

South Nassau Communities Hospital North Addition

Oceanside, New York



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Executive Summary

The following report contains the analysis and documentation of existing electrical system conditions in the South Nassau Communities Hospital North Addition in Oceanside, New York. The 160,000 SF addition provided 108 medical/surgical beds, labor delivery rooms, a new obstetrical suite with 26 private postpartum beds, and a 36-bed behavioral health unit to the existing facility.

The analysis and documentation within this report includes information on the distribution system, service entrance, utility, voltage systems, emergency power systems, major electrical equipment, major equipment and their loads, and any special equipment that are a part of the electrical system. Brief descriptions of the communications, fire alarm, and nurse call systems are also provided. Service entrance calculations were also preformed and are provided within the report.

A single-line diagram was created based off of the existing riser diagram and shows the flow of power through the building. Both drawings are provided in the report.

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Building Statistics

Summary

Completed in May 2005, the North Addition of the South Nassau Communities Hospital provides an additional 108 medical / surgical beds, LDRs (Labor/Delivery/Recovery), an obstetrical suite, a behavioral health unit, offices, and a 300 seat auditorium to the existing complex. Designed to accentuate the strengths of the existing historical building, the North Addition serves as a welcoming entrance and helps to create a modern image for the hospital.

Building Name | South Nassau Communities Hospital North Addition

Location | Oceanside, New York

Building Occupant | South Nassau Communities Hospital

Occupancy Type | Institutional (Group I-2), Assembly (Group A-3)

Size | 160,000 SF

Stories | 5 (all above grade)

Project Team

Owner | South Nassau Communities Hospital

Architect | Cannon Design

Engineers | Cannon Design

Communications Consultant |

Civil Engineer |

Construction Manager | Bovis Lend Lease

General Contractor | KLMK Group

Dates of Construction | December 2003 – May 2005

Cost | \$64,100,000

Project Delivery Method: Guaranteed Maximum Price

Section I – Power Distribution Systems

Summary description of Distribution System:

The electrical distribution system for South Nassau Communities Hospital contains one service entrance with incoming power at 4160V. Power flows through exterior switchgear to a substation within the new North Addition. The substation distributes 480Y/277V, 3PH, 4W power throughout the new building. Transformers are used as needed to step power down to 208Y/120V, 3PH, 4W. Secondary power is divided into multiple branches as outlined below:

- *Normal* – Provides utility power to a majority of the facility loads that are not essential to hospital functions. Loads include general lighting, receptacle loads, and miscellaneous equipment.
- *Life Safety* – Provides continuous power via normal power or emergency generator for lighting and communications equipment related to the safety of building occupants. Loads include egress illumination, fire alarm systems, and paging systems.
- *Critical* – Provides continuous power via normal power or emergency generator for areas and equipment of the hospital essential to patient care. Loads include lighting, nurse call systems, and certain receptacles in areas such as nurses stations and medicine preparation areas
- *Essential Equipment* – Provides continuous power via normal power or emergency generator for critical patient care and hospital functions. Loads include sump pumps, surgical HVAC, and elevators.
- *Fire Pump* – Provides continuous power via normal power or emergency generator for a fire pump to ensure water pressure.

Emergency power is generated by a 900kW exterior pad-mounted 480Y/277V, 3PH, 4W diesel powered emergency generator and flows into the emergency switchboard G-SWBDE01.

Utility Company Information:

Power is provided to South Nassau Communities Hospital by Incorporated Village of Rockville Centre.

1 College Place
 Rockville Centre, NY 11570-4116
 www.rvcny.us
 516-678-9221

Detailed rate schedule information was requested but was not provided, however utility statements were obtained and are summarized in the Service Entrance Size section. Based on the utility statements, the rate schedule is as follows:

Rate Schedule: E206 LG Comm. OV High

Energy-OV	Step 1 @ \$0.0881 per kW
	Step 2 @ \$0.0792 per kW
Fuel Adjustment	Step 1 @ \$-0.0357 per kW
Demand High Voltage OV	Ranges from \$7800 to \$10000 per month

Service Entrance:

The existing hospital is serviced by the Village of Rockville Centre at 4160V. Power is delivered to new 5kV exterior switchgear E-MVS01 located on an existing generator slab just next to the new addition. A meter owned by the utility company is attached to the exterior switchgear. Power is distributed from the switchgear to the North Addition and other parts of the existing hospital. Power flows from the switchgear into a 5kV, 600A switch and through transformer G-T01 to the connected switchboard G-SWBDN01. All equipment, with the exception of the metering devices, is owned by South Nassau Communities Hospital.

Voltage Systems

The primary voltage service is 4160V supplied by Incorporated Village of Rockville Centre. The substation transformer steps the power down to 480Y/277V secondary. 480Y/277V, 3PH, 4W power flows from the substation to the high voltage panels. 480V, 3PH, 3W power flows from the substation to transformers where voltage is stepped down to 208Y/120V, 3PH, 4W as needed to service the low voltage panels. The lighting equipment runs on 480Y/277V, 3PH, 4W with the exception of some lighting in the auditorium, which runs on 208Y/120V, 3PH, 4W. All scheduled equipment runs on 480V, 3PH, 3W.

Emergency Power Systems

Since the existing emergency distribution system did not meet current codes which require emergency branches (life safety, critical, essential, and fire pump), a new 900kW exterior pad-mounted 480Y/277V, 3PH, 4W diesel powered emergency generator was added for the new addition. Power flows from the generator to the emergency switchboard G-SWBDE01, where it is the distributed to the fire pump in the power plant, and to transfer switches G-ATSG01, G-ATSG02, G-ATSS01, and G-ATSC01.

Locations of Switchgear:

The main switchgear E-MVS01 is located on an existing generator slab just next to the new addition. The main switchboard G-SWBDN01 for normal power is located on the ground floor in electrical room GB04A. This room is directly adjacent to the Emergency Electrical Room GB04, which houses the emergency switchboard G-SWBDE01 as well as the general automatic transfer switches (G-ATSG01 and G-ATSG02), the critical isolation by-pass (G-ATSC01), and the life safety isolation by-pass (G-ATSS01).

In addition to the main electrical room on the ground floor, there is one main electrical closet located on each floor. These closets contain transformers, distribution panel boards, and 480Y/277V panel boards. The remaining panel boards are located in smaller electrical closets on each floor.

The following table summarizes switchgear information and locations. Equipment listed is shown on both the electrical riser diagram and floor plans.

MAJOR EQUIPMENT SCHEDULE						
TAG	TYPE	FLOOR LEVEL	ROOM NUMBER	ROOM NAME	1/8 SCALE DWG.	ENLARGED DWG.
E-MVS01	SWITCHGEAR	EXTERIOR	NA	NA	NA	E401
G-SWBDN01	SWITCHBOARD	GROUND	GB04A	ELEC. ROOM	NA	E401
G-SWBDE01	EMERGENCY SWITCHBOARD	GROUND	GB04	EMERGENCY ELEC. ROOM	NA	E401
G-T01	TRANSFORMER	GROUND	GB04A	ELEC. ROOM	NA	E401
G-T02	TRANSFORMER (NORMAL)	GROUND	GA02	ELEC. CLOSET	E201	NA
G-T03	TRANSFORMER (LIFE SAFETY)	GROUND	GA02	ELEC. CLOSET	E201	NA
1-T01	TRANSFORMER	FIRST	1A02	ELEC. CLOSET	E203	NA
2-T01	TRANSFORMER	SECOND	2A02	ELEC. CLOSET	E205	NA
3-T01	TRANSFORMER	THIRD	3A02	ELEC. CLOSET	E207	NA
3-T02	TRANSFORMER (CRITICAL)	THIRD	3A02	ELEC. CLOSET	E207	NA
3-T03	TRANSFORMER	THIRD	3A02	ELEC. CLOSET	E207	NA
4-T01	TRANSFORMER	FOURTH	4A02	ELEC. CLOSET	E209	NA
GPNH1	DISTRIBUTION PANEL	GROUND	GA02	ELEC. CLOSET	E201	NA
GPNH2	DISTRIBUTION PANEL	GROUND	GA54A	CLOSET	E201	NA
GPNH3	DISTRIBUTION PANEL	GROUND	NA	POWER PLANT	NA	E402
GPNL1	DISTRIBUTION PANEL	GROUND	GA02	ELEC. CLOSET	E201	NA
1PNH2	DISTRIBUTION PANEL	FIRST	1B11	MECHANICAL ROOM	E204	NA
1PNL1	DISTRIBUTION PANEL	FIRST	1A02	ELEC. CLOSET	E203	NA
2PNL1	DISTRIBUTION PANEL	SECOND	2A02	ELEC. CLOSET	E205	NA
3PNL1	DISTRIBUTION PANEL	THIRD	3A02	ELEC. CLOSET	E207	NA
PPNH1	DISTRIBUTION PANEL	ROOF	ROOF	ROOF	E211	NA
GPCH1	DISTRIBUTION PANEL	GROUND	GB04	EMERGENCY ELEC. ROOM	NA	E401
1PCL1	DISTRIBUTION PANEL	FIRST	1A02	ELEC. CLOSET	E203	NA
2PCL1	DISTRIBUTION PANEL	SECOND	2A02	ELEC. CLOSET	E205	NA
3PCL1	DISTRIBUTION PANEL	THIRD	3A02	ELEC. CLOSET	E207	NA
GPSH1	DISTRIBUTION PANEL	GROUND	GB04	EMERGENCY ELEC. ROOM	NA	E401
GPSL1	DISTRIBUTION PANEL	GROUND	GA02	ELEC. CLOSET	E201	NA
GPGH1	DISTRIBUTION PANEL	GROUND	GA02	ELEC. CLOSET	E201	NA
GPGH2	DISTRIBUTION PANEL	GROUND	GA54A	CLOSET	E201	NA
GPGH3	DISTRIBUTION PANEL	GROUND	NA	POWER PLANT	NA	E402
1PGH2	DISTRIBUTION PANEL	FIRST	1B11	MECHANICAL ROOM	E204	NA
4PGH1	DISTRIBUTION PANEL	FOURTH	4A02	ELEC. CLOSET	E209	NA
PPGH1	DISTRIBUTION PANEL	ROOF	ROOF	ROOF	E211	NA
PPGH2	DISTRIBUTION PANEL	ROOF	ROOF	ROOF	E210	NA
G-ATSG01	TRANSFER SWITCH	GROUND	GB04	EMERGENCY ELEC. ROOM	NA	E401
G-ATSG02	TRANSFER SWITCH	GROUND	GB04	EMERGENCY ELEC. ROOM	NA	E401
G-ATSS01	TRANSFER SWITCH (LIFE SAFETY)	GROUND	GB04	EMERGENCY ELEC. ROOM	NA	E401
G-ATSF01	TRANSFER SWITCH (FIRE PUMP)	GROUND	NA	POWER PLANT	E402	NA
G-ATSC01	TRANSFER SWITCH (CRITICAL)	GROUND	GB04	EMERGENCY ELEC. ROOM	NA	E401
E-GEN	EMERGENCY GENERATOR	EXTERIOR	NA	NA	NA	E401

