

LIGHTING DESIGN

PREPARED FOR


POWER AND LIGHTING SYSTEMS



DESIGN SPONSORED BY
SEAN GEORGE LIGHTING DESIGN



Table of Contents

- Executive Summary
 - Lighting Fixtures
 - Existing Light Design
 - Proposed Light Design
 - Summary of Lighting Performance
 - Design and Technological Details
 - Lighting Glare and Uniformity
 - Lighting Controls
 - Lighting Levels and Color
 - Hazardous Waste Disposal
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Lighting Fixtures

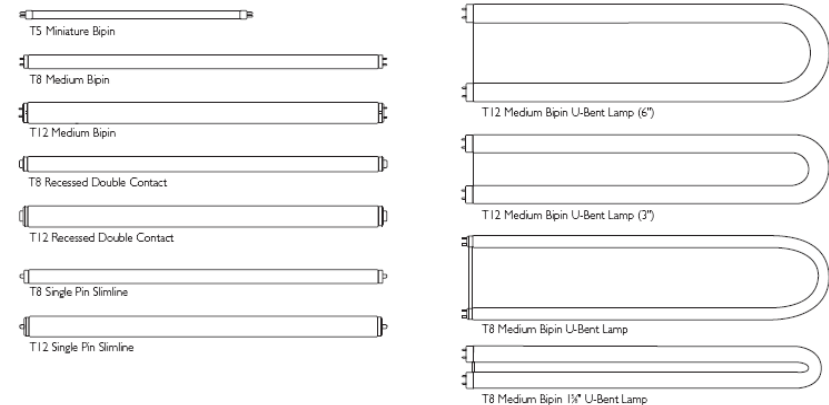
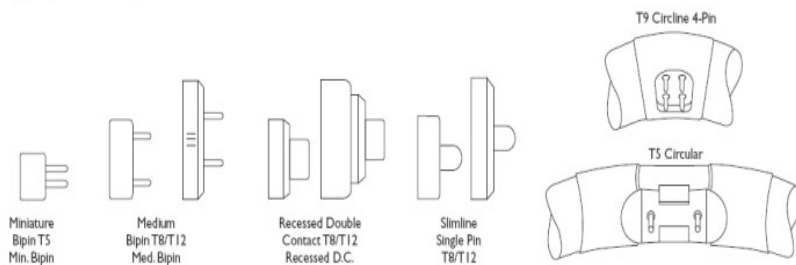
Lighting Fixture Schedule

Fixture Type	Fixture Shape	Manufacturer	Lamps per Fixture	Watts per Lamp	Wattage per Fixture	Code of Bulb	Description
A	2 X 2		1	400	400		Metal Halide
B	1 X 4	Phillips	1	32	32	F32T8	Tube Single Bulb
C	1 X 2	Phillips	1	17	17	FIT8-TJ741	Tube Single Bulb
D	Wash 4'	Phillips	1	32	32	F32T8	Tube Single Bulb
E	2 X 4		2	32	64	F32T8	2 Bulb
F	2 X 2		2	32	64	F32T8	Honeycomb/ 2 U-shaped Bulb
G	FCL	Phillips	1	15	15	FCL	run of the mill Screw Type

FLUORESCENT LAMPS

Base Types and Bulb Shapes

Base Types (Not Actual Sizes)



Bulb Shapes (Not Actual Sizes)

