
UPC	043168994279

ADDITIONAL RESOURCES

Catalogs

Testimonials

Brochures

Application/Segment Brochures

- [Beauty Salon Lighting](#)
- [Restaurant Lighting](#)
- [Specialty Store Lighting](#)

Product Brochures

- [Color](#)
- [XL Brochure](#)

Sell Sheets

- [GE ConstantColor® Precise™ MR16 Lamps](#)

IES/Photometric Download

MSDS (Material Safety Data Sheets)

Disposal Policies & Recycling Information

⚠ CAUTIONS & WARNINGS

[See list of cautions & warnings.](#)

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Pre-Bent 90° Curve



Shown actual size
(7/8" height x 3/8" width)

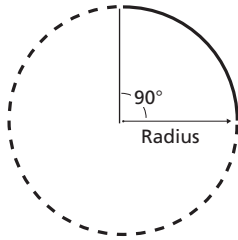
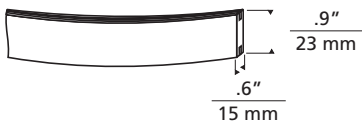


DESCRIPTION

Hand-bendable, field-cuttable Single-Circuit T~trak™ is a line-voltage track rated for 20 amps. Each section of track is shipped with two end caps to cover the open ends of the track. Order additional end caps if cutting and separating track sections.

Single-Circuit T~trak bends very easily by hand to almost any imaginable shape, but we also offer the following pre-bent track options to make the most common bends perfectly shaped and even easier to install. For a factory bend not shown, please call for a custom quotation.

Horizontal 90° curves are sold by radius, or the distance from the center of the circle to the outside edge. Join four 90° curves to create a circle with a diameter (overall width) equal to twice the specified radius.



FINISH

Antique bronze, satin nickel, white.

WEIGHT

1.30-2.19 lb./0.59-0.99 kg. ±

ORDERING INFORMATION

700TTBH90	RADIUS	FINISH
36	36" RADIUS	Z ANTIQUE BRONZE
48	48" RADIUS	S SATIN NICKEL
60	60" RADIUS	W WHITE

700TTBH90 _____

FIXTURE TYPE: _____

JOB NAME: _____

T~trak™
a brand of **TECH LIGHTING®**

7400 Linder Avenue T 847.410.4400
Skokie, Illinois 60077 F 847.410.4500

www.ttraklighting.com



PHILIPSEXISTING SCONCE/
CHANDILIER LAMP

Deco 25W Cand 12V BA9 CL 1BC

**PRODUCT DATA**

Product Number	138230
Full product name	Deco 25W Cand 12V BA9 CL 1BC
Ordering Code	BC25BA9C/CL
Pack type	1 Lamp in a Blister Card
Pieces per Sku	1
Skus / Case	6
Pack UPC	046677138233
EAN2US	-
Case Bar Code	50046677138238
Successor Product number	-
Watts[W]	25W
Base	Cand [Candelabra Screw]
Voltage[V]	12V
Bulb	BA9
Bulb Finish	CL [Clear]
Packing Type	1BC [1 Lamp in a Blister Card]
Base Information	Aluminum[Aluminum Base]
Filament Shape	C-7A[Ring]
Operating Position	Base Down +/- 90D[Standing +/-90D or Base Down (BDH)]
Packing Configuration	6

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DESCRIPTION

The Boca 636 is a 6-1/4" diameter inground fixture with rotatable, slotted aperture for use with an MR16 lamp source. The adjustable lamp assembly provides up to 22° vertical tilt and 360° horizontal rotation for precision uplighting, wall washing or general illumination in constricted areas. Designed for recess mounting in concrete, brick, stone or dirt it is suitable for drive-over applications. Fixture is also suitable for recessed mounting in indoor or outdoor wood flooring (non-IC) when equipped with option T.

Catalog #		Type
Project		FIXTURE 'A2'
Comments		Date
Prepared by		

SPECIFICATION FEATURES

A ... Material

Recessed housing is constructed from corrosion-resistant stainless steel. Trim ring, trim collar and slotted aperture are die-cast from corrosion-resistant solid brass.

B ... Finish

Solid brass trim ring, trim collar and slotted aperture are unpainted to reveal the natural beauty of the material and will patina naturally over time.

C ... Gasket

Recessed housing and trim ring are sealed with a high temperature silicone o-ring gasket to prevent water intrusion.

D ... Lens

Minimum 1/4" thick tempered glass lens, factory sealed with high temperature adhesive to prevent water intrusion and breakage due to thermal shock. Suitable for drive-over applications.

E ... Hardware

Stainless steel hardware is standard to provide maximum corrosion-resistance.

F ... Socket

Ceramic socket with 250° C Teflon® coated lead wires and GU5.3 bi-pin base.

