

Technical Assignment #2:
Electrical Systems Existing Conditions and
Building Load Summary Report



ANN AND RICHARD BARSHINGER LIFE SCIENCES & PHILOSOPHY BUILDING
FRANKLIN & MARSHALL COLLEGE
LANCASTER, PA

Jason Weaver
Lighting Advisor: Dr. Mistrick
Electrical Advisor: Prof. Dannerth
Lighting/Electrical Option
11/02/2007



Table of Contents

Executive Summary	4
Power Distribution Systems	
Summary Description of Distribution Systems	5
Service Entrance	5
Voltage Systems	5
Emergency Power System	6
Over-current Devices	6
Power Factor Correction	6
Design Issues	6
Lighting Loads	6
Mechanical and Other Loads	7
Service Entrance Size	7
Utility Company Information	7
Communications Systems	
Fire Alarm System	8
Building Control & Automation	8
Multimedia & Audiovisual	8
Data Communications Network	8
Cable TV & Satellite	8
Telephone / Voice Data	9



Closed Circuit Surveillance	9
Door & Access Control	9
Appendices	
A: Single-Line Diagram	10
B: Riser Diagram	12
C: Equipment Location Schedule	14
D: Panelboard Location Schedule	16
E: Transformer Schedule	18
F: Feeder Schedule	20
G: Switchboard Schedule	23
H: Luminaire Schedule	25
I: Mechanical Equipment Load Schedule	31
J: Service Entrance Size Calculations	34
K: Utility Rate Structure	44



Executive Summary

The following report analyzes the existing conditions of the power distribution system and communication systems for the building. Most of the information on these topics was contained in the construction documents and specifications. Other sources of information were the National Electric Code (NEC 2005), and correspondence with PP&L Utilities and Turner Construction.

The riser diagram in the construction documents was converted to a single-line diagram. While the riser diagram shows the spatial relationships between the distribution equipment better, the single-line diagram is a lot clearer in showing feeders between the main switchboard and subsequent equipment. On the riser diagram, there are many feeders going from the switchboard to the penthouse. The lines are very close together, and some of the lines cross, making it fairly difficult to track which feeder goes to which panelboard quickly. The single-line diagram makes this a lot clearer, and would have been an asset for the original construction document set.

After analyzing the lighting, receptacle, and mechanical loading, I determined that sizing the switchboard at 1600A was the appropriate decision, and should allow for some future growth. Full calculations for this, as well as other critical information on the power distribution system can be found in the appendices.



Power Distribution Systems

Summary Description of Distribution System

The main power for the Life Sciences & Philosophy comes from the main switchgear for Franklin & Marshall College. Power is run from existing lines in the front of the building to a basement substation at the northwest corner of the building. The 12.47KV service voltage is transformed down to 480Y/277V secondary service. Power is then distributed to various basement panels, 2 bus ducts, and the penthouse level. Each bus ducts serves one half of the building (north or south), and there are 2 electrical rooms on each floor (again, one on the north side of the building, the other servicing the south side). Most of the lighting runs on 277V. There are transformers converting the voltage down to 208Y/120 V service in each electrical room, on the penthouse level, and the main mechanical room. The 208Y/120 service is used for receptacle loads, incandescent lighting, and much of the heating for the space.

Service Entrance

The service entrance for the building is located on the northwest corner of the building, in the main electrical room (Room #M004). The power for this building is run from existing lines that run underground on the east side of the building. These lines run from Franklin & Marshall's main switchgear (located approximate 300 ft north of the building) to the existing Central Utility Plant's switchgear (located next door, about 100 ft from the south end of the building) that services the rest of the campus via a campus loop. A new manhole was dug at the north end of the building, and new lines were run from the existing lines connecting to the building substation.

Voltage Systems

There are two main voltage systems within the building. A 480Y/277v, 3PH, 4W service is transformed at the substation, and is used for the majority of the lighting loads, air handling units, most pumps, the boiler, and the cooling tower. A 208Y/120V, 3PH, 4W service is transformed in every electrical room in the building, in the penthouse, and in the main basement mechanical room. Receptacles, incandescent lighting, unit heaters, air conditioning, and water heaters run at this voltage.



Emergency Power System(s)

The main emergency power system for the building is a 300KW diesel powered generator. Power is distributed from the generator at 480Y/277V. 2 main lines run from the generator: one at 400A and one at 100A. 2 4-pole automatic transfer switches are mounted in the penthouse to power the emergency panels, rated at 400A and 100A respectively. The main emergency panels are also located in the penthouse level, which then distribute power to basement emergency panels. Emergency power also passed through a transformer (converting to 208Y/120V service), and is distributed to emergency panels in the south electrical room of each floor.

Over-current Devices

The main Franklin & Marshall switchgear is protected using a 600A fuse. The substation also is protected using a 600A fuse. All distributing panelboards and lighting panelboards are protected using circuit breakers, with 60A breakers protecting the main lighting panelboards and 200A breakers protecting the main panelboards for each floor.

Power Factor Correction

After inspection of the construction documents and specifications, it does not appear that there was any power factor correction installed or required.

Design Issues

The project seems to be relatively straightforward, and there does not appear to be any major electrical design issues.

Lighting Loads

Recessed fluorescent fixtures are used in the classroom, lab, offices, and corridor spaces. Incandescent and halogen lighting is saved for the more decorative spaces (the Atrium and the Humanities Common Room). Most of the classrooms rely on bi-level switching, with the lecture hall and a few other spaces using dimming to lower light levels. The automatic shut-off standard in ASHRAE 90.1 is attained using time switches (both electronic time switches and electromechanical-dial time switches), occupancy sensors, and outdoor photoelectric switches.

Please see Appendix H for further details and HID ballast cutsheets.



Mechanical and Other Loads

TOTAL LOAD	
<u>CATEGORY</u>	<u>TOTAL LOAD IN KW PER CATEGORY</u>
MECHANICAL	383.02
PLUMBING	144.23
ARCHITECTURAL	120.00
KITCHEN	0.00

Please see Appendix I for full details.

Service Entrance Size

Square Foot Method: 2000A

Square Foot Method + Actual Loads: 1600A

Actual Loads: 1600A

Please see Appendix J for full calculations and details.

Utility Company Information

PP&L Electric Utilities
827 Hausman Road
Allentown, PA 18104-9392
Website: <http://www.pplelectric.com/>

The rate schedule that applies to this building is LP-4, which applies to 12.47 KV service.
The complete rate information is in Appendix K.



Communication Systems

Fire Alarm System

- The main fire alarm control panel is located in the basement, and is linked to fire alarm terminal cabinets on each floor. Those terminal cabinets are linked to smoke and heat detectors throughout the floor, as well as strobe and speaker circuits and magnetic door holders. The third floor terminal cabinet also services the penthouse/roof level, where smoke exhaust is monitored and controlled. Main fire alarm control panel is in the Main Electrical Room in the basement, and the terminal cabinets are located in the North Electrical Rooms on each floor.