PANEL BOARD SCHEDULE							
TAG	VOLTAGE SYSTEM	MLO MCB	MAIN SIZE	FLOOR LEVEL	ROOM NUMBER	ROOM NAME	1/8 SCALE DWG.
GLNH1	480Y/277V, 3PH, 4W	MCB	100A	GROUND	GA02	ELEC. CLOSET	E201
GLNL1	208Y/120V, 3PH, 4W	MLO	150A	GROUND	GA54	CLOSET	E201
GLNL2	208Y/120V, 3PH, 4W	MLO	100A	GROUND	GB13	ELEC. CLOSET	E202
GLNL3	208Y/120V, 3PH, 4W	MLO	100A	GROUND	GB03C	ELEC. CLOSET	E202
1LNH1	480Y/277V, 3PH, 4W	MCB	125A	FIRST	1A02	ELEC. CLOSET	E203
1LNL1	208Y/120V, 3PH, 4W	MLO	225A	FIRST	1A42	ELEC. CLOSET	E203
1LNL2	208Y/120V, 3PH, 4W	MLO	100A	FIRST	1B04A	ELEC. CLOSET	E204
2LNH1	480Y/277V, 3PH, 4W	MCB	125A	SECOND	2A02	ELEC. CLOSET	E205
2LNL1	208Y/120V, 3PH, 4W	MLO	225A	SECOND	2A52	ELEC. CLOSET	E205
2LNL2	208Y/120V, 3PH, 4W	MLO	225A	SECOND	2B48	ELEC. CLOSET	E206
3LNH1	480Y/277V, 3PH, 4W	MCB	100A	THIRD	3A02	ELEC. CLOSET	E207
3LNL1	208Y/120V, 3PH, 4W	MLO	225A	THIRD	3A45	ELEC. CLOSET	E207
3LNL2	208Y/120V, 3PH, 4W	MLO	150A	THIRD	3B38	ELEC. CLOSET	E208
4LNH1	480Y/277V, 3PH, 4W	MCB	100A	FOURTH	4A02	ELEC. CLOSET	E209
4LNL1	208Y/120V, 3PH, 4W	MLO	225A	FOURTH	4A51	ELEC. CLOSET	E209
GLCH1	480Y/277V, 3PH, 4W	MCB	100A	GROUND	GA02	ELEC. CLOSET	E201
GLCL1	208Y/120V, 3PH, 4W	MLO	100A	GROUND	GA54	CLOSET	E201
GLCL2	208Y/120V, 3PH, 4W	MLO	100A	GROUND	GB13	ELEC. CLOSET	E202
1LCH1	480Y/277V, 3PH, 4W	MCB	100A	FIRST	1A02	ELEC. CLOSET	E203
1LCL1	208Y/120V, 3PH, 4W	MLO	225A	FIRST	1A42	ELEC. CLOSET	E203
1LCL2	208Y/120V, 3PH, 4W	MLO	100A	FIRST	1B04A	ELEC. CLOSET	E204
2LCH1	480Y/277V, 3PH, 4W	MCB	100A	SECOND	2A02	ELEC. CLOSET	E205
2LCL1	208Y/120V, 3PH, 4W	MLO	225A	SECOND	2A52	ELEC. CLOSET	E205
2LCL2	208Y/120V, 3PH, 4W	MLO	225A	SECOND	2B48	ELEC. CLOSET	E206
2LCL3	208Y/120V, 3PH, 4W	MLO	100A	SECOND	2B48	ELEC. CLOSET	E206
3LCH1	480Y/277V, 3PH, 4W	MCB	100A	THIRD	3A02	ELEC. CLOSET	E207
3LCL1	208Y/120V, 3PH, 4W	MLO	225A	THIRD	3A45	ELEC. CLOSET	E207
3LCL2	208Y/120V, 3PH, 4W	MLO	225A	THIRD	3B38	ELEC. CLOSET	E208
3LCL3	208Y/120V, 3PH, 4W	MLO	150A	THIRD	3B53	CORRIDOR	E208
4LCH1	480Y/277V, 3PH, 4W	MCB	100A	FOURTH	4A02	ELEC. CLOSET	E209
4LCL1	208Y/120V, 3PH, 4W	MLO	225A	FOURTH	4A51	ELEC. CLOSET	E209
GLSH1	480Y/277V, 3PH, 4W	MCB	60A	GROUND	GA02	ELEC. CLOSET	E201
GLSL1	208Y/120V, 3PH, 4W	MLO	60A	GROUND	GA02	ELEC. CLOSET	E201
1LSH1	480Y/277V, 3PH, 4W	MCB	60A	FIRST	1A02	ELEC. CLOSET	E203
1LSL1	208Y/120V, 3PH, 4W	MLO	60A	FIRST	1A02	ELEC. CLOSET	E203
4LSH1	480Y/277V, 3PH, 4W	MCB	60A	FOURTH	4A02	ELEC. CLOSET	E209
4LSL1	208Y/120V, 3PH, 4W	MLO	60A	FOURTH	4A02	ELEC. CLOSET	E209
3LGL1	208Y/120V, 3PH, 4W	MCB	60A	THIRD	3A02	ELEC. CLOSET	E207

ISOLATION PANEL BOARD SCHEDULE							
TAG	VOLTAGE SYSTEM	MLO MCB	MAIN SIZE	FLOOR LEVEL	ROOM NUMBER	ROOM NAME	1/8 SCALE DWG.
3LIL1	208Y/120V, 3PH, 4W	MLO	50A	THIRD	3B16	PROCEDURE ROOM	E208
3LIL2	208Y/120V, 3PH, 4W	MLO	50A	THIRD	3B17	PROCEDURE ROOM	E208
3LIL3	208Y/120V, 3PH, 4W	MLO	50A	THIRD	3B16	PROCEDURE ROOM	E208
3LIL4	208Y/120V, 3PH, 4W	MLO	50A	THIRD	3B17	PROCEDURE ROOM	E208

Overcurrent Devices:

The exterior switchgear E-MVS01 is protected by a 600A fuse. Within the exterior switchgear, a 400A fuse protects the new switchboard G-SWBDN01. Within the substation, a 4000A, 50kAIC LSIG power air breaker provides branch over-current protection. The emergency switchboard G-SWBDE01 is protected by a 1600A, 50kAIC circuit breaker. An 800A LSIG circuit breaker protects the fire pump. The main switchboard distributes power on 12 feeders which are protected by molded case three-pole circuit breakers with solid state trip. These breakers provide protection ranging from 225 A to 1200A . Twenty-one panels throughout the building are protected by main circuit breakers, while the rest are main lugs only. Protection for distribution panels ranges from 10kAIC to 50kAIC.

Transformers:

There are nine transformers located in the new North Addition. G-T01 is part of the normal switchboard G-SWBDN01 located in the electrical room on the ground floor and steps down the 5kV, 3PH, 3W power to 480Y/277V, 3PH, 4W power. The remaining transformers are located in the main electrical closets on each floor. These transformers step down 480V, 3PH, 3W power to 208Y/120V, 3PH, 4W power and are listed in the table below.

TRANSFORMER SCHEDULE								
TAG	PRIMARY VOLTAGE	SECONDARY VOLTAGE	SIZE	TYPE	TEMP. RISE	TAPS	MOUNTING	REMARKS
G-T01	5000V, 3PH, 3W	480Y/277V, 3PH, 4W	2500	DRY	115 DEGREE C	(4) 2.5%	PAD MOUNTED ON FLOOR	-
G-T02	480V, 3PH, 3W	208Y/120V, 3PH, 4W	300	DRY	150 DEGREE C	(6) 2.5%	PAD MOUNTED ON FLOOR	NEMA TP1
G-T03	480V, 3PH, 3W	208Y/120V, 3PH, 4W	45	DRY	150 DEGREE C	(6) 2.5%	WALL MOUNTED	NEMA TP1
1-T01	480V, 3PH, 3W	208Y/120V, 3PH, 4W	150	DRY	150 DEGREE C	(6) 2.5%	PAD MOUNTED ON FLOOR	NEMA TP1
2-T01	480V, 3PH, 3W	208Y/120V, 3PH, 4W	150	DRY	150 DEGREE C	(6) 2.5%	PAD MOUNTED ON FLOOR	NEMA TP1
3-T01	480V, 3PH, 3W	208Y/120V, 3PH, 4W	225	DRY	150 DEGREE C	(6) 2.5%	PAD MOUNTED ON FLOOR	NEMA TP1
3-T02	480V, 3PH, 3W	208Y/120V, 3PH, 4W	225	DRY	150 DEGREE C	(6) 2.5%	PAD MOUNTED ON FLOOR	NEMA TP1
3-T03	480Y/277V, 3PH, 4W	208Y/120V, 3PH, 4W	15	DRY	150 DEGREE C	(6) 2.5%	CEILING MOUNTED	NEMA TP1
4-T01	480V, 3PH, 3W	208Y/120V, 3PH, 4W	75	DRY	150 DEGREE C	(6) 2.5%	PAD MOUNTED ON FLOOR	NEMA TP1

Grounding:

The extent to which grounding is shown on the drawings is in Detail 2: Typical Electrical System Grounding Scheme Detail (Single-Ended Substation) on E502.

Special Equipment:

A transient voltage surge suppressor (TVSS) is connected to the switchboard G-SWBDN01. The unit’s primary mode of protection is line-to-neutral (wye configured systems). The secondary mode of protection is line-to-ground and neutral-to-ground (wye configured systems). The single pulse surge current capacity is 250,000A while the repetitive surge current capacity is 7,000A. The unit includes an engineered parallel connected, solid-state high-performance suppression system and high-frequency extended range tracking filter. LED indicators show the status of each MOV array. An alarm contact allows for remote monitoring.

There were a few features used in the hospital to minimize or eliminate down time due to maintenance. Power air main circuit breakers allow the circuit breaker to be easily worked on. Isolation by-pass transfer switches allow for maintenance on the switches without interrupting power.

Lighting Loads:

The majority of the lighting in the hospital is provided by linear fluorescent and cove-mounted fluorescent luminaires. Fluorescent lighting is also used extensively in slot applications. The auditorium makes use of linear fluorescent fixtures for conference settings and relies heavily on recessed cans with incandescent sources for more private functions. Metal halide sources are also used throughout the building, primarily in the lobby and on the exterior of the building. Metal halide lamp and ballast combinations are provided in Appendix B. Most of the luminaires operate on 277V, with the exception of the incandescent fixtures in the auditorium, which operate at 120V. The following table provides a list of each luminaire type as well as specific characteristics of each luminaire.

LUMINAIRE SCHEDULE										
TAG	LAMPS				BALLAST TYPE	VOLTAGE	INPUT WATTS	BALLAST FACTOR	CURRENT (START/OPERATING)	POWER FACTOR (START/OPERATING)
	NO.	TYPE	WATTAGE	SOURCE						
PX15	1	35W PAR20	35	MH	ELEC	277	44	1.00	0.18	0.90
PX16	1	35W PAR30	35	MH	ELEC	277	44	1.00	0.18	0.90
PX17	1	250W MH	250	MH	ELEC	277	269	1.00	1.06	0.99
PX18	1	250W MH	250	MH	ELEC	277	269	1.00	1.06	0.99
PX19	1	100W MH	100	MH	ELEC	277	109	1.00	0.40	0.90
	1	Q75 HALOGEN	75	INCAN	NONE	120	75	NONE	0.63	1.00
PY6	1	F28T5	28	FLUOR	ELEC. PS	277	33	1.04	0.12	0.98
PZ2	1	150W CAPSY.	150	INCAN	NONE	120	150	NONE	1.25	1.00
XA4	-	LED	3.1	LED	NONE	277	3.1	NONE	0.01	1.00
PZ4	-	LED	3.1	LED	NONE	277	3.1	NONE	0.01	1.00
PZ5	-	LED	3.1	LED	NONE	277	3.1	NONE	0.01	1.00
FY2	-	COLD CATHODE	12W/FT	CC	NONE	120	-	NONE	0.80	1.00

LUMINAIRE SCHEDULE										
TAG	LAMPS				BALLAST TYPE	VOLTAGE	INPUT WATTS	BALLAST FACTOR	CURRENT (START/OPERATING)	POWER FACTOR (START/OPERATING)
	NO.	TYPE	WATTAGE	SOURCE						
FA2	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FB1	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FB2	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FC1	3	F32T8	32	FLUOR	ELEC. PS	277	91	0.88	0.34	0.99
FD1	4	F32T8	32	FLUOR	ELEC. PS	277	121	0.88	0.45	0.99
FE1	2	FB031 T8	31	FLUOR	ELEC. PS	277	57	0.90	0.21	0.98
FE2	2	FB031 T8	31	FLUOR	ELEC. PS	277	57	0.90	0.21	0.98
FH3	3	F32T8	32	FLUOR	ELEC. PS	277	91	0.88	0.34	0.99
FJ3	2	F32 T8U 6	32	FLUOR	ELEC. PS	277	58	0.88	0.21	0.98
FK4	3	F32T8	32	FLUOR	ELEC. PS	277	91	0.88	0.34	0.99
FK6	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FK8	3	F32T8	32	FLUOR	ELEC. PS	277	91	0.88	0.34	0.99
FL4	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FM3	4	F32T8	32	FLUOR	ELEC. PS	277	121	0.88	0.45	0.99
FN6	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FP3	3	F32T8	32	FLUOR	ELEC. PS	277	91	0.88	0.34	0.99
FP11	1	F28T5	28	FLUOR	ELEC. PS	277	33	1.04	0.12	0.98
FP13	1	F54T5HO/835	54	FLUOR	ELEC. PS	277	62	0.99	0.24	0.90
FQ5	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FQ8	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FR3	2	F32,25,17 T8	VARIES	FLUOR	ELEC. PS	277	VARIES	0.88	VARIES	0.99
FR5	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FR9	2	40W BIAX	40	FLUOR	ELEC. PS	277	75	0.98	0.27	0.95
FR10	2	40W BIAX	40	FLUOR	ELEC. PS	277	75	0.98	0.27	0.95
FR11	2	40W BIAX	40	FLUOR	ELEC. PS	277	75	0.98	0.27	0.95
FR12	2	40W BIAX	40	FLUOR	ELEC. PS	277	75	0.98	0.27	0.95
FS11	2	F32T8	32	FLUOR	ELEC. PS	277	63	0.88	0.23	0.98
FS12	3	F32T8	32	FLUOR	ELEC. PS	277	91	0.88	0.34	0.99
FS13	2	FB031 T8	31	FLUOR	ELEC. PS	277	57	0.90	0.21	0.98
FS14	3	F32T8	32	FLUOR	ELEC. PS	277	91	0.88	0.34	0.99
FS15	1	F32T8	32	FLUOR	ELEC. PS	277	34	0.90	0.13	0.98
FT2	2	F32,25,17 T8	VARIES	FLUOR	ELEC. PS	277	VARIES	0.88	VARIES	0.99
FT4	2	F32,25,17 T8	VARIES	FLUOR	ELEC. PS	277	VARIES	0.88	VARIES	0.99
FT6	2	F32,25,17 T8	VARIES	FLUOR	ELEC. PS	277	VARIES	0.88	VARIES	0.99
FT8	1	F54T5HO/835	54	FLUOR	ELEC. PS	277	62	0.99	0.24	0.90
FT9	1	F54T5HO/835	54	FLUOR	ELEC. PS	277	62	0.99	0.24	0.90
FT10	2	F54T5HO/835	54	FLUOR	ELEC. DIM	277	125	1.00	0.45	0.98
FT11	-	LINEAR	1.4W/FT	LED	NONE	277	300	1.00	6.50	1.00
FZ2	4	F40BX	40	FLUOR	ELEC. PS	277	75	0.98	0.27	0.95
	1	50W HALOGEN	50	INCAN	NONE	120	50	NONE	0.42	1.00
	2	F40BX	40	FLUOR	ELEC. PS	277	75	0.98	0.27	0.95