G ... Electrical

Remote 12V transformer required (not included). Available from Lumière as an accessory - see the Accessories & Technical Data section of this catalog for details. 4' 16-2 cord with Lumière's exclusive Siphon Protection System (S.P.S.) is standard. Two 1/2-14 NPSM brass female conduit fittings for through wiring is available (specify option -2C).

H ... Thermal Cutoff Protection (Optional)

Fixture is suitable for recessed mounting in indoor or outdoor wood flooring (non-IC) when equipped with option T (changes UL/cUL wet label to damp label). Fixture is not suitable for inground or concrete pour applications when equipped with option T. Includes two 1/2-14 NPSM brass female conduit fittings for through wiring (option -2C) in lieu of standard 4' 16-2 cord.

I ... Lamp

Not included. Available from Lumière as an accessory - see reverse side of this page.

J ... Labels & Approvals

UL and cUL listed, standard wet label. Fixtures equipped with option T (thermal cutoff protection) are UL/cUL listed, damp label. Manufactured to ISO 9001-2000 Quality Systems Standard. IBEW union made.

K ... Warranty

Lumière warrants its fixtures against defects in materials & workmanship for three (3) years. Auxiliary equipment such as transformers, ballasts and lamps carry the original manufacturer's warranty.

L ... Recessed Housing

Recessed housing is available to ship in advance of complete fixture for rough-in purposes. Specify option -LBB and order separately accompanying recessed housing from below:

636-NBR-BB
recessed housing;

636-NBR-2C-BB
recessed housing w/2C option;

636-NBR-T-BB
recessed housing w/T option;

636-NBR-TP-BB
recessed housing w/TP option;

636-NBR-2C-TP-BB
recessed housing w/2C & TP option;

636-NBR-T-TP-BB
recessed housing w/T & TP option



BOCA

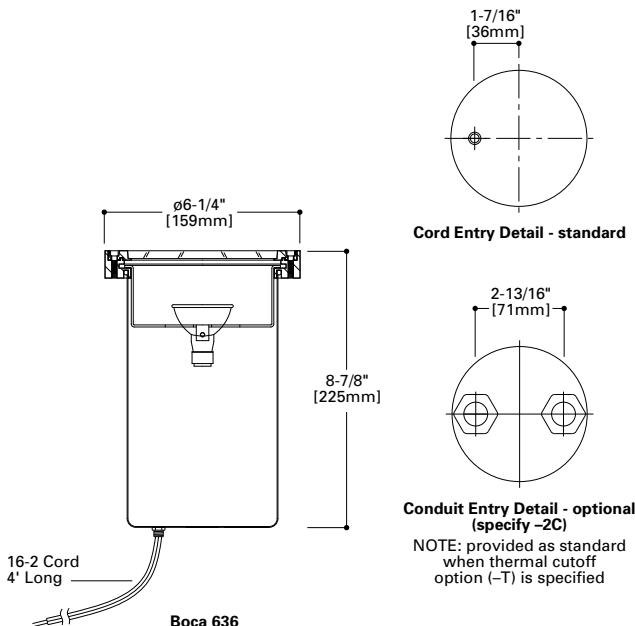
636

75W (max.) MR16

Halogen

Low Voltage

Inground



Boca 636
Lamp=75MR16/NSP
(EYF)
CBCP=12,300

Cone of Light		
Distance to Illuminated Plane	Initial Nadir Footcandles	Beam Diameter
15'0"	54	4'0"
10'0"	123	3'0"
8'0"	192	2'0"
6'0"	342	1'6"
4'0"	769	1'0"
2'0"	3075	0'6"
Lamp Wattage Multiplier 50W x 0.83 20W x 0.29		

Boca 636
Lamp=75MR16/NFL
(EYJ)
CBCP=4600

Cone of Light		
Distance to Illuminated Plane	Initial Nadir Footcandles	Beam Diameter
15'0"	20	9'0"
10'0"	46	6'0"
8'0"	72	4'6"
6'0"	128	3'6"
4'0"	287	2'0"
2'0"	1150	1'0"
Lamp Wattage Multiplier 50W x 0.63		

Boca 636
Lamp=75MR16/FL
(EYC)
CBCP=2100

Cone of Light		
Distance to Illuminated Plane	Initial Nadir Footcandles	Beam Diameter
15'0"	9	4'0"
10'0"	21	3'0"
8'0"	33	2'0"
6'0"	58	1'6"
4'0"	131	1'0"
2'0"	525	0'6"
Lamp Wattage Multiplier 50W x 0.82 35W x 0.48 20W x 0.25		

LAMP INFORMATION

Lamp	ANSI Code	Watts	Beam Spread	CBCP	°K	Life (hrs.)	Base	Volts
75MR16/NSP	EYF	75	14°	12,300	3050	4000	GU5.3 bi-pin	12
75MR16/NFL	EYJ	75	25°	4600	3050	4000	GU5.3 bi-pin	12
75MR16/FL	EYC	75	42°	2100	3050	4000	GU5.3 bi-pin	12

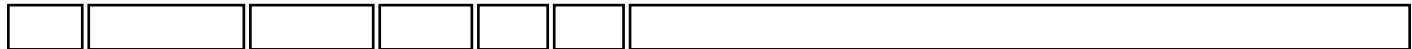
NOTE: Inferior quality lamps may adversely affect the performance of this product. Use only name brand lamps from reputable lamp manufacturers.