Building Control & Automation

- For lighting, there are dimming panels and scene control devices for the major public spaces in the building. Many of the lab spaces require ventilation and temperature control, in the form of a VAV fume hood controller and a lab room controller. There are room sensors for the heating and cooling systems.

Multimedia & Audiovisual

- Most of the classrooms and the teaching laboratories are equipped with ceiling-mounted data projectors and ceiling mounted speakers, along with either a mobile podium or fixed workstation with control panels for computing and sound. These systems connect to the main A/V system via floorboxes. There are motorized projection screens in the Humanities Common Room and the Lecture Hall, and manual screens in the other classroom and lab spaces.

Data Communications Network

- This system was mostly the responsibility of Franklin & Marshall College Computing Services. As with most of the building, main lines for this system enter through the basement Telecommunications Room and are distributed to the other 6 telecommunications room in the building. Every classroom, lab, office, and major gathering space has at least 4 ports to plug into the building's data system. In addition, Computing Services also coordinated several wireless access points throughout the building, with the goal of having 100% blanket coverage for the building. Priority points include offices, classrooms, labs, and the Lecture Hall.

Cable TV & Satellite

- Cable TV service is fed from the Central Services Building to the main Telecommunications Room in the basement (M058). From there, service is distributed to splitters in each of the 6 other telecommunications rooms in the building (2 per floor) and to two neighboring buildings.



Telephone / Voice Data

- OSP fiber is run from an existing fiber room in the Central Services Building to the basement Telecommunications Room. Copper cables are run from the telecomm. room in the Central Services Building to the LS&P Telecomm. Room. Service is then distributed to fiber breakout boxes, and receiving and sending boxes in each of the 6 other telecommunications rooms. Copper voice feeds are also sent to the two neighboring buildings. Every major space in the building (offices, labs, gathering spaces) has at least 2 connections to the voice data system.

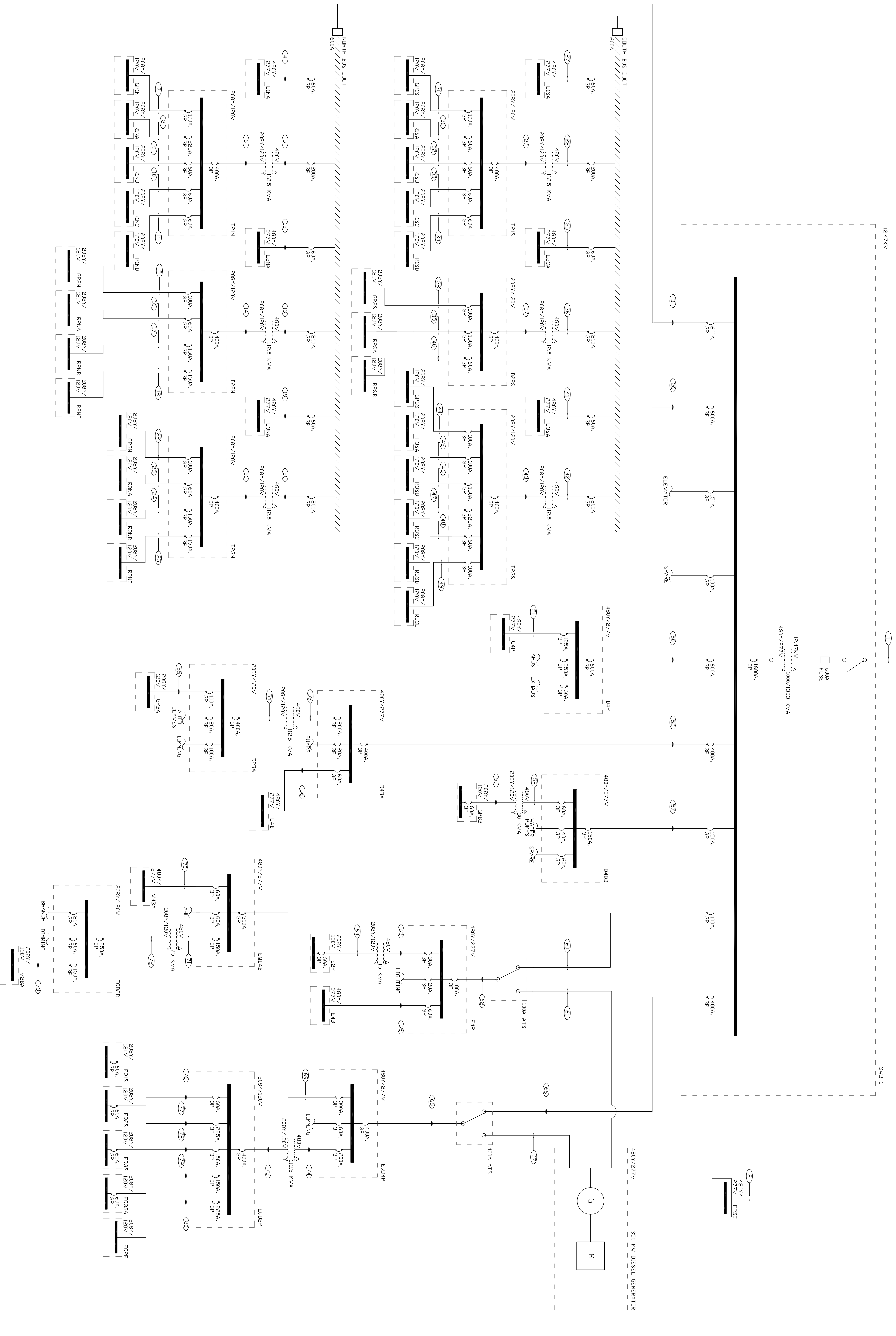
Closed Circuit Surveillance

- A couple of the areas of the building (namely the vivarium and the loading dock) required 24-hour surveillance, for security and monitoring purposes. Closed circuit cameras are placed around and within these areas. Main lines run through the basement telecommunications room through the telecomm and data closets on each floor. Surveillance occurs from the public safety office on campus.