LUMINAIRE SCHEDULE										
TAG	LAMPS				BALLAST TYPE	VOLTAGE	INPUT WATTS	BALLAST FACTOR	CURRENT (START/OPERATING)	POWER FACTOR (START/OPERATING)
	NO.	TYPE	WATTAGE	SOURCE						
FZ5	6	F32T8/950	32	FLUOR	ELEC. PS	277	91	0.88	0.34	0.99
PB1	2	CFQ18W	18	FLUOR	ELEC. RS	277	35	0.95	0.13	0.99
PB2	2	CFQ18W	18	FLUOR	ELEC. RS	277	35	0.95	0.13	0.99
PB3	2	CFQ18W	18	FLUOR	ELEC. RS	277	35	0.95	0.13	0.99
PD1	2	CFQ18W	18	FLUOR	ELEC. RS	277	35	0.95	0.13	0.99
PD2	2	CFQ18W	18	FLUOR	ELEC. RS	277	35	0.95	0.13	0.99
PD7	2	CFQ18W	18	FLUOR	ELEC. RS	277	35	0.95	0.13	0.99
PD9	1	CF42W/GX24	42	FLUOR	ELEC. PS	277	94	0.95	0.40	0.98
PD10	1	CF42W/GX24	42	FLUOR	ELEC. PS	277	94	0.95	0.40	0.98
PD11	1	39W PAR20MH	39	MH	ELEC	277	44	1.00	0.18	0.90
PH1	1	70W MH	70	MH	ELEC	277	79	1.00	0.29	0.90
PH2	1	70W MH	70	MH	ELEC	277	79	1.00	0.29	0.90
	1	Q50 HALOGEN	50	INCAN	NONE	120	50	NONE	0.42	1.00
PH3	1	100W MH	100	MH	ELEC	277	109	1.00	0.40	0.90
PH4	1	100W MH	100	MH	ELEC	277	109	1.00	0.40	0.90
	1	Q75 HALOGEN	75	INCAN	NONE	120	75	NONE	0.63	1.00
PJ3	1	35W MH T6	35	MH	ELEC	277	45	1.00	0.17	0.90
PL5	1	75W MR16	75	INCAN	NONE	120	75	NONE	0.63	1.00
PL6	1	75W MR16	75	INCAN	NONE	120	75	NONE	0.63	1.00
PL7	1	75W MR16	75	INCAN	NONE	120	75	NONE	0.63	1.00
PL8	1	35W MR16	35	INCAN	NONE	120	75	NONE	0.63	1.00
PL9	1	50ALR-18	50	INCAN	NONE	120	50	NONE	0.42	1.00
PQ7	1	39WCMHT6	39	MH	ELEC	277	45	1.00	0.17	0.90
PQ9	1	100WPAR38	100	INCAN	NONE	120	100	NONE	0.83	1.00
PQ10	1	100WPAR38	100	INCAN	NONE	120	100	NONE	0.83	1.00
PQ11	1	CFTR42	42	FLUOR	ELEC. RS	277	46	0.98	0.17	0.98
PQ12	1	100W A	100	INCAN	NONE	120	100	NONE	0.83	1.00
PU3	1	150W A	150	INCAN	NONE	120	150	NONE	1.25	1.00
PS3	2	CFQ18W	18	FLUOR	ELEC. RS	277	35	0.95	0.13	0.99
PS4	2	CFQ26W	26	FLUOR	ELEC. PS	277	52	1.00	0.43	0.98
PT6	1	75W MR16	75	INCAN	NONE	120	75	NONE	0.63	1.00
PU2	1	CFQ18W	18	FLUOR	ELEC. RS	277	35	0.95	0.13	0.99
PU3	1	150W A	150	INCAN	NONE	120	150	NONE	1.25	1.00
PX1	1	70W MH	70	MH	ELEC	277	79	1.00	0.29	0.90
PX2	1	70W MH	70	MH	ELEC	277	79	1.00	0.29	0.90
	1	Q50 HALOGEN	50	INCAN	NONE	120	50	NONE	0.42	1.00
PX3	1	175W MH	175	MH	ELEC	277	191	1.00	0.70	0.90
PX9	1	CFQ18W	18	FLUOR	ELEC. RS	277	35	0.95	0.13	0.99
PX14	1	150W MH	150	MH	ELEC	277	166	1.00	0.60	0.90

Lighting Controls:

New York State Building Code requires that each area required to have a manual control shall also have a control that allows the occupant to reduce the connected lighting load in a reasonably uniform pattern by at least 50%. Corridors and areas controlled by occupancy sensors are exempt. This reduction may be achieved in the following ways:

- Controlling all lamps and luminaires
- Dual switching of alternate rows of luminaires, alternate luminaires, or alternate lamps
- Switching the middle lamps independently of the outer lamps
- Switching each luminaire or each lamp

Ceiling mounted occupancy sensors are used to control the lighting in the offices located on the ground floor of the hospital. The lighting in the auditorium is dimmable and is controlled by a Lutron Graphic Eye 4000 Series Dimming Panel. The fluorescent lighting is switched to allow alternating luminaires in a row to be controlled separately. To allow the auditorium to function as three separate spaces, the lighting systems are switched to allow each space to be controlled separately. Most of the remaining spaces in the hospital are controlled through multilevel switching.

Mechanical and Other Loads:

The North Addition contains a wide variety of electrically powered equipment. The bulk of this equipment is part of the mechanical system and includes air handling units, return fans, exhaust fans, and chillers. Elevator equipment is listed under architectural equipment. All equipment runs on 480V. Smaller equipment that was not on the equipment connection / motor control schedule is not listed. Kitchen equipment was not a factor since the main cafeteria and kitchen area is located in the existing hospital. These loads are shown in the construction documents phase of the next section. The following tables contain the calculated loads for all major equipment listed on equipment connection / motor control schedule. The total load is given at the bottom of both tables.

ARCHITECTURAL EQUIPMENT SCHEDULE									
TAG	DESCRIPTION	LOAD		MOTOR AMPS	VOLTAGE	PHASE(S)	ASSUMED PF	kVA	kW
		MAGNITUDE	UNITS						
ELV-1	ELEVATOR	50	HP	65	480	3	0.95	53.98	51.28
ELV-2	ELEVATOR	50	HP	65	480	3	0.95	53.98	51.28
ELV-3	ELEVATOR	50	HP	65	480	3	0.95	53.98	51.28
ELV-4	ELEVATOR	50	HP	65	480	3	0.95	53.98	51.28
ELV-5	ELEVATOR	50	HP	65	480	3	0.95	53.98	51.28
TOTAL:								269.88	256.39

MECHANICAL EQUIPMENT SCHEDULE									
TAG	DESCRIPTION	LOAD		MOTOR AMPS	VOLTAGE	PHASE(S)	ASSUMED PF	kVA	kW
		MAGNITUDE	UNITS						
AHU-1	AIR HANDLING UNIT	60	HP	77	480	3	0.95	63.94	60.74
AHU-2	AIR HANDLING UNIT	60	HP	77	480	3	0.95	63.94	60.74
AHU-3	AIR HANDLING UNIT	40	HP	52	480	3	0.95	43.18	41.02
AHU-4	AIR HANDLING UNIT	40	HP	52	480	3	0.95	43.18	41.02
AHU-5	AIR HANDLING UNIT	20	HP	27	480	3	0.95	22.42	21.30
AHU-6	AIR HANDLING UNIT	20	HP	27	480	3	0.95	22.42	21.30
AHU-7	AIR HANDLING UNIT	60	HP	77	480	3	0.95	63.94	60.74
RF-1	RETURN FAN	30	HP	40	480	3	0.95	33.22	31.56
RF-2	RETURN FAN	30	HP	40	480	3	0.95	33.22	31.56
RF-3	RETURN FAN	25	HP	34	480	3	0.95	28.23	26.82
RF-4	RETURN FAN	25	HP	34	480	3	0.95	28.23	26.82
RF-5	RETURN FAN	10	HP	14	480	3	0.95	11.63	11.04
RF-6	RETURN FAN	10	HP	14	480	3	0.95	11.63	11.04
RF-7	RETURN FAN	25	HP	34	480	3	0.95	28.23	26.82
EF-1	EXHAUST FAN	5	HP	7.6	480	3	0.95	6.31	6.00
EF-2	EXHAUST FAN	5	HP	7.6	480	3	0.95	6.31	6.00
EF-3A	EXHAUST FAN	5	HP	7.6	480	3	0.95	6.31	6.00
EF-3B	EXHAUST FAN	5	HP	7.6	480	3	0.95	6.31	6.00
EF-4	EXHAUST FAN	5	HP	7.6	480	3	0.95	6.31	6.00
EF-5A	EXHAUST FAN	3	HP	4.8	480	3	0.85	3.99	3.39
EF-5B	EXHAUST FAN	3	HP	4.8	480	3	0.85	3.99	3.39
EF-6	EXHAUST FAN	3	HP	4.8	480	3	0.85	3.99	3.39
EF-7	EXHAUST FAN	1	HP	2.1	480	3	0.85	1.74	1.48
EF-8A	EXHAUST FAN	1	HP	2.1	480	3	0.85	1.74	1.48
EF-8B	EXHAUST FAN	1	HP	2.1	480	3	0.85	1.74	1.48
EF-9	EXHAUST FAN	1.5	HP	3	480	3	0.85	2.49	2.12
EF-10	EXHAUST FAN	1	HP	2.1	480	3	0.85	1.74	1.48
EF-11	EXHAUST FAN	1	HP	2.1	480	3	0.85	1.74	1.48
SEF-1	SMOKE EXHAUST FAN	50	HP	65	480	3	0.95	53.98	51.28
SEF-2	SMOKE EXHAUST FAN	50	HP	65	480	3	0.95	53.98	51.28
CRU-1	CONDENSATE RETURN	(2) 1	HP	2.1	480	3	0.85	3.49	2.96
CRU-2	CONDENSATE RETURN	(2) 1	HP	2.1	480	3	0.85	3.49	2.96
CRU-3	CONDENSATE RETURN	(2) 5	HP	7.6	480	3	0.95	12.62	11.99
MVP	MED. VAC. PUMP	(2) 7.5	HP	11	480	3	0.95	18.27	17.36
MAP	MED. AIR PUMP	(3) 7.5	HP	11	480	3	0.95	27.40	26.03
P-1	CHILLED WATER PUMP	100	HP	124	480	3	0.95	102.97	97.82
P-2	CHILLED WATER PUMP	100	HP	124	480	3	0.95	102.97	97.82
P-3	CHILLED WATER PUMP	100	HP	124	480	3	0.95	102.97	97.82
P-4	CHILLED WATER PUMP	25	HP	34	480	3	0.95	28.23	26.82
P-5	CHILLED WATER PUMP	25	HP	34	480	3	0.95	28.23	26.82
P-6	CHILLED WATER PUMP	75	HP	96	480	3	0.95	79.72	75.73

MECHANICAL EQUIPMENT SCHEDULE									
TAG	DESCRIPTION	LOAD		MOTOR AMPS	VOLTAGE	PHASE(S)	ASSUMED PF	kVA	kW
		MAGNITUDE	UNITS						
P-7	CHILLED WATER PUMP	75	HP	96	480	3	0.95	79.72	75.73
P-8	CHILLED WATER PUMP	30	HP	40	480	3	0.95	33.22	31.56
P-9	CHILLED WATER PUMP	30	HP	40	480	3	0.95	33.22	31.56
DHWCP	DOM. HOT WATER	1/6	HP	4.4	120	1	0.75	0.53	0.40
CT-3	COOLING TOWER	75	HP	96	480	3	0.95	79.72	75.73
CT-3 HTR 1	CT-3 SUMP HEATER	20	A	20	480	3	0.95	16.61	15.78
CT-3 HTR 2	CT-3 SUMP HEATER	20	A	20	480	3	0.95	16.61	15.78
CH-1	EXISTING CHILLER #1	30	A	30	480	3	0.95	24.91	23.67
CT-1	EX. COOLING TOWER #1	75	HP	96	480	3	0.95	79.72	75.73
INST. AC	INST. AIR COMP.	(2) 1	HP	2.1	480	3	0.85	3.49	2.96
CH-3	CHILLER #3	756	A	756	480	3	0.95	627.78	596.39

TOTAL:	995.51	945.28
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Service Entrance Size:

The following is a summary of three different calculations made to size the service entrance. The first calculation is typically made during the Conceptual or Schematic Design Phase and is calculated by multiplying the square footage of the building by a demand load (in VA/sq.ft) for a particular building type. The second calculation is made during the Design Development Phase and is determined by multiplying the square footage by the demand load (again in VA/sq. ft) for specific areas or equipment (such as lighting, receptacles, and mechanical equipment) in the building. The third method is based on actual building loads obtained from the panelboards. A summary of each calculation is shown below.