NOTES AND FORMULAS

- Beam diameter is to 50% of maximum footcandles, rounded to the nearest half-foot.
- Footcandle values are initial. Apply appropriate light loss factors where necessary.
- Bare lamp data shown. Consult lamp manufacturers to obtain detailed specifications for their lamps.

ORDERING INFORMATION

Sample Number: 636-75MR16-12-NBR



Series
636- Slotted Aperture, 6-1/4" Dia, Adjustable 22° Vertical Tilt 360° Horizontal Rotation Boca Inground

Voltage
12: 12V

Options
2C: Two 1/2" Conduit Entries (in lieu of 4" cord)
T: Thermally rated for use in non-IC wood flooring (changes UL/CUL wet label to damp label)
TP: Tamper-Resistant Hardware
LBB: Housing Shipped in Advance (select LBB option and order recessed housing separately)

Accessories 2
Filters
F71: Peach Dichroic Filter, 2.00" Dia
F73: Green Dichroic Filter, 2.00" Dia
F75: Yellow Dichroic Filter, 2.00" Dia
F77: Dark Blue Dichroic Filter, 2.00" Dia
F79: Neutral Density Dichroic Filter, 2.00" Dia
F22: Red Color Filter, 2.00" Dia
F44: Green Color Filter, 2.00" Dia
F66: Mercury Vapor Color Filter, 2.00" Dia

F72: Amber Dichroic Filter, 2.00" Dia
F74: Medium Blue Dichroic Filter, 2.00" Dia
F76: Red Dichroic Filter, 2.00" Dia
F78: Light Blue Dichroic Filter, 2.00" Dia
F80: Magenta Dichroic Filter, 2.00" Dia
F33: Blue Color Filter, 2.00" Dia
F55: Yellow Color Filter, 2.00" Dia

Source
Halogen
75MR16: 75W Max Halogen MR16, GU5.3 Base

Finish
Metal
NBR: Brass

Recessed Housing (order separately)
Select housing from Recessed Housing section on previous page

Filter Holder
LH16: MR16 Size Filter Holder with Hex Cell Louver

- Notes:**
- Two conduit entries (2C) standard with T option.
 - Filters require filter holder accessory.
 - Lamp not included.
 - 12V remote transformer required - not included.
 - See ACCESSORIES & TECHNICAL DATA section of the Lumière catalog for Low Voltage Cable & Transformers.
 - Consult your Cooper Lighting representative for additional options and finishes.

- Lamps**
EZ: 20W MR16 GU5.3 Bi-Pin Very Narrow Spot
BAB: 20W MR16 GU5.3 Bi-Pin Flood
FRA: 35W MR16 GU5.3 Bi-Pin Spot
EXT: 50W MR16 GU5.3 Bi-Pin Narrow Spot
EXN: 50W MR16 GU5.3 Bi-Pin Flood
EYF: 75W MR16 GU5.3 Bi-Pin Narrow Spot
EYC: 75W MR16 GU5.3 Bi-Pin Flood
- ESX: 20W MR16 GU5.3 Bi-Pin Narrow Spot
FRB: 35W MR16 GU5.3 Bi-Pin Narrow Spot
FMW: 35W MR16 GU5.3 Bi-Pin Flood
EXZ: 50W MR16 GU5.3 Bi-Pin Narrow Flood
FNV: 50W MR16 GU5.3 Bi-Pin Very Wide Flood
EYJ: 75W MR16 GU5.3 Bi-Pin Narrow Flood