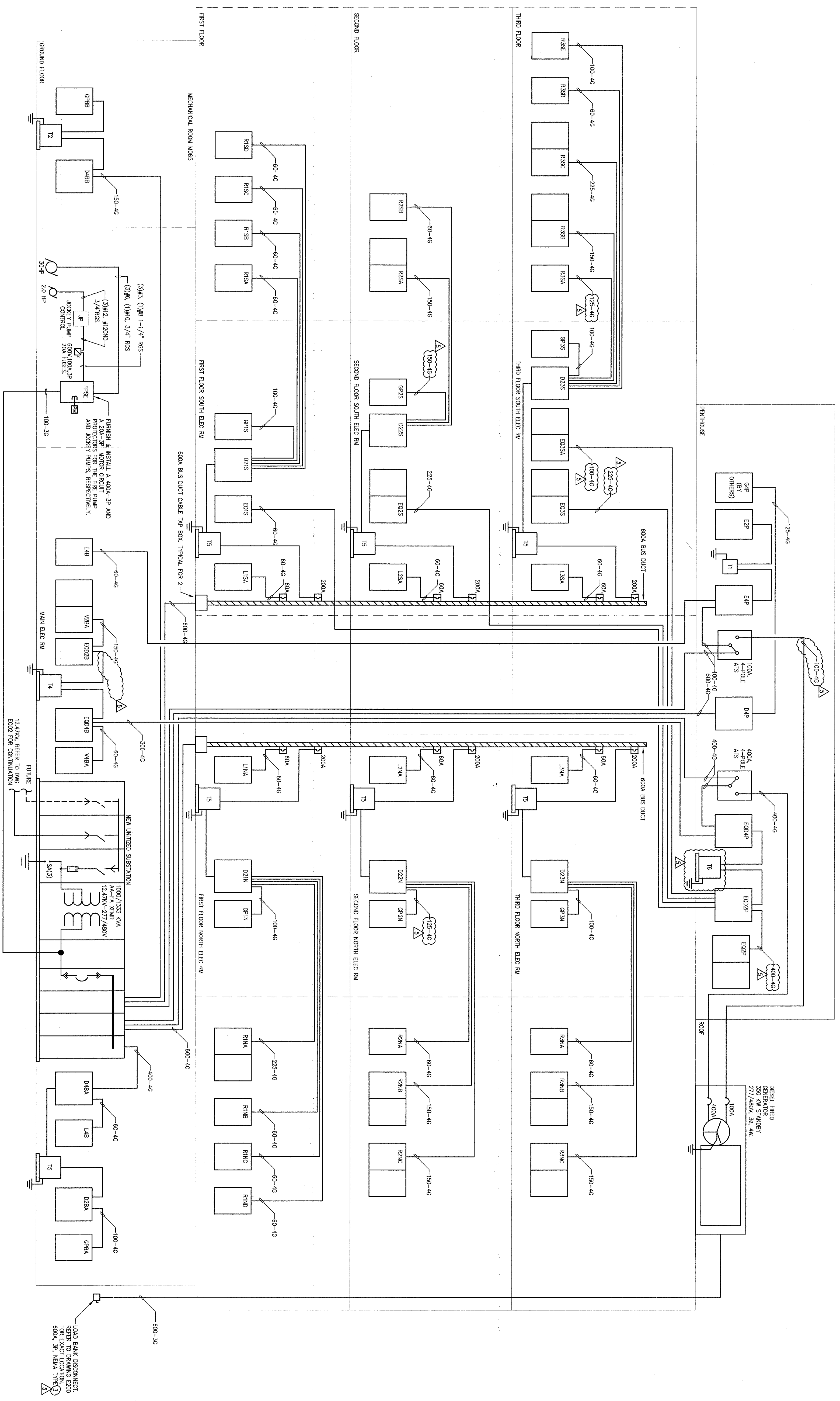
Door Access & Control

- Several of the areas of the building, including the basement vivarium, are available only via card access for security reasons. The main control panel for this system in the South Telecommunications Room on the first floor.

Appendix A:
Single-Line Diagram



Appendix B:
Riser Diagram



FEDDER SCHEDULE 5G - THHN/THWN

CODE	SETS	PHASE	NEUTRAL	GROUND	CONDUIT	CAPACITY
100-35	1	3PH	2#	2#	1"	100
200-35	1	3PH	2#	2#	1"	200
300-35	1	3PH	2#	2#	1"	300
400-35	2	3PH	2#	2#	1"	400

ISOLATED GROUND SCHEDULE - THHN/THWN

CODE	SETS	PHASE	NEUTRAL	GROUND	CONDUIT	CAPACITY
100-35	1	3PH	2#	2#	1"	100
200-35	1	3PH	2#	2#	1"	200
300-35	1	3PH	2#	2#	1"	300
400-35	2	3PH	2#	2#	1"	400

-60- APPROVE ONE ISOLATED GREEN WITH YELLOW TRACES ISOLATED GROUND WITH FEEDERS AS SCHEDULED.

LEGEND OF FEEDER SIZES - COPPER CONDUCTORS

1/46	3 PHASE	1/46	CONDUCTORS (3 PHASE)	BACKUP	MINIMUM
30-35	3PH & 1PH GND	3/4"	4#12 & 1#10 GND	3/4"	30
50-35	3PH & 1PH GND	3/4"	4#12 & 1#10 GND	3/4"	50
75-35	3PH & 1PH GND	1/2"	4#12 & 1#10 GND	1/2"	75
100-35	3PH & 1PH GND	1/2"	4#12 & 1#10 GND	1/2"	100
125-35	3PH & 1PH GND	1/2"	4#12 & 1#10 GND	1/2"	125
150-35	3PH & 1PH GND	1/2"	4#12 & 1#10 GND	1/2"	150
175-35	3PH & 1PH GND	1/2"	4#12 & 1#10 GND	1/2"	175
200-35	3PH & 1PH GND	2"	4#12 & 1#10 GND	2"	200
225-35	3PH & 1PH GND	2 1/2"	4#12 & 1#10 GND	2 1/2"	225
250-35	3PH & 1PH GND	2 1/2"	4#12 & 1#10 GND	2 1/2"	250
300-35	3PH & 1PH GND	3"	4#12 & 1#10 GND	3"	300
350-35	3PH & 1PH GND	3"	4#12 & 1#10 GND	3"	350
400-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	400
450-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	450
500-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	500
550-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	550
600-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	600
650-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	650
700-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	700
750-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	750
800-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	800
850-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	850
900-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	900
950-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	950
1000-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	1000
1050-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	1050
1100-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	1100
1150-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	1150
1200-35	3PH & 1PH GND	3 1/2"	4#12 & 1#10 GND	3 1/2"	1200

DRY TYPE TRANSFORMER SCHEDULE 480-120/208V

SIZE	KVA	PRIMARY	SECONDARY	480 VOLT OVERCURRENT	208 VOLT OVERCURRENT	480V BREAKER	120V BREAKER	GROUND
T1	15	48	208	30A 3P	60A 3P	30-35	50-45	#8-3/4"
T2	30	36	83	60A 3P	100A 3P	60-35	100-45	#8-3/4"
T3	45	36	83	60A 3P	100A 3P	60-35	100-45	#8-3/4"
T4	60	36	83	60A 3P	100A 3P	60-35	100-45	#8-3/4"
T5	75	48	125	80A 3P	150A 3P	80-35	150-45	#8-3/4"
T6	90	208	150A 3P	250A 3P	150-35	5/4" & 3/4" GND - 2"	250-45	#8-3/4"
T7	112.5	135	313	200A 3P	400A 3P	200-35	400-45	#8-3/4"
T8	150	181	417	300A 3P	600A 3P	300-35	600-45	#8-3/4"
T9	225	270	625	400A 3P	800A 3P	400-35	800-45	#8-3/4"
T10	300	360	833	600A 3P	1200A 3P	600-35	1200-45	#8-3/4"

1. FOR PANELBOARD SERVING ISOLATED GROUND RECEPTS AN ADDITIONAL ISOLATED GROUND WIRE IS REQUIRED. REFER TO ISOLATED GROUND DETAIL FOR ADDITIONAL INFORMATION.
2. * * * WHERE THIS SYMBOL IS SHOWN ON DRAWINGS, AN ADDITIONAL NEUTRAL CONDUCTOR REQUIRED (2000) FOR ALL FEEDERS TO PANELBOARDS.