CONCEPTUAL AND DESIGN PHASE			
DEMAND LOAD BUILDING TYPE	VA/SF	SF	VA
HEALTH CARE - HOSPITAL	40	160,000	6,400,000

TOTAL:	6,400,000 VA
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DESIGN DEVELOPMENT PHASE				
LOAD	OCCUPANCY	VA/SF	SF	VA
LIGHTING	OFFICE	3.5 ^a	11,000	38,500 ^b
LIGHTING	AUDITORIUM	1 ^a	2,700	2,700 ^b
LIGHTING	HOSPITAL	2 ^a	146,300	68,520 ^b
RECEPTACLES	GENERAL	0.5	160,000	80,000
EXHAUST FANS	-	2	160,000	320,000
COOLING	-	8	160,000	1,280,000
MEDICAL OR	-	20	1800	36,000
ELEVATORS	-	50 kW/per	5	250

TOTAL:	1,826,000 VA
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^a General lighting load values from Table 220.12, *National Electric Code 2008*, Quincy, MA: National Fire Protection Association Inc., 2008

^b Values calculated using demand factors found in Table 220.42, *National Electric Code 2008*, Quincy, MA: National Fire Protection Association Inc., 2008

DESIGN DEVELOPMENT PHASE				
LOAD	OCCUPANCY	VA/SF	SF	VA
LIGHTING	OFFICE	3.5 ^a	11,000	38,500 ^b
LIGHTING	AUDITORIUM	1 ^a	2,700	2,700 ^b
LIGHTING	HOSPITAL	2 ^a	146,300	68,520 ^b
RECEPTACLES	GENERAL	1	160,000	85,000
EXHAUST FANS	-	2	160,000	320,000
COOLING	-	8	160,000	1,280,000
MEDICAL OR	-	20	1800	36,000
ELEVATORS	-	50 kW/per	5	250

TOTAL:	1,831,000 VA
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WORKING DRAWINGS PHASE			
LIGHTING AND RECEPTACLE PANELBOARD LOADS			
PANEL	LIGHTING LOAD (kW)	RECEPTACLE LOAD (kW)	MOTOR LOAD (kW)
GLNH1	30.5	0.0	0.0
GLNL1	54.1	2.0	0.0
GLNL2	0.0	9.0	3.5
GLNL3	13.9	14.0	0.5
1LNH1	39.7	0.0	0.0
1LNL1	7.7	56.2	1.0
1LNL2	0.4	8.0	0.0
2LNH1	51.8	0.0	0.0
2LNL1	11.6	68.9	1.0
2LNL2	8.0	54.8	0.0
3LNH1	28.7	0.0	0.0
3LNL1	5.4	64.2	0.8
3LNL2	0.0	43.8	0.0
4LNH1	18.2	0.0	0.0
4LNL1	6.4	55.7	5.1
GLCH1	5.3	0.0	0.0
GLCL1	0.0	8.6	4.5
GLCL2	0.0	2.0	16.0
1LCH1	4.8	0.0	1.5
1LCL1	1.9	68.3	3.0
1LCL2	0.0	3.9	14.1
2LCH1	8.3	0.0	0.0
2LCL1	1.9	72.4	18.0
2LCL2	1.9	73.0	3.5
2LCL3	0.0	7.6	6.0
3LCH1	20.9	0.0	0.0
3LCL1	1.9	67.3	2.0
3LCL2	1.0	46.4	11.1
3LCL3	4.6	43.0	0.0
4LCH1	12.7	0.0	0.0
4LCL1	0.0	32.8	26.5
GLSH1	10.5	0.0	0.0
GLSL1	1.0	0.0	4.7
1LSH1	12.0	0.0	0.0

CONSTRUCTION DOCUMENTS PHASE			
LIGHTING AND RECEPTACLE PANELBOARD LOADS			
PANEL	LIGHTING LOAD (kW)	RECEPTACLE LOAD (kW)	MOTOR LOAD (kW)
4LSH1	9.8	0.0	0.0
4LSL1	0.0	0.0	5.5
3LIL1	0.0	9.4	0.0
3LIL2	0.0	9.4	0.0
3LIL3	0.0	9.4	0.0
3LIL4	0.0	9.4	0.0
TOTAL (kW)	9.80	37.60	5.50
TOTAL (kVA)	10.89	41.78	6.11

Note: Panelboard schedules are provided in kW. Engineer assumed PF=0.9 for sizing of panels. A spare capacity of 20% or 25% was assumed and a multiplier of 1.25 was also use to size the panels. The spare capacity and 1.25 multiplier are not included in the table above.

SERVICE ENTRANCE SIZE TABLE 1			
PHASE	LOAD - kVA	VOLTAGE SYSTEM	LOAD - AMPS
CONCEPTUAL/SCHEMATIC DESIGN	6400	480Y/277, 3PH, 4W	7698
DESIGN DEVELOPMENT	1831	480Y/277, 3PH, 4W	2202
WORKING DRAWINGS	3858	480Y/277, 3PH, 4W	4640

SERVICE ENTRANCE SIZE TABLE 2			
PHASE	SIZE - A	VOLTAGE SYSTEM	CAPACITY - kVA
ACTUAL CONDITIONS	4000	480Y/277, 3PH, 4W	3325

SUMMARY - VA/SF	20.78
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When comparing the three methods, the conceptual method was the largest. This is due to the large demand load of 40 VA/SF for hospitals. The number likely includes areas such as kitchens and multiple labs and operating rooms that are not included in the North Addition. The smallest method was the design development method, which did not account for all of the mechanical loads but did not include demand loads for kitchens, labs, and operating rooms. With the 20% spare capacity added, the load calculated using working drawings method was greater than the actual conditions.

UTILITY DATA				
BILLING DATE	ENERGY OV		FUEL ADJ.	DEMAND HIGH VOLTAGE
	STEP 1 @ \$0.0881/kWh	STEP 2 @ \$0.0792/kWh	STEP 1 @- \$0.0070/kWh	
5/9/2008	30000 kWh	1376400 kWh	1406400 kWh	\$8,988
7/11/2008	30000 kWh	1470000 kWh	1500000 kWh	\$10,416
9/5/2008	30000 kWh	1892400 kWh	1922400 kWh	\$10,164
10/6/2008	30000 kWh	1506000 kWh	1536000 kWh	\$10,080
11/4/2008	30000 kWh	1554000 kWh	1584000 kWh	\$9,912
1/6/2009	30000 kWh	1143600 kWh	1173600 kWh	\$8,484
2/3/2009	30000 kWh	1443600 kWh	1473600 kWh	\$7,896
3/6/2009	30000 kWh	1314000 kWh	1344000 kWh	\$7,812
4/6/2009	30000 kWh	1189200 kWh	1219200 kWh	\$7,890

Building utility data for South Nassau Communities Hospital is provided in the table above. It does not show how much energy is consumed specifically by the North Addition, but does show what the demand is for the entire facility.

Environmental Stewardship Design:

Due to the time period when the North Addition was designed, a LEED certification was not considered. Energy efficiency was considered, and this is evident in the use of occupancy sensors and multi-level switching. Patient care and reliability were the major design considerations due to the function of the building.

Design Issues:

There are no known design issues.

Section II – Communication Systems

Fire Alarm System

The fire alarm system is based upon a LAN hardware package utilizing a solid state, microprocessor-based, analog/addressable monitoring and control system. The system has peer-to-peer token ring network topology over common bus data communication lines between various remote filed processing units and network display units. The system includes a central processor unit, annunciator panels, field processing units, firefighter’s emergency telephone communications, peripheral detection, smoke and heat detectors, speakers, and manual pull stations. The fire alarm system is tied into the existing main fire alarm panel.

Telecommunications

The telecommunications system was extended from the existing hospital into the new addition and runs back to the main telecom / computer room in the existing hospital. Voice and data closets house telecom copper, fiber optic, and coax patch panels.

Public Address System

An all-call public address system provides general paging via microphone and/or telephone system access. Speakers are located in corridors, conference rooms, waiting rooms.

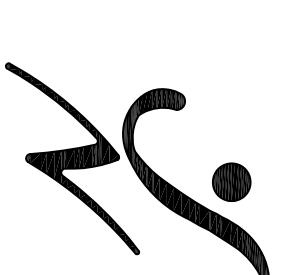
Nurse Call System

The nurse call system provides communication between master stations and sub stations via audio and or visual signaling.

Code Blue

A code blue system provides audible and visual alarms via dome lights at the nurse call master stations within each departments as well as the hospital's telephone switchboard room where an operator can provide initiate crash team assistance either by overhead or page. A code blue emergency button is located at each critical care patient bed. Local audible and visual alarms are through nurse call dome lights and at the respective department's nurse call master station.