MHN-TD 150W/842 RX7s 1CT



PRODUCT DATA

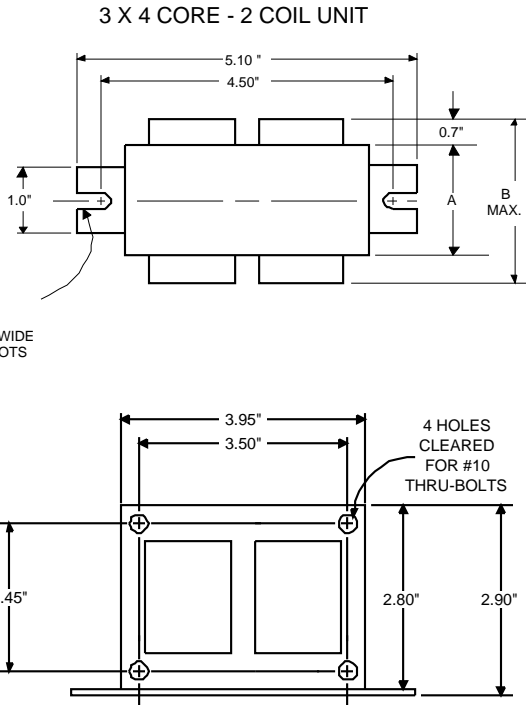
Product Number	303552
Full product name	MHN-TD 150W/842 RX7s 1CT
Ordering Code	MHN150/TD/840
Pack type	1 Lamp in a Folding Carton
Pieces per Sku	1
Skus / Case	12
Pack UPC	046677303556
EAN2US	-
Case Bar Code	50046677303551
Successor Product number	-
Watts[W]	150W
Color Code	842 [CCT of 4200K]
Base	Recessed Single Contact RX7s
Packing Type	1CT [1 Lamp in a Folding Carton]
Packing Configuration	12
Base Information	24
Bulb	T7 1/2[T 24mm]
Bulb Finish	Clear
Operating Position	Horizontal +/- 45 D[Parallel +/-45D or Horizontal(HOR)]
Rated Avg. Life[hr]	10500
ANSI Code HID	M81/E
Lamp Voltage[V]	98
Dimmable	No
Mercury (Hg) Content[mg]	-
Color Rendering Index[Ra8]	85
Color Designation	Cool White
Color Description	842 Cool White
Color Temperature[K]	4200
Initial Lumens[Lm]	12900
Design Mean Lumens[Lm]	9675
Overall Length C[mm]	137.43
Diameter D[mm]	24
Light Center Length L[in]	2.59375
Max Overall Length (MOL) - C[in]	5.40625
Diameter D[in]	0.875



Metal Halide Lamp Ballast

Catalog Number 71A54N2
For 150W M102/M142
50 Hz HX-HPF
Status: Active

DIMENSIONS AND DATA



0.25" WIDE
2 SLOTS

INPUT VOLTS	120	220	240		
CIRCUIT TYPE	HX-HPF				
POWER FACTOR (min)	90%				
REGULATION					
Line Volts	±5%				
Lamp Watts	±14%				
LINE CURRENT (Amps)					
Operating.....	1.70	0.95	0.85		
Open Circuit.....	3.70	2.00	1.80		
Starting.....	2.00	1.15	1.00		
UL TEMPERATURE RATINGS					
Insulation Class	H(180°C)				
Coil Temperature Code	1029				
MIN. AMBIENT STARTING TEMP.	-30°F or -35°C				
NOM. OPEN CIRCUIT VOLTAGE	248				
INPUT VOLTAGE AT LAMP DROPOUT.....	80	150	160		
INPUT WATTS	187				
RECOMMENDED FUSE (Amps).....	10	5	5		
CORE and COIL					
Dimension (A)	2.50				
Dimension (B)	4.10				
Weight (lbs.)	7.5				
Lead Lengths	12"				
CAPACITOR REQUIREMENT					
Microfarads	28.0				
Volts (min.)	240				
Fault Current Withstand (amps)					
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)					
High Potential Test (Volts)					
1 minute	1500				
2 seconds	2500				
Open Circuit Voltage Test (Volts)	228-279				
Short-Circuit Current Test (Amps)					
Secondary Current	1.60-2.05				
Input Current.....	0.85	0.46	0.42	-	-
	1.26	0.68	0.64		

Capacitor: 7C280P30-R



Capacitance: 28
 Dia/Oval Dim: 1.75
 Height: 3.75
 Temp Rating: 105°C

Ignitor: LI533-H4



Ballast to Lamp Distance (BTL) = 5 feet
 Temp Rating: 105°C

Wiring Diagram:

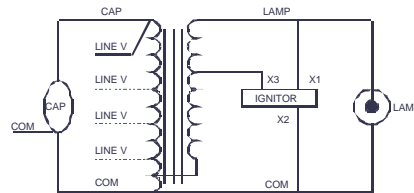


Fig. K3

Typical Ordering Information

(please call Advance for suffix availability)

Order Suffix	Description
500D.	Ballast With Ignitor and Dry Film Capacitor
510D.	Ballast w/Welded Bracket, Ignitor, & Dry Film Capacitor
600.	Ballast and Ignitor, No Capacitor
610.	Ballast with Welded Bracket and Ignitor, No Capacitor

Data is based upon tests performed by Advance Transformer in a controlled environment and representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice.

ADVANCE

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08/07/02