KEY PLAN

The Ann & Richard Barsinger
 Life Sciences & Philosophy Building
 FRANKLIN & MARSHALL COLLEGE
 CONSTRUCTION DOCUMENTS
 DATE: 02.27.06
 CDR PROJECT NO: 5000415.00
 DRAWN BY: PW
 CHECKED BY: FB
 ELECTRICAL RISER DIAGRAM

EYP/
 Engineers, Architects, Planners,
 Architects & Engineers, P.C.
 24 School Street
 Suite 200
 Durham, NC 27701
 Telephone: 617 205 8800
 Fax: 617 205 8888
 eyp@eyp.com

NO. REVISION/SUBMISSION
 02.06.06
 DATE

Appendix C:
Equipment Location Schedule

MAJOR EQUIPMENT SCHEDULE					
<u>TAG</u>	<u>TYPE OF EQUIPMENT</u>	<u>FLOOR LEVEL</u>	<u>ROOM NUMBER</u>	<u>ROOM NAME</u>	<u>FLOOR PLAN DRAWING NUMBER</u>
SWB-1	MAIN SWITCHBOARD	BASEMENT	M004	MAIN ELECTRICAL	E200
D4P	DISTRIBUTION PANEL	PENTHOUSE	M443	MECHANICAL AREA	E204
D4BA	DISTRIBUTION PANEL	BASEMENT	M004	MAIN ELECTRICAL	E200
D4BB	DISTRIBUTION PANEL	BASEMENT	M069	MAIN MECHANICAL	E200
D23S	DISTRIBUTION PANEL	THIRD FLOOR	M254	SOUTH ELECTRICAL	E203
D22S	DISTRIBUTION PANEL	SECOND FLOOR	M254	SOUTH ELECTRICAL	E202
D21S	DISTRIBUTION PANEL	FIRST FLOOR	M254	SOUTH ELECTRICAL	E201
D23N	DISTRIBUTION PANEL	THIRD FLOOR	M226	NORTH ELECTRICAL	E203
D2BA	DISTRIBUTION PANEL	BASEMENT	M004	MAIN ELECTRICAL	E200
D22N	DISTRIBUTION PANEL	SECOND FLOOR	M226	NORTH ELECTRICAL	E202
D21N	DISTRIBUTION PANEL	FIRST FLOOR	M226	NORTH ELECTRICAL	E201
EQD2B	EMERGENCY DISTRIBUTION PANEL	BASEMENT	M004	MAIN ELECTRICAL	E200
EQD4P	EMERGENCY DISTRIBUTION PANEL	PENTHOUSE	M444	ELECTRICAL AREA	E204
EQD4B	EMERGENCY DISTRIBUTION PANEL	BASEMENT	M004	MAIN ELECTRICAL	E200
EQD2P	EMERGENCY DISTRIBUTION PANEL	PENTHOUSE	M444	ELECTRICAL AREA	E204
T2	TRANSFORMER	BASEMENT	M069	MAIN MECHANICAL	E200
T4	TRANSFORMER	BASEMENT	M004	MAIN ELECTRICAL	E200
SS	TRANSFORMER	BASEMENT	M004	MAIN ELECTRICAL	E200
T5	TRANSFORMER	BASEMENT	M004	MAIN ELECTRICAL	E200
T5	TRANSFORMER	FIRST FLOOR	M254	SOUTH ELECTRICAL	E201
T5	TRANSFORMER	FIRST FLOOR	M226	NORTH ELECTRICAL	E201
T5	TRANSFORMER	SECOND FLOOR	M254	SOUTH ELECTRICAL	E202
T5	TRANSFORMER	SECOND FLOOR	M226	NORTH ELECTRICAL	E202
T5	TRANSFORMER	THIRD FLOOR	M254	SOUTH ELECTRICAL	E203
T5	TRANSFORMER	THIRD FLOOR	M226	NORTH ELECTRICAL	E203
T1	TRANSFORMER	PENTHOUSE	M444	ELECTRICAL AREA	E204
T5	TRANSFORMER	PENTHOUSE	M444	ELECTRICAL AREA	E204
DFG	GENERATOR	ROOF	ROOF	ROOF	E204
ATS 100	TRANSFER SWITCH	PENTHOUSE	M444	ELECTRICAL AREA	E204
ATS 400	TRANSFER SWITCH	PENTHOUSE	M444	ELECTRICAL AREA	E204
NOTES:					
1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS					