Appendix A – Feeder Schedule and Single-line Diagram



SOUTH NASSAU
COMMUNITIES HOSPITAL

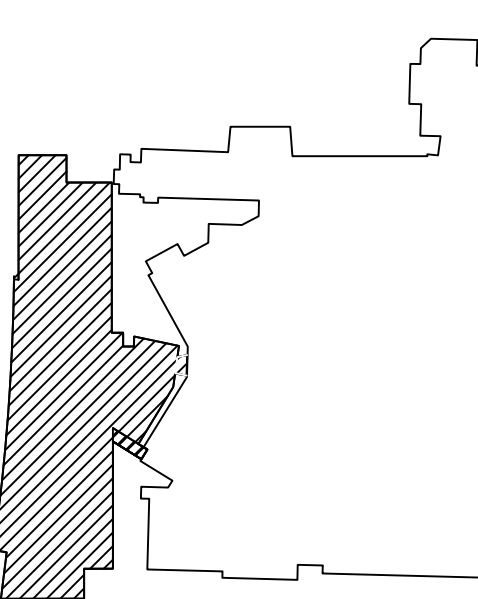
OCANASIDE, NEW YORK

NORTH ADDITION
PROJECT

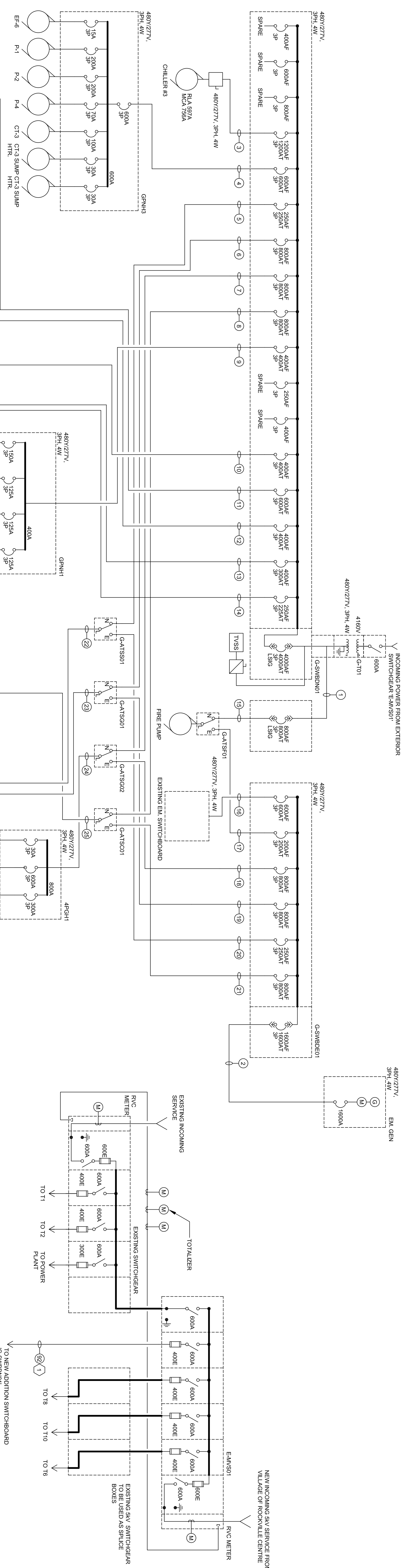
CARL SPEROFF

AE481 - SENIOR THESIS

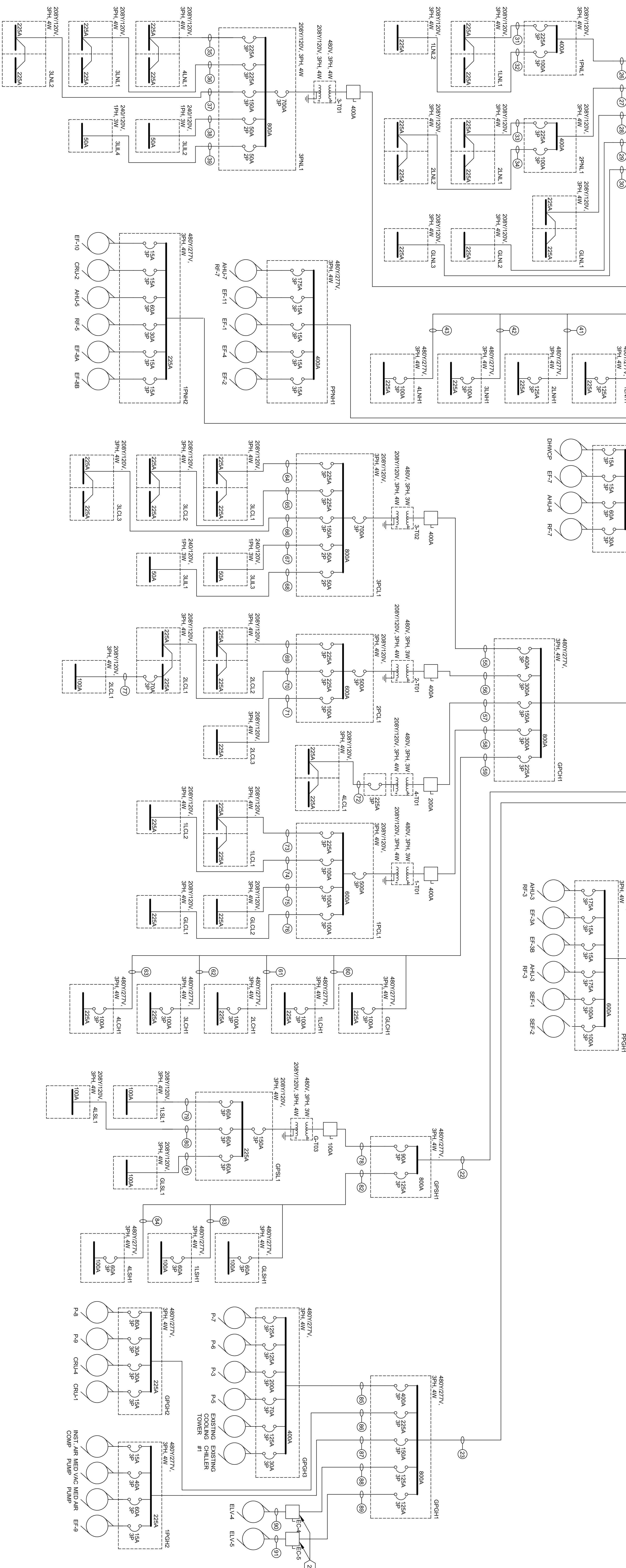
TECH 2 100%
OCTOBER 27, 2010



POWER DISTRIBUTION SINGLE LINE DIAGRAM



- DRAWING NOTES**
- 1 ROUTE FEEDER IN NEW DUCTRANK, REFER TO DRAWING E03
 - 2 PROVIDE BREAK OR FUSE SWITCH AS REQUIRED/RECOMMENDED BY ELEVATOR MANUFACTURER



FEEDER SCHEDULE																	
TAG		FROM	TO	NO. OF SETS	CONDUCTORS (PER SET)										SIZE OF OVERCURRENT PROTECTION	FRAME OR SWITCH SIZE	
					CONDUIT (PER SET)		PHASE CONDUCTORS			NEUTRAL CONDUCTORS			GROUND CONDUCTORS				
SL	RD				SIZE	TYPE	NO	SIZE	TYPE	NO	SIZE	TYPE	NO	SIZE	TYPE		
1	MI-V4	G-T01	G-LSIG1	2	-	MI	3	250KCMIL	CU THWN	1	250KCMIL	CU THWN	1	2 AWG	CU THWN	800A	800A/3P
2	Z4	EM. GEN.	G-SWBDE01	5	4"	EMT	3	400KCMIL	CU THWN	1	400KCMIL	CU THWN	1	4/0 AWG	CU THWN	1600A	1600A/3P
3	Y4	G-SWBND01	CHILLER #3	4	4"	EMT	3	500KCMIL	CU THWN	1	500KCMIL	CU THWN	1	4/0 AWG	CU THWN	1200A	1200A/3P
4	U4	G-SWBND01	GPNH3	2	4"	EMT	3	500KCMIL	CU THWN	1	500KCMIL	CU THWN	1	1/0 AWG	CU THWN	600A	600A/3P
5	N4	G-SWBND01	G-ATSS01	1	2.5"	EMT	3	250KCMIL	CU THWN	1	250KCMIL	CU THWN	1	4 AWG	CU THWN	250A	250A/3P
6	V4	G-SWBND01	G-ATSG01	3	3"	EMT	3	300KCMIL	CU THWN	1	300KCMIL	CU THWN	1	1/0 AWG	CU THWN	800A	800A/3P
7	V4	G-SWBND01	G-ATSG02	3	3"	EMT	3	300KCMIL	CU THWN	1	300KCMIL	CU THWN	1	1/0 AWG	CU THWN	800A	800A/3P
8	V4	G-SWBND01	G-ATSC01	3	3"	EMT	3	300KCMIL	CU THWN	1	300KCMIL	CU THWN	1	1/0 AWG	CU THWN	800A	800A/3P
9	R4	G-SWBND01	GPNH1	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	400A	400A/3P
10	R4	G-SWBND01	GLNH1	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	400A	400A/3P
11	T3	G-SWBND01	G-T02	2	2.5"	EMT	3	350KCMIL	CU THWN	-	-	-	1	1/0 AWG	CU THWN	600A	600A/3P
12	R4	G-SWBND01	3PNL1	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	400A	400A/3P
13	P4	G-SWBND01	PPNH1	1	3"	EMT	3	350KCMIL	CU THWN	1	350KCMIL	CU THWN	1	4 AWG	CU THWN	300A	400A/3P
14	M4	G-SWBND01	1PNH2	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	250A/3P
15	MI-N4	G-LSIG1	G-ATSF01	1	-	MI	3	2/0 AWG	CU THWN	1	2/0 AWG	CU THWN	1	6 AWG	CU THWN	800A	800A/3P
16	U4	G-SWBDE01	EX. EM. SWBD	2	4"	EMT	3	500KCMIL	CU THWN	1	500KCMIL	CU THWN	1	1/0 AWG	CU THWN	600A	600A/3P
17	MI-N4	G-SWBDE01	G-ATSF01	1	-	MI	3	2/0 AWG	CU THWN	1	2/0 AWG	CU THWN	1	6 AWG	CU THWN	200A	200A/3P
18	V4	G-SWBDE01	G-ATSG02	3	3"	EMT	3	300KCMIL	CU THWN	1	300KCMIL	CU THWN	1	1/0 AWG	CU THWN	800A	800A/3P
19	V4	G-SWBDE01	G-ATSG01	3	3"	EMT	3	300KCMIL	CU THWN	1	300KCMIL	CU THWN	1	1/0 AWG	CU THWN	800A	800A/3P
20	N4	G-SWBDE01	G-ATSS01	1	2.5"	EMT	3	250KCMIL	CU THWN	1	250KCMIL	CU THWN	1	4 AWG	CU THWN	250A	250A/3P
21	V4	G-SWBDE01	G-ATSC01	3	3"	EMT	3	300KCMIL	CU THWN	1	300KCMIL	CU THWN	1	1/0 AWG	CU THWN	800A	800A/3P
22	N4	G-ATSS01	GPSH1	1	2.5"	EMT	3	250KCMIL	CU THWN	1	250KCMIL	CU THWN	1	4 AWG	CU THWN	250A	250A/3P
23	V4	G-ATSG01	GPGH1	3	3"	EMT	3	300KCMIL	CU THWN	1	300KCMIL	CU THWN	1	1/0 AWG	CU THWN	800A	800A/3P
24	V4	G-ATSG02	4PGH1	3	3"	EMT	3	300KCMIL	CU THWN	1	300KCMIL	CU THWN	1	1/0 AWG	CU THWN	800A	800A/3P
25	V4	G-ATSC01	GPCH1	3	3"	EMT	3	300KCMIL	CU THWN	1	300KCMIL	CU THWN	1	1/0 AWG	CU THWN	800A	800A/3P
26	R4	GPNL1	1PNL1	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	400A	400A/3P
27	R4	GPNL1	2PNL1	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	400A	400A/3P
28	J4	GPNL1	GLNL1	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	150A	150A/3P
29	G4	GPNL1	GLNL2	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	8 AWG	CU THWN	100A	100A/3P
30	G4	GPNL1	GLNL3	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	8 AWG	CU THWN	100A	100A/3P
31	M4	1PNL1	1LNL1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
32	G4	1PNL1	1LNL2	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	8 AWG	CU THWN	100A	100A/3P
33	M4	2PNL1	2LNL1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P

FEEDER SCHEDULE

TAG		FROM	TO	NO. OF SETS	CONDUCTORS (PER SET)										SIZE OF OVERCURRENT PROTECTION	FRAME OR SWITCH SIZE	
					CONDUIT (PER SET)		PHASE CONDUCTORS			NEUTRAL CONDUCTORS			GROUND CONDUCTORS				
SL	RD				SIZE	TYPE	NO	SIZE	TYPE	NO	SIZE	TYPE	NO	SIZE	TYPE		
34	M4	2PNL1	2LNL2	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	100A	100A/3P
35	M4	3PNL1	4LNL1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
36	M4	3PNL1	3LNL1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
37	J4	3PNL1	3LNL2	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	150A	150A/3P
38	C3	3PNL1	3LIL2	1	1"	EMT	3	6 AWG	CU THWN	-	-	-	1	1 AWG	CU THWN	50A	100A/2P
39	C3	3PNL1	3LIL4	1	1"	EMT	3	6 AWG	CU THWN	-	-	-	1	1 AWG	CU THWN	50A	100A/2P
40	R4	G-SWBDN01	1LNH1	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	600A	600A/3P
41	R4	G-SWBDN01	2LNH1	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	600A	600A/3P
42	R4	G-SWBDN01	3LNH1	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	600A	600A/3P
43	R4	G-SWBDN01	4LNH1	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	600A	600A/3P
44	J4	GPNH1	GPNH2	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	150A	150A/3P
45	H4	GPNH1	EC-1	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
46	H4	GPNH1	EC-2	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
47	H4	GPNH1	EC-3	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
48	H4	EC-1	ELEV-1	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
49	H4	EC-2	ELEV-2	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
50	H4	EC-3	ELEV-3	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
51	B4	4PGH1	3-T03	1	3/4"	EMT	3	8 AWG	CU THWN	1	8 AWG	CU THWN	1	10 AWG	CU THWN	30A	100A/3P
52	T4	4PGH1	PPGH1	2	3"	EMT	3	350KCMIL	CU THWN	1	350KCMIL	CU THWN	1	1/0 AWG	CU THWN	600A	600A/3P
53	P4	4PGH1	PPGH2	1	3"	EMT	3	350KCMIL	CU THWN	1	350KCMIL	CU THWN	1	4 AWG	CU THWN	300A	300A/3P
54	D4	3-T03	3LGL1	1	1.25"	EMT	3	4 AWG	CU THWN	1	4 AWG	CU THWN	1	10 AWG	CU THWN	30A	100A/3P
55	R3	GPCH1	3-T02	2	2"	EMT	3	3/0 AWG	CU THWN	-	-	-	1	2 AWG	CU THWN	400A	400A/3P
56	P3	GPCH1	2-T01	1	3"	EMT	3	350KCMIL	CU THWN	-	-	-	1	4 AWG	CU THWN	300A	300A/3P
57	J3	GPCH1	4-T01	1	1.5"	EMT	3	1/0 AWG	CU THWN	-	-	-	1	6 AWG	CU THWN	150A	225A/3P
58	P3	GPCH1	1-T01	1	3"	EMT	3	350KCMIL	CU THWN	-	-	-	1	4 AWG	CU THWN	300A	300A/3P
59	M4	GPCH1	GLCH1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
60	M4	GPCH1	1LCH1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
61	M4	GPCH1	2LCH1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
62	M4	GPCH1	3LCH1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
63	M4	GPCH1	4LCH1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
64	M4	3PCL1	3LCL1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
65	M4	3PCL1	3LCL2	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
66	J4	3PCL1	3LCL3	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	150A	150A/3P