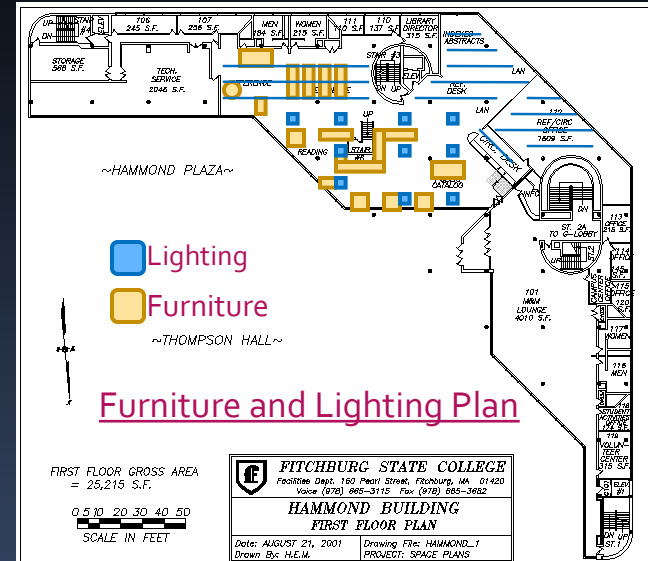
The size and shape of a bulb is designated by a letter or letters followed by a number. The letter indicates the shape of the bulb while the number indicates the diameter of the bulb in eighths of an inch. For example, "T12" indicates a tubular shaped bulb having a diameter of $\frac{1}{2}$ or $1\frac{1}{2}$ inches. The following illustrations show some of the more popular bulb shapes and sizes.

Existing Light Design

First Floor

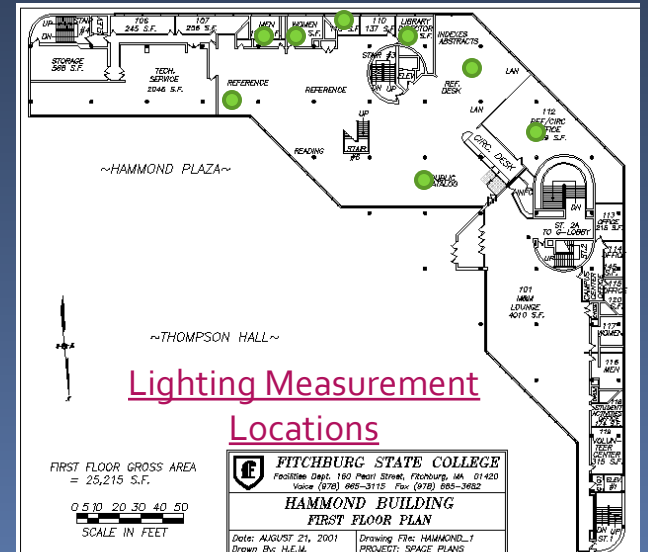
First Floor Library Lighting Audit

Room	Lighting Type	Quantity	Room Dimensions		Room Area	Watts per Fixture	Ballast Wattage	Total Wattage	Density Watts/ft ²
			Length	Width					
Large Main	A	10			2600	400	0	4000	1.5385
Reference Area	B	85			2863	32	138	2582	0.9749
	C	5				17	0	85	
	D	4				32	4	124	
Stair 1/elevator	B	7			443	32	8	216	0.6569
	G	5				15	0	75	
Circulation Desk	E	8			280	64	16	496	1.7714
Office Space	B	38			1600	32	68	1148	0.8025
	C	8				17	0	136	
Center for Learning	B	22			1250	32	36	668	0.6024
	C	5				17	0	85	
Room 110	B	5			137	32	6	154	1.3723
	C	2				17	0	34	
Room 111	B	2			110	32	4	60	0.8545
	C	2				17	0	34	
Library Dir.	B	8			315	32	8	248	1.0571
	C	5				17	0	85	
Room 105	B	1			32	32	2	30	0.9375
Mens 108	B	5			184	32	6	154	0.8370
Womens 109	B	5			215	32	6	154	0.7163
Room 106	B	1			245	32	2	30	0.1224
Corridor 1	B	13			360	32	20	396	1.1000
Stair 2	B	6			300	32	6	186	0.6200



First Floor

Room Description	Lux	Foot Candle
R 110	82	75
R 111	82	75
Janitor closet	12	11
Mens Bathroom	41	39
Womans Bathroom	41	39
Director office	103	95
Ref NW Corner	24	22
Ref NE Corner	29	26
Reading W	99	91
Reading E	70	65
Index A and B	58	53
Ref Office	18	16
Stairwell	14	12