Appendix D:
Panelboard Location Schedule

PANELBOARD SCHEDULE

<u>TAG</u>	<u>VOLTAGE SYSTEM</u>	<u>MAIN SIZE</u>	<u>FLOOR LEVEL</u>	<u>ROOM NUMBER</u>	<u>ROOM NAME</u>	<u>FLOOR PLAN DRAWING NUMBER</u>
V2BA	208Y/120V, 3PH, 4W	150A	BASEMENT	M004	MAIN ELECTRICAL	E200
GPBA	208Y/120V, 3PH, 4W	150A	BASEMENT	M004	MAIN ELECTRICAL	E200
GPBB	208Y/120V, 3PH, 4W	100A	BASEMENT	M069	MAIN MECHANICAL	E200
L4B	480Y/277V, 3PH, 4W	60A	BASEMENT	M004	MAIN ELECTRICAL	E200
V4BA	480Y/277V, 3PH, 4W	60A	BASEMENT	M004	MAIN ELECTRICAL	E200
E4B	480Y/277V, 3PH, 4W	60A	BASEMENT	M004	MAIN ELECTRICAL	E200
GP1N	208Y/120V, 3PH, 4W	100A	FIRST FLOOR	M004	MAIN ELECTRICAL	E201
R1NA	208Y/120V, 3PH, 4W	225A	FIRST FLOOR	100A	CONTROLS ROOM	E201
R1NB	208Y/120V, 3PH, 4W	60A	FIRST FLOOR	127	RECEPTION	E201
R1NC	208Y/120V, 3PH, 4W	60A	FIRST FLOOR	102M	PSYCHOLOGY DISCUSSION AREA	E201
R1ND	208Y/120V, 3PH, 4W	60A	FIRST FLOOR	111	DISCUSSION AREA	E201
EQ1S	208Y/120V, 3PH, 4W	60A	FIRST FLOOR	M154	SOUTH ELECTRICAL	E201
GP1S	208Y/120V, 3PH, 4W	100A	FIRST FLOOR	M154	SOUTH ELECTRICAL	E201
R1SA	208Y/120V, 3PH, 4W	60A	FIRST FLOOR	151C	TEST ROOM	E201
R1SB	208Y/120V, 3PH, 4W	60A	FIRST FLOOR	171	WAITING AREA	E201
R1SC	208Y/120V, 3PH, 4W	60A	FIRST FLOOR	164	COGNITIVE PSYCH. SUITE	E201
R1SD	208Y/120V, 3PH, 4W	60A	FIRST FLOOR	189	CATER PREP	E201
L1NA	480Y/277V, 3PH, 4W	60A	FIRST FLOOR	M126	NORTH ELECTRICAL	E201
L1SA	480Y/277V, 3PH, 4W	60A	FIRST FLOOR	M154	SOUTH ELECTRICAL	E201
GP2N	208Y/120V, 3PH, 4W	100A	SECOND FLOOR	M226	NORTH ELECTRICAL	E202
R2NA	208Y/120V, 3PH, 4W	60A	SECOND FLOOR	245	NEURO. TEACHING LAB	E202
R2NB	208Y/120V, 3PH, 4W	150A	SECOND FLOOR	2C-1	CORRIDOR	E202
R2NC	208Y/120V, 3PH, 4W	150A	SECOND FLOOR	223	BIOLOGY RESEARCH LAB	E202
EQ2S	208Y/120V, 3PH, 4W	225A	SECOND FLOOR	M254	SOUTH ELECTRICAL	E202
GP2S	208Y/120V, 3PH, 4W	100A	SECOND FLOOR	M254	SOUTH ELECTRICAL	E202
R2SA	208Y/120V, 3PH, 4W	150A	SECOND FLOOR	2C5W	CORRIDOR	E202
R2SB	208Y/120V, 3PH, 4W	60A	SECOND FLOOR	270	PSYCH. RESEARCH LAB	E202
L2NA	480Y/277V, 3PH, 4W	60A	SECOND FLOOR	M254	SOUTH ELECTRICAL	E202
L2SA	480Y/277V, 3PH, 4W	60A	SECOND FLOOR	M254	SOUTH ELECTRICAL	E202
GP3N	208Y/120V, 3PH, 4W	100A	THIRD FLOOR	M326	NORTH ELECTRICAL	E203
R3NA	208Y/120V, 3PH, 4W	60A	THIRD FLOOR	302	MICRO. TEACHING LAB	E203
R3NB	208Y/120V, 3PH, 4W	150A	THIRD FLOOR	325	LAB WRITE-UP	E203
R3NC	208Y/120V, 3PH, 4W	150A	THIRD FLOOR	332	BIOLOGY RESEARCH LAB	E203
EQ3S	208Y/120V, 3PH, 4W	150A	THIRD FLOOR	M354	SOUTH ELECTRICAL	E203
EQ3SA	208Y/120V, 3PH, 4W	150A	THIRD FLOOR	M354	SOUTH ELECTRICAL	E203
GP3S	208Y/120V, 3PH, 4W	100A	THIRD FLOOR	M354	SOUTH ELECTRICAL	E203
R3SA	208Y/120V, 3PH, 4W	100A	THIRD FLOOR	349	MOLECULAR TEACHING LAB	E203
R3SB	208Y/120V, 3PH, 4W	150A	THIRD FLOOR	3C5W	CORRIDOR	E203
R3SC	208Y/120V, 3PH, 4W	225A	THIRD FLOOR	386	POTTING AREA	E203
R3SD	208Y/120V, 3PH, 4W	60A	THIRD FLOOR	370	PLANT TEACHING LAB	E203
R3SE	208Y/120V, 3PH, 4W	100A	THIRD FLOOR	3C-5	CORRIDOR	E203
L3NA	480Y/277V, 3PH, 4W	60A	THIRD FLOOR	M254	SOUTH ELECTRICAL	E203
L3SA	480Y/277V, 3PH, 4W	60A	THIRD FLOOR	M226	NORTH ELECTRICAL	E203
E2P	208Y/120V, 3PH, 4W	60A	PENTHOUSE	M444	ELECTRICAL AREA	E204
EQ2P	208Y/120V, 3PH, 4W	225A	PENTHOUSE	M444	ELECTRICAL AREA	E204
E4P	480Y/277V, 3PH, 4W	100A	PENTHOUSE	M444	ELECTRICAL AREA	E204

Appendix E:
Transformer Schedule

INDIVIDUAL TRANSFORMER SCHEDULE

<u>TAG</u>	<u>FROM</u>	<u>TO</u>	<u>PRIMARY VOLTAGE</u>	<u>SECONDARY VOLTAGE</u>	<u>SIZE (KVA)</u>	<u>TYPE</u>	<u>TEMP. RISE</u>	<u>TAPS</u>	<u>MOUNTING</u>	<u>REMARKS</u>
SWB-1	-	-	12470V, 3PH, 3W	480Y/277V, 3PH, 4W	1000/1333	DRY TYPE	80 °C	(4) 0.5%	PAD MOUNTED ON GRADE BY PP&I	OWNED BY PP&L
XFMR 1	NORTH DUCT	D21N	480V, 3PH, 3W	208Y/120V, 3PH, 4W	112.5	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 2	NORTH DUCT	D22N	480V, 3PH, 3W	208Y/120V, 3PH, 4W	112.5	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 3	NORTH DUCT	D23N	480V, 3PH, 3W	208Y/120V, 3PH, 4W	112.5	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 4	SOUTH DUCT	D21S	480V, 3PH, 3W	208Y/120V, 3PH, 4W	112.5	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 5	SOUTH DUCT	D22S	480V, 3PH, 3W	208Y/120V, 3PH, 4W	112.5	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 6	SOUTH DUCT	D23S	480V, 3PH, 3W	208Y/120V, 3PH, 4W	112.5	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 7	D4BA	D2BA	480V, 3PH, 3W	208Y/120V, 3PH, 4W	112.5	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 8	D4BB	GPBB	480V, 3PH, 3W	208Y/120V, 3PH, 4W	30	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 9	E4P	E2P	480V, 3PH, 3W	208Y/120V, 3PH, 4W	15	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 10	EQD4B	EQD2B	480V, 3PH, 3W	208Y/120V, 3PH, 4W	75	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	
XFMR 11	EQD4P	EQD2P	480V, 3PH, 3W	208Y/120V, 3PH, 4W	112.5	DRY TYPE	150 °C	(4) 2.5%	WALL MOUNTED WITH BRACKETS	