FEEDER SCHEDULE

TAG		FROM	TO	NO. OF SETS	CONDUCTORS (PER SET)										SIZE OF OVERCURRENT PROTECTION	FRAME OR SWITCH SIZE	
					CONDUIT (PER SET)		PHASE CONDUCTORS			NEUTRAL CONDUCTORS			GROUND CONDUCTORS				
SL	RD				SIZE	TYPE	NO	SIZE	TYPE	NO	SIZE	TYPE	NO	SIZE	TYPE		
67	C3	3PCL1	3LIL3	1	1"	EMT	3	6 AWG	CU THWN	-	-	-	1	1 AWG	CU THWN	50A	100A/2P
68	C3	3PCL1	3LIL1	1	1"	EMT	3	6 AWG	CU THWN	-	-	-	1	1 AWG	CU THWN	50A	100A/2P
69	M4	2PCL1	2LCL2	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
70	M4	2PCL1	2LCL1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
71	G4	2PCL1	2LCL3	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	8 AWG	CU THWN	100A	100A/3P
72	M4	4-T01	4LCL1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
73	M4	1PCL1	1LCL1	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	225A/3P
74	G4	1PCL1	1LCL2	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	8 AWG	CU THWN	100A	100A/3P
75	G4	1PCL1	GLCL2	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	8 AWG	CU THWN	100A	100A/3P
76	G4	1PCL1	GLCL1	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	8 AWG	CU THWN	100A	100A/3P
77	E4	2LCL1	2LCL1	1	1.25"	EMT	3	4 AWG	CU THWN	1	4 AWG	CU THWN	1	8 AWG	CU THWN	70A	100A/3P
78	G3	GPSH1	G-T03	1	1.25"	EMT	3	1/0 AWG	CU THWN	-	-	-	1	8 AWG	CU THWN	90A	100A/3P
79	D4	GPSL1	1LSL1	1	1.25"	EMT	3	4 AWG	CU THWN	1	4 AWG	CU THWN	1	10 AWG	CU THWN	60A	100A/3P
80	D4	GPSL1	4LSL1	1	1.25"	EMT	3	4 AWG	CU THWN	1	4 AWG	CU THWN	1	10 AWG	CU THWN	60A	100A/3P
81	D4	GPSL1	GLSL1	1	1.25"	EMT	3	4 AWG	CU THWN	1	4 AWG	CU THWN	1	10 AWG	CU THWN	60A	100A/3P
82	H4	GPSH1	GLSH1	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
83	H4	GPSH1	1LSH1	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
84	H4	GPSH1	4LSH1	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
85	R4	GPGH1	GPGH3	2	2"	EMT	3	3/0 AWG	CU THWN	1	3/0 AWG	CU THWN	1	2 AWG	CU THWN	400A	400A/3P
86	M4	GPGH1	GPGH2	1	2.5"	EMT	3	4/0 AWG	CU THWN	1	4/0 AWG	CU THWN	1	4 AWG	CU THWN	225A	300A/3P
87	K4	GPGH1	1PGH2	1	2"	EMT	3	2/0 AWG	CU THWN	1	2/0 AWG	CU THWN	1	2 AWG	CU THWN	150A	150A/3P
88	H4	GPGH1	EC-4	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
89	H4	GPGH1	EC-5	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
90	H4	EC-4	ELEV-4	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
91	H4	EC-5	ELEV-5	1	1.5"	EMT	3	1/0 AWG	CU THWN	1	1/0 AWG	CU THWN	1	6 AWG	CU THWN	125A	150A/3P
92	-	E-MVS01	G-SWBDN01	2	5"	EMT	3	500MCM	CU THWN	-	-	-	-	-	-	400A	600A/3P

Appendix B – HID Lamps and Ballasts

Luminaire Tag: PD 11

Lamp Type: (1) 39W PAR20 MH

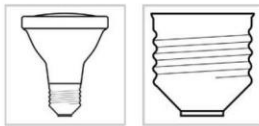
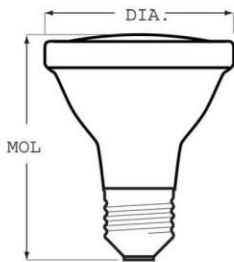
Ballast: Electronic



42068 - CMH39UPAR20FL25

GE ConstantColor® PulseArc® CMH® Ceramic Metal Halide PAR20

a product of
ecomagination



CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: <http://www.fda.gov/cdrh/rdhealth/products/urburns.html>

Caution

- Lamp may shatter and cause injury if broken
- Do not use lamp if outer glass is scratched or broken.

Warning

- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.
- Risk of Electric Shock
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Turn power off before inspection, installation or removal.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use fused or thermally protected ballast - see instructions.
 - Use in fixture rated for this product.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not store flammable materials near/below lamp.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Use only properly rated ballast.

NOTES

- Rated life based on 11 hours per start
- Use electronic ballast, peak lead ballast, or system which can shut itself off if ballast overheating occurs

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Ceramic Metal Halide
Bulb	PAR20
Base	Medium Screw (E26)
Wattage	39
Rated Life	10000 hrs
Bulb Material	Hard glass
Lamp Enclosure Type (LET)	Open or enclosed fixtures
LEED-EB MR Credit	238 picograms Hg per mean lumen hour
Additional Info	Ballast thermal protection/UV control

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2100
Nominal Initial Lumens per Watt	53
Beam Spread	25 °
Center Beam Candlepower (CBCP)	7500
Color Temperature	3000 K
Color Rendering Index (CRI)	86

ELECTRICAL CHARACTERISTICS

Burn Position	Universal burning position
Open Circuit Voltage (peak lead ballast)	280 V
Open Circuit Voltage (RMS lag ballast)	198 V
Warm Up Time to 90%	2 min
Warm Up Time to 90% (MAX)	2 min
Hot Restart Time to 90% (MIN)	10 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

Maximum Overall Length (MOL)	3.6 cm
Nominal Length	3.5 cm
Bulb Diameter (DIA)	2.5 cm
Bulb Diameter (DIA) (MAX)	2.5 cm

PRODUCT INFORMATION

Product Code	42068
Description	CMH39UPAR20FL25
ANSI Code	M130
Standard Package	Case
Standard Package GTIN	10043168420683
Standard Package Quantity	15
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	15
UPC	043168420686

Luminaire Tag: PD 11

Lamp Type: (1) 39W PAR20 MH

Ballast: Electronic

Revised: 3/5/2009

PHILIPS ADVANCE		e-Vision® Electronic Ballast for Metal Halide Lamps			Catalog Number: IMH-39-G For 39W Metal Halide Lamps ANSI M130 120-277 50/60Hz Electronic Status: RELEASED					
DIMENSIONS AND DATA										
Lamp		Input Volts	Catalog Number*	Line Current (Amps)	Input Power (Watts)	Min Power Factor	Wiring Diag	Fig.	Weight (lb)	Max. Distance to Lamp (ft)
Number	Watts									
39W Watt Lamp, ANSI Code M130 Minimum Starting Temp -30°C/-20°F										
1	39	120 277	IMH-39-G-XXX	0.39 0.18	46 45	0.9	3	G	0.9	5
Case Figure	Overall Length	Case Length	Case Width	Height	Mountin Length	Mounting Width				
G	97mm [3.8"]	90mm [3.5"]	77mm [3.0"]	30mm [1.2"]	87mm [3.4"]	67mm [2.6"]				
INSTALLATION & APPLICATION NOTES: 1. Maximum allowable case temperature is 90°C. See figure above for measurement location 2. Ignition pulse is 4 kV max 3. All leads are 9 inches long 4. Ballast output will shutdown after 20 minutes if lamp fails to ignite 5. Power must be cycled off – then on, after replacing lamp 6. Connect the red lead to the center terminals of the lamp when using screw base lamps							*Ordering Information			
Order Suffix		Description								
-LF		Ballast with side exit leads and mounting feet								
-BLS		Ballast with bottom exit leads and mounting studs								
Data is based on tests performed by Philips Advance in a controlled environment and is 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.										

Philips Lighting Electronics N.A.

10275 West Higgins Road • Rosemont, IL 60018 • www.philips.com/advance
 Tel: 800-322-2086 • Fax: 800-423-1882 • Customer Support: 800-372-3331 • OEM Support: 866-915-5886

Luminaire Tag: PH 1, PH-2, PX-1, PX-2

Lamp Type: (1) 70W MH

Ballast: Electronic

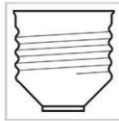


GE
Lighting

31070 - CMH70CU830MED/O

GE Protected ConstantColor® PulseArc® CMH® Ceramic Metal Halide ED17

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ecomagination



CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: <http://www.fda.gov/cdrh/radhealth/products/urburns.html>

Caution

- Lamp may shatter and cause injury if broken
- Dispose of lamp in a closed container.
- Do not use excessive force when installing lamp.
- Do not use lamp if outer glass is scratched or broken.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.
- Risk of Electric Shock
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Turn power off before inspection, installation or removal.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture rated for this product.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not store flammable materials near/below lamp.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Operate lamp only in specified position.
 - Use only properly rated ballast.

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Ceramic Metal Halide
Bulb	ED17
Base	Medium Screw (E26)
Bulb Finish	Coated
Wattage	70
Rated Life	15000 hrs
Bulb Material	Hard glass
Lamp Enclosure Type (LET)	Open or enclosed fixtures
LEED-EB MR Credit	94 picograms Hg per mean lumen hour

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	5700
Mean Lumens	4100
Nominal Initial Lumens per Watt	81
Color Temperature	3000 K
Color Rendering Index (CRI)	80
Effective Arc Length	0.28125 cm

ELECTRICAL CHARACTERISTICS

Burn Position	Universal burning position
Warm Up Time to 90% (MIN)	2 min
Warm Up Time to 90% (MAX)	5 min
Hot Restart Time to 90%	15 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

Maximum Overall Length (MOL)	5.4300 in(137.9 mm)
Nominal Length	5.430 in(137.9 mm)
Bulb Diameter (DIA)	2.125 in(54.0 mm)
Bulb Diameter (DIA) (MAX)	2.125 in(54.0 mm)
Light Center Length (LCL)	3.370 in(85.6 mm)

PRODUCT INFORMATION

Product Code	31070
Description	CMH70CU830MED/O
ANSI Code	C98/M143/M98
Standard Package	Case
Standard Package GTIN	10043168310700
Standard Package Quantity	6
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	6
UPC	043168310703

Luminaire Tag: PH 1, PH-2, PX-1, PX-2

Lamp Type: (1) 70W MH

Ballast: Electronic

Revised: 3/5/2009

PHILIPS ADVANCE		e-Vision® Electronic Ballast for Metal Halide Lamps			Catalog Number: IMH-70-D For 70W Metal Halide Lamps ANSI M98, M139 or M143 120-277 50/60Hz Electronic Status: RELEASED					
DIMENSIONS AND DATA										
Lamp		Input	Catalog Number*	Line	Input	Min	Wiring Diag	Fig.	Weight (lb)	Max. Distance to Lamp (ft)
Number	Watts	Volts		Current (Amps)	Power (Watts)	Power Factor				
70W Watt Lamp, ANSI Code M98, M139 or M143 Minimum Starting Temp -30°C/-20°F										
1	70	120 277	IMH-70-D-XXX	0.67 0.29	80 79	0.9	3	D	1.6	5
Case Figure	Overall Length	Case Length	Case Width	Height	Mountin Length	Mounting Width	Wiring Diagram 3			
D	128mm [5.0"]	108mm [4.3"]	77mm [3.0"]	38mm [1.5"]	118mm [4.6"]	19mm [0.7"]				
INSTALLATION & APPLICATION NOTES: 1. Maximum allowable case temperature is 85°C. See figure above for measurement location 2. Ignition pulse is 4 kV max 3. All leads are 12 inches long 4. Ballast output will shutdown after 20 minutes if lamp fails to ignite 5. Power must be cycled off – then on, after replacing lamp							*Ordering Information			
Order Suffix		Description								
-LF		Ballast with side exit leads and mounting feet								
-BLS		Ballast with bottom exit leads and mounting studs								
Data is based on tests performed by Philips Advance in a controlled environment and is 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.										