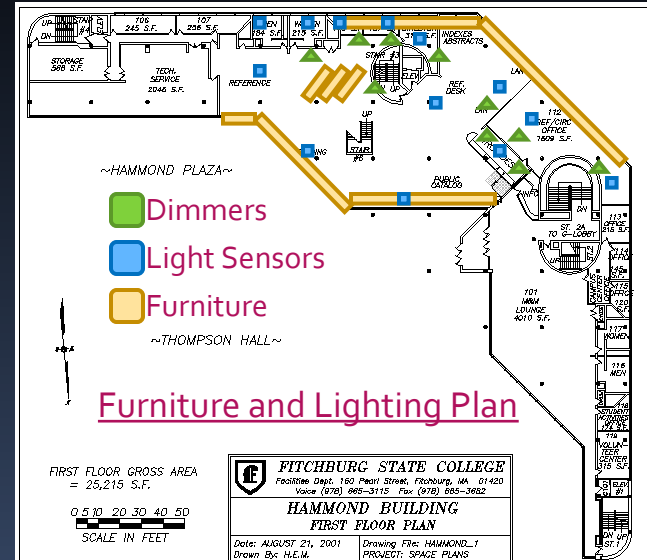


Proposed Light Design

First Floor

First Floor Library Lighting Audit

Room	Lighting Type	Quantity	Room Dimensions		Room Area	Watts per Fixture	Ballast Wattage	Total Wattage	Density Watts/ft ²
			Length	Width					
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Reference Area	B	85			2863	32	138	2582	0.9749
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First Floor Library Survey					(5) Bad (4) So So (3) Ok (1) Good (0) N/A		
	Glare	Dim Lighting	Bright	Location light switches	Readability	Day lighting	Change or Ok
Stacks	1	3.5	1	0	3	1	Yes
	Yes	NO	Yes		No	Yes	
Offices		2	4		2	1	Yes
		Yes	No		Yes	Yes	
Open Area	4.5	1.5	1.5	5	3.5	2.5	No
	No	Yes	Yes	No	No	Yes	

Energy Advantage Long Life 25W T8 System vs F32T8 System				
	3 LAMP SYSTEM		4 LAMP SYSTEM	
	Standard F32T8 .87 BF*	Energy Advantage Long Life 25W T8 .87 BF*	Standard F32T8 .87 BF*	Energy Advantage Long Life 25W T8 .87 BF*
System Wattage	88	67	112	84
Maintained Lumens	2800 x .87 BF* x .95 LM x 3 = 6943	2400 x .87 BF* x .95 LM x 3 = 5951	2800 x .87 BF* x .95 LM x 4 = 9257	2400 x .87 BF* x .95 LM x 4 = 7934
Energy Savings	21 WATTS SAVED!		28 WATTS SAVED!	

*Ballast Factor (BF) Measure of light output from lamp operated by commercial ballast, as compared to a laboratory standard reference ballast.

Dollars Saved Over the Life of Energy Advantage Long Life 25W T8 Lamps vs Standard F32T8 Lamps			
Energy Savings Calculator			
7 Watts per Lamp Saved	Annual Operating Hrs. (12 hour cycle)	Annual Operating Hrs. (24 hour cycle)	SAVINGS OVER LAMP LIFE
kWh Rate	4380*	8760**	30,000 Hours
\$0.06	\$1.84	\$3.68	\$12.26
\$0.08	\$2.45	\$4.90	\$16.80
\$0.10	\$3.07	\$6.13	\$21.00
\$0.12	\$3.68	\$7.36	\$25.20
\$0.20	\$6.13	\$12.60	\$42.00

*4380 based on operating the lamps 12 hours per day/7 days per week.
 **8760 based on operating the lamps 24 hours per day/7 days per week.