NOTES:

- REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

KEY:

A/N=AS NOTED

Appendix F:
Feeder Schedule

FEEDER SCHEDULE

TAG	FROM	TO	NO. OF SETS	CONDUIT (PER SET)		CONDUCTORS (PER SET)									SIZE OF OVERCURRENT PROTECTION	FRAME OR SWITCH SIZE	REMARKS
				SIZE	TYPE	PHASE CONDUCTORS			NEUTRAL CONDUCTORS			GROUND CONDUCTORS					
						No.	SIZE	TYPE	No.	SIZE	TYPE	No.	SIZE	TYPE			
1	MAIN	SWB-1															
2	SWB-1	FPSE	1	1 1/4"	EMT	3	3AWG	CU THWN	0	-	-	1	8AWG	CU THWN	100	100A/3P	
3	SWB-1	NORTH DUCT	2	3"	EMT	3	350KCMIL	CU THWN	1	350KCMIL	CU THWN	1	1AWG	CU THWN	600	600/3P	
4	NORTH DUCT	L1NA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
5	NORTH DUCT	XFMR 1	1	2"	EMT	3	3/0AWG	CU THWN	0	-	-	1	6AWG	CU THWN	200	200/3P	
6	XFMR 1	D21N	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
7	D21N	GP1N	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
8	D21N	R1NA	1	2 1/2"	EMT	3	4/0AWG	CU THWN	1	4/0AWG	CU THWN	1	4AWG	CU THWN	225	225/3P	
9	D21N	R1NB	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
10	D21N	R1NC	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
11	D21N	R1ND	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
12	NORTH DUCT	L2NA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
13	NORTH DUCT	XFMR 2	1	2"	EMT	3	3/0AWG	CU THWN	0	-	-	1	6AWG	CU THWN	200	200/3P	
14	XFMR 2	D22N	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
15	D22N	GP2N	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
16	D22N	R2NA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
17	D22N	R2NB	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
18	D22N	R2NC	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
19	NORTH DUCT	L3NA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
20	NORTH DUCT	XFMR 3	1	2"	EMT	3	3/0AWG	CU THWN	0	-	-	1	6AWG	CU THWN	200	200/3P	
21	XFMR 3	D23N	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
22	D23N	GP3N	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
23	D23N	R3NA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
24	D23N	R3NB	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
25	D23N	R3NC	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
26	SWB-1	SOUTH DUCT	2	3"	EMT	3	350KCMIL	CU THWN	1	350KCMIL	CU THWN	1	1AWG	CU THWN	600	600/3P	
27	SOUTH DUCT	L1SA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
28	SOUTH DUCT	XFMR 4	1	2"	EMT	3	3/0AWG	CU THWN	0	-	-	1	6AWG	CU THWN	200	200/3P	
29	XFMR 4	D21S	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
30	D21S	GP1S	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
31	D21S	R1SA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
32	D21S	R1SB	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
33	D21S	R1SC	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
34	D21S	R1SD	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
35	SOUTH DUCT	L2SA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
36	SOUTH DUCT	XFMR 5	1	2"	EMT	3	3/0AWG	CU THWN	0	-	-	1	6AWG	CU THWN	200	200/3P	
37	XFMR 5	D22S	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
38	D22S	GP2S	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
39	D22S	R2SA	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
40	D22S	R2SB	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
41	SOUTH DUCT	L3SA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
42	SOUTH DUCT	XFMR 6	1	2"	EMT	3	3/0AWG	CU THWN	0	-	-	1	6AWG	CU THWN	200	200/3P	
43	XFMR 6	D23S	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
44	D23S	GP3S	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
45	D23S	R3SA	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
46	D23S	R3SB	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
47	D23S	R3SC	1	2 1/2"	EMT	3	4/0AWG	CU THWN	1	4/0AWG	CU THWN	1	4AWG	CU THWN	225	225/3P	
48	D23S	R3SD	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
49	D23S	R3SE	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
50	SWB-1	D4P	2	3"	EMT	3	350KCMIL	CU THWN	1	350KCMIL	CU THWN	1	1AWG	CU THWN	600	600/3P	

FEEDER SCHEDULE

TAG	FROM	TO	NO. OF SETS	CONDUIT (PER SET)		CONDUCTORS (PER SET)									SIZE OF OVERCURRENT PROTECTION	FRAME OR SWITCH SIZE	REMARKS
				SIZE	TYPE	PHASE CONDUCTORS			NEUTRAL CONDUCTORS			GROUND CONDUCTORS					
						No.	SIZE	TYPE	No.	SIZE	TYPE	No.	SIZE	TYPE			
51	D4P	G4P	1	1 1/2"	EMT	3	1AWG	CU THWN	1	1AWG	CU THWN	1	6AWG	CU THWN	125	125/3P	
52	SWB-1	D4BA	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
53	D4BA	XFMR 7	1	2"	EMT	3	3/0AWG	CU THWN	0	-	-	1	6AWG	CU THWN	200	200/3P	
54	XFMR 7	D2BA	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
55	D2BA	GPBA	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
56	D4BA	L4B	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
57	SWB-1	D4BB	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
58	D4BB	XFMR 8	1	3/4"	EMT	3	6AWG	CU THWN	0	-	-	1	10AWG	CU THWN	60	60/6P	
59	XFMR 8	GPBB	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
60	SWB-1	ATS 100	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
61	GEN	ATS 100	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
62	ATS 100	E4P	1	1 1/4"	EMT	3	2AWG	CU THWN	1	2AWG	CU THWN	1	8AWG	CU THWN	100	100/3P	
63	E4P	XFMR 9	1	3/4"	EMT	3	10AWG	CU THWN	0	-	-	1	10AWG	CU THWN	30	30/3P	
64	XFMR 9	E2P	1	3/4"	EMT	3	8AWG	CU THWN	1	8AWG	CU THWN	1	10AWG	CU THWN	50	50/3P	
65	E4P	E4B	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
66	SWB-1	ATS 400	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
67	GEN	ATS 400	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
68	ATS 400	EQD4P	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
69	EQD4P	EQD4B	1	3"	EMT	3	350KCMIL	CU THWN	1	350KCMIL	CU THWN	1	4AWG	CU THWN	300	300/3P	
70	EQD4B	V4BA	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
71	EQD4B	XFMR 10	1	1 1/2"	EMT	3	1/0AWG	CU THWN	0	-	-	1	6AWG	CU THWN	150	150/3P	
72	XFMR 10	EQD2B	1	2 1/2"	EMT	4	250KCMIL	CU THWN	1	250KCMIL	CU THWN	1	4AWG	CU THWN	250	250/3P	
73	EQD2B	V2BA	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
74	EQD4P	XFMR 11	1	2"	EMT	3	3/0AWG	CU THWN	0	-	-	1	6AWG	CU THWN	200	200/3P	
75	XFMR 11	EQD2P	1	3 1/2"	EMT	3	600KCMIL	CU THWN	1	600KCMIL	CU THWN	1	3AWG	CU THWN	400	400/3P	
76	EQD2P	EQ1S	1	1"	EMT	3	6AWG	CU THWN	1	6AWG	CU THWN	1	10AWG	CU THWN	60	60/3P	
77	EQD2P	EQ2S	1	2 1/2"	EMT	3	4/0AWG	CU THWN	1	4/0AWG	CU THWN	1	4AWG	CU THWN	225	225/3P	
78	EQD2P	EQ3S	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
79	EQD2P	EQ3SA	1	2"	EMT	3	1/0AWG	CU THWN	1	1/0AWG	CU THWN	1	6AWG	CU THWN	150	150/3P	
80	EQD2P	EQ2P	1	2 1/2"	EMT	3	4/0AWG	CU THWN	1	4/0AWG	CU THWN	1	4AWG	CU THWN	225	225/3P	