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Luminaire Tag: PH 3, PH-4

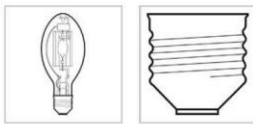
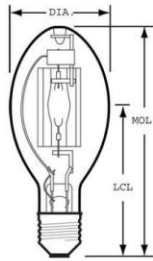
Lamp Type: (1) 100W MH

Ballast: Electronic



12579 - MXR100/C/U/MED/O

GE Protected Multi-Vapor® PulseArc® Quartz Metal Halide ED17



CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: <http://www.fda.gov/cdrh/radhealth/products/urburns.html>

Caution

- Lamp may shatter and cause injury if broken
 - Dispose of lamp in a closed container.
 - Do not use excessive force when installing lamp.
 - Do not use lamp if outer glass is scratched or broken.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.
- Risk of Electric Shock
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Turn power off before inspection, installation or removal.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not store flammable materials near/below lamp.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Operate lamp only in specified position.
 - Turn lamp off at least once for 15 minutes per week.
 - Use only properly rated ballast.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture rated for this product.

GRAPHS & CHARTS

Spectral Power Distribution

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Quartz Metal Halide
Bulb	ED17
Base	Medium Screw (E26)
Bulb Finish	Coated
Wattage	100
Rated Life	15000 hrs
Bulb Material	Hard glass
Lamp Enclosure Type (LET)	Open or enclosed fixtures
Base Temperature	190 °C
Bulb Temperature (MAX)	400 °C
LEED-EB MR Credit	111 picograms Hg per mean lumen hour

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	8500
Mean Lumens	5900
Nominal Initial Lumens per Watt	85
Color Temperature	3200 K
Color Rendering Index (CRI)	70

ELECTRICAL CHARACTERISTICS

Burn Position	Universal burning position
Warm Up Time to 90% (MIN)	2 min
Warm Up Time to 90% (MAX)	5 min
Hot Restart Time to 90% (MIN)	10 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

Maximum Overall Length (MOL)	5.4300 in(137.9 mm)
Bulb Diameter (DIA)	2.125 in(54.0 mm)
Bulb Diameter (DIA) (MAX)	2.125 in(54.0 mm)
Light Center Length (LCL)	3.430 in(87.1 mm)

PRODUCT INFORMATION

Product Code	12579
Description	MXR100/C/U/MED/O
ANSI Code	M90
Standard Package	Case
Standard Package GTIN	10043168125793
Standard Package Quantity	6
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	6
UPC	043168125796

Luminaire Tag: PH 3, PH-4

Lamp Type: (1) 100W MH

Ballast: Electronic

Revised: 3/5/2009

PHILIPS ADVANCE		e-Vision® Electronic Ballast for Metal Halide Lamps				Catalog Number: IMH-100-D For 100W Metal Halide Lamps ANSI M90 or M140 120-277 50/60Hz Electronic Status: RELEASED				
DIMENSIONS AND DATA										
Lamp		Input	Catalog Number*	Line	Input	Min	Wiring Diag	Fig.	Weight (lb)	Max. Distance to Lamp (ft)
Number	Watts	Volts		Current (Amps)	Power (Watts)	Power Factor				
100W Watt Lamp, ANSI Code M90 or M140 Minimum Starting Temp -30°C/-20°F										
1	100	120 277	IMH-100-D-XXX	0.92 0.4	110 109	0.9	3	D	1.6	5
Case Figure	Overall Length	Case Length	Case Width	Height	Mountin Length	Mounting Width				
D	128mm [5.0"]	108mm [4.3"]	77mm [3.0"]	38mm [1.5"]	118mm [4.6"]	19mm [0.7"]				
INSTALLATION & APPLICATION NOTES: 1. Maximum allowable case temperature is 85°C. See figure above for measurement location 2. Ignition pulse is 4 kV max 3. All leads are 12 inches long 4. Ballast output will shutdown after 20 minutes if lamp fails to ignite 5. Power must be cycled off – then on, after replacing lamp						*Ordering Information				
		Order Suffix	Description							
		-LF	Ballast with side exit leads and mounting feet							
		-BLS	Ballast with bottom exit leads and mounting studs							
Data is based on tests performed by Philips Advance in a controlled environment and is 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.										

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Luminaire Tag: PJ 3, PQ 7

Lamp Type: (1) 35/39W CMH T6

Ballast: Electronic



MasterColor® CDM-T T6 Elite

MasterColor CDM-T Elite 35W/930 T6 1CT

The Elite family is at the very top of the MasterColor® CDM range, and gives a unique combination of unbeatable light quality and consistent performance over lifetime. While keeping running costs low, MasterColor metal halide lamps deliver consistent white light and higher color rendering than any standard metal halide source for architectural lighting.

Product data

• Product Data

Product number	404830
Full product name	MasterColor CDM-T Elite 35W/930 T6 1CT
Short product name	CDM-T 35W/930 G12
Pieces per Sku	1
eop_pck_cfg	12
Skus/Case	12
Bar code on pack	46677404833
Bar code on case	50046677404838
Logistics code(s)	928092505117
tpd_ilcos_cd	MT-35/30/1A-H-G12
eop_net_weight_pp	0.027 kg

• General Characteristics

Base	G12
Bulb	T6 [Diameter: 6/8 inch /19mm]
Bulb Finish	Clear
Operating Position	Universal [Any or Universal (U)]
Avg. Hrs. Life	12000 hr
Life to 5% failures EL	9000 hr
Life to 20% failures EL	11000 hr
Life to 10% failures EL	10000 hr

• Electrical Characteristics

System Power EL	43 W
Watts	35 W
Lamp Wattage EL	39 W
Lamp Voltage	85 V
Lamp Current EL	0.45 A
Ignition Time	30 s
Run-up time 90%	3 min
Ignition Peak Voltage	3500 V

Re-ignition Time [min]	15 min
Dimmable	No

• Environmental Characteristics

Mercury (Hg) Content	3.5 mg
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• Light Technical Characteristics

Color Code	930 [CCT of 3000K]
Color Rendering Index	90 Ra8
Color Designation	Warm White
Color Temperature technical	3000 K
Chromaticity Coordinate X	0.432 -
Chromaticity Coordinate Y	0.396 -
Initial Lumens	3500 Lm
Luminous Efficacy Lamp EL	90 Lm/W
Lumen Maintenance 2000h	95 %
Lumen Maintenance EL 2000h	95 %
Lumen Maintenance EL 5000h	88 %
Lumen Maintenance 10000h	83 %
Lumen Maintenance EL 10000h	80 %
Lumen Maintenance 12000h	80 %

PHILIPS
sense and simplicity

Luminaire Tag: PJ 3, PQ 7

Lamp Type: (1) 35/39W CMH T6

Ballast: Electronic

Revised: 6/4/2009

PHILIPS ADVANCE		e-Vision® Electronic Ballast for Metal Halide Lamps			Catalog Number: IMH-P39-G For 39W Philips Mini Master Color Lamps ANSI C179 120-277 50/60Hz Electronic Status: RELEASED											
DIMENSIONS AND DATA																
Lamp		Input	Catalog Number*	Line	Input	Min	Wiring	Fig.	Weight	Max.						
Number	Watts	Volts		Current	Power						Power					
39W Watt Lamp, ANSI Code C179 Minimum Starting Temp -30°C/-20°F																
1	39	120 277	IMH-P39-G-XXX	0.39 0.17	46 45	0.95	3	G	0.9	5						
Case Figure	Overall Length	Case Length	Case Width	Height	Mountin Length	Mounting Width										
G	97mm [3.8"]	90mm [3.5"]	77mm [3.0"]	30mm [1.2"]	87mm [3.4"]	67mm [2.6"]										
						<p>*Ordering Information</p> <table border="1"> <thead> <tr> <th>Order Suffix</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>-LF</td> <td>Ballast with side exit leads and mounting feet</td> </tr> <tr> <td>-BLS</td> <td>Ballast with bottom exit leads and mounting studs</td> </tr> </tbody> </table>					Order Suffix	Description	-LF	Ballast with side exit leads and mounting feet	-BLS	Ballast with bottom exit leads and mounting studs
Order Suffix	Description															
-LF	Ballast with side exit leads and mounting feet															
-BLS	Ballast with bottom exit leads and mounting studs															
<p>INSTALLATION & APPLICATION NOTES:</p> <ol style="list-style-type: none"> Maximum allowable case temperature is 90°C. See figure above for measurement location Ignition pulse is 2.5 kV max All leads are 9 inches long Ballast output will shutdown after 20 minutes if lamp fails to ignite Power must be cycled off – then on, after replacing lamp 																
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Philips Lighting Electronics N.A.

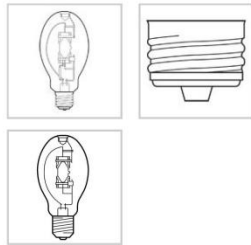
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Luminaire Tag: PX 3

Lamp Type: (1) 175W MH Ballast: Electronic



61325 - MPR175/VBU/PA/O
GE Multi-Vapor® Protected PulseArc® Quartz Metal Halide ED28



CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: <http://www.fda.gov/cdrh/radhealth/products/urburns.html>

Caution

- Lamp may shatter and cause injury if broken
 - Dispose of lamp in a closed container.
 - Do not use excessive force when installing lamp.
 - Do not use lamp if outer glass is scratched or broken.

Warning

- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not store flammable materials near/below lamp.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Use only properly rated ballast.
 - Operate lamp only in specified position - Turn lamp off at least once for 15 minutes per week.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture rated for this product.
- Risk of Electric Shock
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Turn power off before inspection, installation or removal.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.
- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.

GRAPHS & CHARTS

Spectral Power Distribution

NOTES

- When operated on a 120 hrs. cycle (minimum), lamp life rating may be extended by up to 50% based on engineering estimates.

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Quartz Metal Halide
Bulb	ED28
Base	Mogul Screw (EX39)
Bulb Finish	Clear
Wattage	175
Rated Life	15000 hrs
Bulb Material	Hard glass
Lamp Enclosure Type (LET)	Open or enclosed fixtures
Base Temperature	210 °C
Bulb Temperature (MAX)	400 °C
LEED-EB MR Credit	153 picograms Hg per mean lumen hour
Additional Info	UV control

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	16000
Mean Lumens	11000
Nominal Initial Lumens per Watt	91
Color Temperature	3900 K
Color Rendering Index (CRI)	65

ELECTRICAL CHARACTERISTICS

Burn Position	Vertical base up ±15°
Warm Up Time to 90%	5 min
Warm Up Time to 90% (MAX)	5 min
Hot Restart Time to 90%	15 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

Maximum Overall Length (MOL)	8.2500 in(209.5 mm)
Bulb Diameter (DIA) (MAX)	3.540 in(89.9 mm)
Light Center Length (LCL)	5.000 in(127.0 mm)

PRODUCT INFORMATION

Product Code	61325
Description	MPR175/VBU/PA/O
ANSI Code	M137
Standard Package	Case
Standard Package GTIN	10043168613252
Standard Package Quantity	6
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	6
UPC	043168613255

Luminaire Tag: PX 3

Lamp Type: (1) 175W MH Ballast: Electronic

Revised: 4/8/2009

PHILIPS ADVANCE		e-Vision® Electronic Ballast for Metal Halide Lamps				Catalog Number: IMH-175-C For 150W or 175W Metal Halide Lamps ANSI M102, M142, S56, M137 or M152 120-277V 50/60Hz Electronic Status: RELEASED										
DIMENSIONS AND DATA																
Lamp		Input	Catalog Number*	Line	Input	Min	Wiring Diag	Fig.	Weight	Max.						
Number	Watts	Volts		Current	Power						Power					
				(Amps)	(Watts)	Factor			(lb)	Distance to						
										Lamp (ft)						
150 Watt Lamp, MH ANSI Code M102 or M142 and HPS ANSI Code S56 Minimum Starting Temp -30°C/-20°F																
1	150	120 277	IMH-175-C-XXX	1.4 0.6	169 166	1	1	C	2.5	5						
175 Watt Lamp, ANSI Code M137 or M152 Minimum Starting Temp -30°C/-20°F																
1	175	120 277	IMH-175-C-XXX	1.7 0.7	194 191	1	2	C	2.5	5						
				<p>Ballast Case must be Grounded</p>												
Case Figure	Overall Length	Case Length	Case Width	Height	Mountin Length	Mounting Width										
C	204mm [8.0"]	184mm [7.2"]	92mm [3.6"]	38mm [1.5"]	195mm [7.7"]	73mm [2.9"]										
				<p>MEASURE CASE TEMPERATURE ON RIGHT HEAT SINK CLIP AT BALLAST END</p>												
<p>INSTALLATION & APPLICATION NOTES:</p> <ol style="list-style-type: none"> Maximum allowable case temperature is 85°C. See figure above for measurement location Ignition pulse is 4 kV max All leads are 12 inches long Ballast output will shutdown after 20 minutes if lamp fails to ignite Power must be cycled off – then on, after replacing lamp 							<p style="text-align: center;">*Ordering Information</p> <table border="1"> <tr> <th>Order Suffix</th> <th>Description</th> </tr> <tr> <td>-LF</td> <td>Ballast with side exit leads and mounting feet</td> </tr> <tr> <td>-BLS</td> <td>Ballast with bottom exit leads and mounting studs</td> </tr> </table>				Order Suffix	Description	-LF	Ballast with side exit leads and mounting feet	-BLS	Ballast with bottom exit leads and mounting studs
Order Suffix	Description															
-LF	Ballast with side exit leads and mounting feet															
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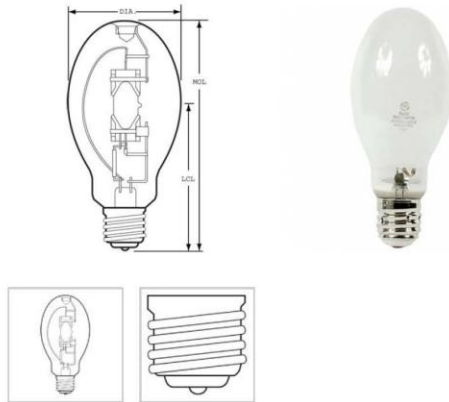
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Luminaire Tag: PX 14

Lamp Type: (1) 150W MH Ballast: Electronic



13490 - MVR150/C/U/WM
GE Multi-Vapor® Watt-Miser® Quartz Metal Halide ED28
• Saves energy compared to standard wattage lamps



CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: <http://www.fda.gov/cdrh/radhealth/products/urburns.html>

Caution

- Lamp may shatter and cause injury if broken
 - Dispose of lamp in a closed container.
 - Do not use excessive force when installing lamp.
 - Do not use lamp if outer glass is scratched or broken.