NOTES:

1. REFER TO SINGLE-LINE DIAGRAM FOR FEEDER TAGS

AL=ALUMINUM

CU=COPPER

Appendix G:
Switchboard Schedule

MAIN SWITCHBOARD "SWB-1" SCHEDULE

480 / 277 VOLTS

3 PHASE, 4 WIRE & GROUND

MAIN DEVICE MCB : 1600A

NEUTRAL: 100%

MOUNTING: PAD

GROUND BUS: FULL

CIRCUIT NUMBER	DESCRIPTION	OVERCURRENT DEVICES			FEEDER SIZE	REMARKS
		FRAME	TRIP	PHASES		
1	PANEL EQD4P VIA NORTH ATS	400A	400A	3	(4) 600 KCMIL + (1) #3 AWG IN 3 1/2" C	-
2	PANEL E4P VIA SOUTH ATS	225A	100A	3	(4) #2 AWG + (1) #8 AWG IN 1 1/4" C	
3	PANEL D4P	600A	600A	3	2 SETS OF (4) 350 KCMIL + (1) #1 AWG IN 3" C	
4	NORTH BUS DUCT	600A	600A	3	2 SETS OF (4) 350 KCMIL + (1) #1 AWG IN 3" C	
5	SOUTH BUS DUCT	600A	600A	3	2 SETS OF (4) 350 KCMIL + (1) #1 AWG IN 3" C	
6	PANEL D4BA	400A	400A	3	(4) 600 KCMIL + (1) #3 AWG IN 3 1/2" C	
7	PANEL D4BB	150A	150A	3	(4) #1/0 AWG + (1) #6 AWG IN 2" C	
8	ELEVATOR	225A	150A	3	(4) #1/0 AWG + (1) #6 AWG IN 2" C	SHUNT TRIP TYPE
9	SPARE	100A	100A	3	-	
10	SPARE	100A	100A	3	-	
11	SPARE	100A	100A	3	-	
12	SPARE	100A	-	3	-	
13	SPARE	100A	-	3	-	
14	SPARE	100A	-	3	-	

Appendix H:
Luminaire Schedule

LUMINAIRE SCHEDULE

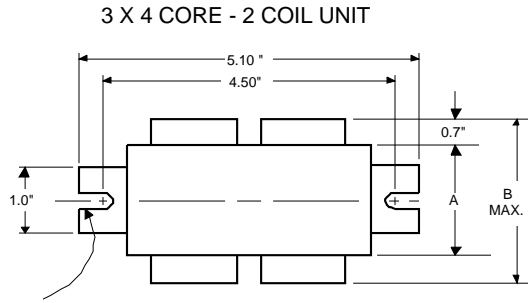
<u>TYPE</u>	<u>NUMBER OF LAMPS</u>	<u>LAMP TYPE</u>	<u>WATTAGE</u>	<u>VOLTAGE</u>	<u>DIMMING?</u>	<u>OTHER</u>	<u>BALLAST TYPE</u>	<u>POWER FACTOR</u>	<u>BALLAST FACTOR</u>	<u>OPERATING CURRENT</u>	<u>STARTING CURRENT</u>	<u>FIXTURE INPUT WATTS</u>
A4A	2	T8	32	277	Y	-	INSTANT	0.99	1.05	0.25	-	68
A4B	2	T8	32	277	Y	-	INSTANT	0.99	1.05	0.25	-	68
A17	1	HEX	32	277	-	-	RAPID START	0.98	0.95	0.14	-	37
A17B	1	HEX	32	277	Y	-	RAPID START	0.98	1.05	0.14	-	38
A18	1	HEX	32	277	-	-	RAPID START	0.98	0.95	0.14	-	37
A18B	1	HEX	32	277	Y	-	RAPID START	0.98	1.05	0.14	-	38
A19	2	LTT	18	277	-	-	RAPID START	0.99	0.95	0.16	-	44
B2	1	T5HO	54	277	-	-	RAPID START	0.98	0.98	0.23	-	63
B2A	1	T5HO	54	277	-	-	RAPID START	0.98	0.98	0.23	-	63
B3	1	T8	32	277	Y	-	INSTANT	0.94	0.88	0.13	-	32
C1	1	COLD CATHODE (4')	108	120	-	-	-	1.00	-	0.00	-	108
D1	2	INCAND.	40	120	-	-	-	1.00	-	0.00	-	40
D2	2	T101F INC.	40	120	-	-	-	1.00	-	0.00	-	40
D2A	4	T101F INC.	40	120	-	-	-	1.00	-	0.00	-	40
D5	1	CFL	13	277	-	-	RAPID START	0.99	0.95	0.08	-	20
F4	7	INCAND.	40	120	-	-	-	1.00	-	0.00	-	40
F5	9	T8	32	120	Y	-	INSTANT	0.98	0.95	0.28	-	32
F5	3	HAL PAR30S	75	120	-	-	-	1.00	-	0.00	-	75
F5	3	LTT	36	120	Y	-	RAPID START	0.98	0.95	0.14	-	39
G1	1	HAL PAR56	200	120	-	-	-	1.00	-	0.00	-	200
G2	1	HAL MR16	75	277	-	-	-	1.00	-	0.00	-	75
G4	1	HAL MR16	75	277	-	-	-	1.00	-	0.00	-	75
G5	1	HAL MR16	75	277	-	-	-	1.00	-	0.00	-	75
G6	1	HAL MR16	75	277	-	-	-	1.00	-	0.00	-	75
G8	3	HAL PAR30S	75	120	-	-	-	1.00	-	0.00	-	75
G9	1	HAL PAR30S	75	120	-	-	-	1.00	-	0.00	-	75
G10	1	HAL PAR30S	75	120	-	-	-	1.00	-	0.00	-	75
G12	1	HAL PAR38	100	120	-	-	-	1.00	-	0.00	-	100
G13	1	HALOGEN	75	120	-	-	-	1.00	-	0.00	-	75
H4	1	HAL PAR56	200	120	-	-	-	1.00	-	0.00	-	200
H4A	1	HAL PAR56	200	120	-	-	-	1.00	-	0.00	-	200
CC1	1	T8	32	277	-	-	INSTANT	0.94	0.88	0.13	-	32
CC1	1	T8	25	277	-	-	INSTANT	0.98	0.85	0.09	-	24
DD1	1	A23 INC.	200	120	-	-	-	1.00	-	-	-	200
DD1	1	A15 INC.	15	120	-	-	-	1.00	-	-	-	15
DD2	-	LED	-	120	-	-	-	-	-	-	-	-
E1	-	LED	-	120/277	-	-	-	-	-	-	-	-
E2	-	LED	-	120/277	-	-	-	-	-	-	-	-
E3	-	LED	-	120/277	-	-	-	-	-	-	-	-
E4	-	LED	-	120/277	-	-	-	-	-	-	-	-
F1	2	T8	32	277	-	-	INSTANT	0.99	0.95	0.24	-	65
F2	2	T8	32	277	-	-	INSTANT	0.99	0.95	0.24	-	65
F2A	2	T8	32	120	-	-	INSTANT	0.98	0.95	0.55	-	65
F3	2	T5HO	54	120	Y	-	RAPID START	0.98	0.98	0.46	-	125
N1	1	MH	150	277	-	-	CORE & COIL	0.90	-	0.74	0.42	185
N2	1	MH	150	277	-	-	CORE & COIL	0.90	-	0.74	0.42	185
N3	1	FLOOD INC.	50	277	-	-	-	1.00	-	0.00	-	50
N4	1	FLOOD INC.	50	277	-	-	-	1.00	-	0.00	-	50
N5	1	CFL	13	277	-	-	RAPID START	0.99	0.95	0.08	-	20
P1	3	T8	32	277	-	-	INSTANT	0.99	0.85	0.31	-	85