Warning

- Risk of Electric Shock
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Turn power off before inspection, installation or removal.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.
- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture rated for this product.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - If used on a dimming system, see instructions.
 - Operate lamp only in specified position.
 - Turn lamp off at least once for 15 minutes per week.
 - Use in enclosed fixture rated for this product.
 - Use only properly rated ballast.

GRAPHS & CHARTS

Spectral Power Distribution

For additional information, visit www.gelighting.com

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Quartz Metal Halide
Bulb	ED28
Base	Mogul Screw (E39)
Bulb Finish	Coated
Wattage	150
Rated Life	7500 hrs
Bulb Material	Hard glass
Lamp Enclosure Type (LET)	Enclosed fixtures only
Base Temperature	210 °C
Bulb Temperature (MAX)	400 °C
LEED-EB MR Credit	219 picograms Hg per mean lumen hour

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	10900 /12800
Mean Lumens	6900 /8000
Nominal Initial Lumens per Watt	72
Color Temperature	3700 K
Color Rendering Index (CRI)	70

ELECTRICAL CHARACTERISTICS

Burn Position	Universal burning position
Warm Up Time to 90% (MIN)	2 min
Warm Up Time to 90% (MAX)	5 min
Hot Restart Time to 90% (MIN)	5 min
Hot Restart Time to 90% (MAX)	10 min

DIMENSIONS

Maximum Overall Length (MOL)	8.2500 in(209.5 mm)
Bulb Diameter (DIA)	3.500 in(88.9 mm)
Bulb Diameter (DIA) (MAX)	3.500 in(88.9 mm)
Light Center Length (LCL)	5.000 in(127.0 mm)

PRODUCT INFORMATION

Product Code	13490
Description	MVR150/C/U/WM
ANSI Code	M107/M57
Standard Package	Case
Standard Package GTIN	10043168134900
Standard Package Quantity	12
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	12
UPC	043168134903

Luminaire Tag: PX 14

Lamp Type: (1) 150W MH Ballast: Electronic

Revised: 4/8/2009

PHILIPS ADVANCE		e-Vision® Electronic Ballast for Metal Halide Lamps				Catalog Number: IMH-175-C For 150W or 175W Metal Halide Lamps ANSI M102, M142, S56, M137 or M152 120-277V 50/60Hz Electronic Status: RELEASED										
DIMENSIONS AND DATA																
Lamp		Input	Catalog Number*	Line	Input	Min	Wiring Diag	Fig.	Weight	Max.						
Number	Watts	Volts		Current	Power						Power					
150 Watt Lamp, MH ANSI Code M102 or M142 and HPS ANSI Code S56 Minimum Starting Temp -30°C/-20°F																
1	150	120	IMH-175-C-XXX	1.4	169	1	1	C	2.5	5						
		277		0.6	166											
175 Watt Lamp, ANSI Code M137 or M152 Minimum Starting Temp -30°C/-20°F																
1	175	120	IMH-175-C-XXX	1.7	194	1	2	C	2.5	5						
		277		0.7	191											
				<p>Ballast Case must be Grounded</p>												
Case Figure	Overall Length	Case Length	Case Width	Height	Mountin Length	Mounting Width										
C	204mm [8.0"]	184mm [7.2"]	92mm [3.6"]	38mm [1.5"]	195mm [7.7"]	73mm [2.9"]										
				<p>MEASURE CASE TEMPERATURE ON RIGHT HEAT SINK CLIP AT BALLAST END</p>												
<p>INSTALLATION & APPLICATION NOTES:</p> <ol style="list-style-type: none"> Maximum allowable case temperature is 85°C. See figure above for measurement location Ignition pulse is 4 kV max All leads are 12 inches long Ballast output will shutdown after 20 minutes if lamp fails to ignite Power must be cycled off – then on, after replacing lamp 							<p style="text-align: center;">*Ordering Information</p> <table border="1"> <tr> <th>Order Suffix</th> <th>Description</th> </tr> <tr> <td>-LF</td> <td>Ballast with side exit leads and mounting feet</td> </tr> <tr> <td>-BLS</td> <td>Ballast with bottom exit leads and mounting studs</td> </tr> </table>				Order Suffix	Description	-LF	Ballast with side exit leads and mounting feet	-BLS	Ballast with bottom exit leads and mounting studs
Order Suffix	Description															
-LF	Ballast with side exit leads and mounting feet															
-BLS	Ballast with bottom exit leads and mounting studs															
<p>Data is based on tests performed by Philips Advance in a controlled environment and is 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.</p>																

Philips Lighting Electronics N.A.

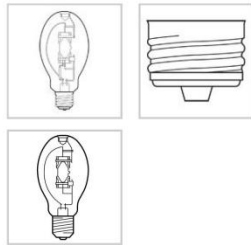
10275 West Higgins Road • Rosemont, IL 60018 • www.philips.com/advance
 Tel: 800-322-2086 • Fax: 800-423-1882 • Customer Support: 800-372-3331 • OEM Support: 866-915-5886

Luminaire Tag: PX 17, PX 18

Lamp Type: (1) 250W MH Ballast: Electronic



61326 - MPR250/VBU/PA/O
GE Multi-Vapor® Protected PulseArc® Quartz Metal Halide ED28



CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: <http://www.fda.gov/cdrh/radhealth/products/urburns.html>

Caution

- Lamp may shatter and cause injury if broken
 - Dispose of lamp in a closed container.
 - Do not use excessive force when installing lamp.
 - Do not use lamp if outer glass is scratched or broken.

Warning

- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not store flammable materials near/below lamp.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Use only properly rated ballast.
 - Operate lamp only in specified position - Turn lamp off at least once for 15 minutes per week.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture rated for this product.
- Risk of Electric Shock
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Turn power off before inspection, installation or removal.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.
- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.

GRAPHS & CHARTS

Spectral Power Distribution

NOTES

- When operated on a 120 hrs. cycle (minimum), lamp life rating may be extended by up to 50% based on engineering estimates.

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Quartz Metal Halide
Bulb	ED28
Base	Mogul Screw (EX39)
Bulb Finish	Clear
Wattage	250
Rated Life	15000 hrs
Bulb Material	Hard glass
Lamp Enclosure Type (LET)	Open or enclosed fixtures
Base Temperature	210 °C
Bulb Temperature (MAX)	400 °C
LEED-EB MR Credit	104 picograms Hg per mean lumen hour
Additional Info	UV control

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	23000
Mean Lumens	16600
Nominal Initial Lumens per Watt	92
Color Temperature	3800 K
Color Rendering Index (CRI)	75

ELECTRICAL CHARACTERISTICS

Burn Position	Vertical base up ±15°
Warm Up Time to 90%	5 min
Warm Up Time to 90% (MAX)	5 min
Hot Restart Time to 90%	15 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

Maximum Overall Length (MOL)	8.2500 in(209.5 mm)
Bulb Diameter (DIA) (MAX)	3.540 in(89.9 mm)
Light Center Length (LCL)	5.000 in(127.0 mm)

PRODUCT INFORMATION

Product Code	61326
Description	MPR250/VBU/PA/O
ANSI Code	M138
Standard Package	Case
Standard Package GTIN	10043168613269
Standard Package Quantity	6
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	6
UPC	043168613262

Luminaire Tag: PX 17, PX 18

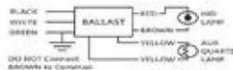
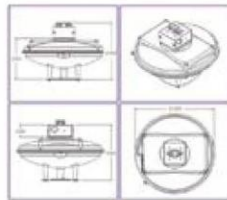
Lamp Type: (1) 250W MH Ballast: Electronic



29377 - GE-MH-250-400-MA

GE HID UltraMax™ eHID Electronic Low Frequency Ballast

- High efficiency electronic ballast provides 48% less ballast losses compared to electromagnetic CWA ballasts
- Improves lumen maintenance by 10 points on pulse start lamps.
- Multi-Voltage Technology handles voltage from 208 to 277V
- Multi-Wattage operates 250W, 300W, 320W, 350W and 400W pulse start and ceramic metal halide lamps.
- Superior low frequency square wave frequency design maximizes performance and life of ceramic metal halide lamps.



GENERAL CHARACTERISTICS

Application	1- 250 to 400w UltraMax HID Electronic 208-277 50-60Hz
Category	High Intensity Discharge
Ballast Type	Electronic - Low Frequency
Line Voltage Regulation (+/-)	10 %
Ambient Temperature (MAX)	130 °F(54 °C)
Ballast Factor	Normal
Power Factor Correction	Active
Circuit Type	Electronic
Sound Rating	D (37-42 decibels)
Enclosure Type	Metal
Additional Info	Thermally protected

PRODUCT INFORMATION

Product Code	29377
Description	GE-MH-250-400-MA
Standard Package	Case
Standard Package GTIN	10043168293775
Standard Package Quantity	1
Sales Unit	Standard Pack
No Of Items Per Sales Unit	1
No Of Items Per Standard	1
Package	
UPC	043168293778

DIMENSIONS

Case dimensions			
Length (L)	14.9 in(378.66 mm)		
Width (W)	14.9 in(378.66 mm)		
Height (H)	9.4 in(237.79 mm)		
Mounting dimensions			
Bracket Length (BL)	6.5 in(165.10 mm)		
Weight	10.2 lb		
Exit Type	Bottom		
Lead lengths	Qty	Exit	Length (± 1 in.)
Yellow	2	Bottom	9.0 (229mm)
White	1	Bottom	9.0 (229mm)
Red	1	Bottom	10.0 (254mm)
Green	1	Bottom	9.0 (229mm)
Brown	1	Bottom	10.0 (254mm)
Black	1	Bottom	9.0 (229mm)
Black	1	Bottom	9.0 (229mm)
Brown	1	Bottom	10.0 (254mm)
Green	1	Bottom	9.0 (229mm)
Red	1	Bottom	10.0 (254mm)
White	1	Bottom	9.0 (229mm)
Yellow	2	Bottom	9.0 (229mm)

ELECTRICAL CHARACTERISTICS

Lamp Operating Frequency	75 Hz
Supply Current Frequency	50 Hz/60 Hz

SAFETY & PERFORMANCE

- eUL Listed
- FCC - CLASS A Non-Consumer
- UL Class P
- UL Listed
- UL Type I Outdoor
- UL Type HL

SPECIFICATIONS BY LAMP & LINE VOLTAGE

Lamp # of Lamps	Specifications by Line Voltage	System Wattage	Nominal Current	Ballast Factor	Ballast Efficiency	Max. Input Current	Starting Current	Open Circuit Voltage	Drop Voltage	Out Power factor	Min. starting temperature	Fuse rating	UL bench top rise
No CMH4C ANSI code	1 208	431.0	2.23A		0.928					0.99	-20.0°F		
No CMH4C ANSI code	1 240	431.0	1.92A		0.928					0.99	-20.0°F		
No CMH4C ANSI code	1 277	428.0	1.65A		0.935					0.99	-20.0°F		

For additional information, visit www.gelighting.com

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