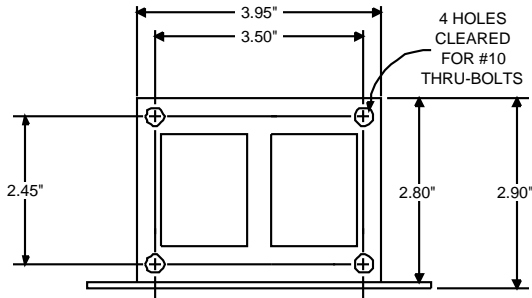
**Metal
Halide
Lamp Ballast**

**Catalog Number 71A5380
For 100W M90/M140
60 Hz HX-HPF
Status: Active**

DIMENSIONS AND DATA



0.25" WIDE
2 SLOTS



	120	277			
INPUT VOLTS					
CIRCUIT TYPE	HX-HPF				
POWER FACTOR (min)	90%				
REGULATION					
Line Volts	±5%				
Lamp Watts	±12%				
LINE CURRENT (Amps)					
Operating.....	1.15	0.50			
Open Circuit.....	2.30	1.00			
Starting.....	1.20	0.60			
UL TEMPERATURE RATINGS					
Insulation Class	H(180°C)				
Coil Temperature Code	1029				
MIN. AMBIENT STARTING TEMP.	-20°F or -30°C				
NOM. OPEN CIRCUIT VOLTAGE	265				
INPUT VOLTAGE AT LAMP DROPOUT.....	90	208			
INPUT WATTS	129				
RECOMMENDED FUSE (Amps).....	6	3			
CORE and COIL					
Dimension (A)	1.50				
Dimension (B)	2.80				
Weight (lbs.)	5.5				
Lead Lengths	12"				
CAPACITOR REQUIREMENT					
Microfarads	12.0				
Volts (min.)	280				
Fault Current Withstand (amps)	280				
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)					
High Potential Test (Volts)					
1 minute	2000				
2 seconds	2500				
Open Circuit Voltage Test (Volts)	240-300				
Short-Circuit Current Test (Amps)					
Secondary Current					
Input Current.....	1.35-1.70				
	1.00	0.40	-	-	-
	1.50	0.65			

Capacitor: 7C120M33-R



Capacitance: 12
Dia/Oval Dim: 1.5
Height: 2.9
Temp Rating: 105°C

Wiring Diagram:

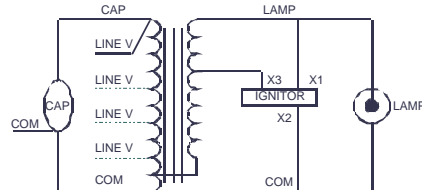


Fig. K3

Ignitor: LI533-H4



Ballast to Lamp Distance
(BTL) = 20 feet
Temp Rating: 105°C

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

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

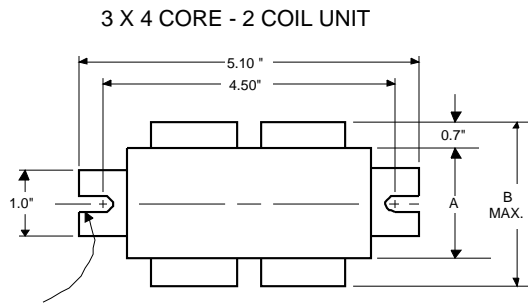
10/29/01



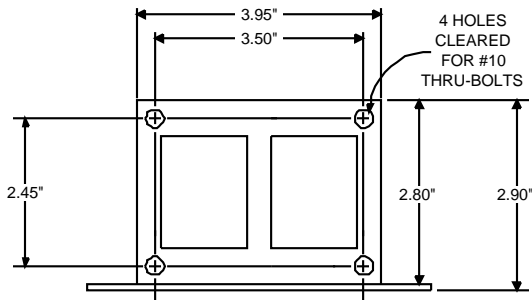
**Metal
Halide
Lamp Ballast**

**Catalog Number 71A5482
For 150W M102/M142
60 Hz HX-HPF
Status: Active**

DIMENSIONS AND DATA



0.25" WIDE
2 SLOTS



INPUT VOLTS	120	277			
CIRCUIT TYPE	HX-HPF				
POWER FACTOR (min)	90%				
REGULATION					
Line Volts	±5%				
Lamp Watts	±12%				
LINE CURRENT (Amps)					
Operating.....	1.60	0.70			
Open Circuit.....	3.65	1.58			
Starting.....	0.95	0.42			
UL TEMPERATURE RATINGS					
Insulation Class	H(180°C)				
Coil Temperature Code	1029				
MIN. AMBIENT STARTING TEMP.	-20°F or -30°C				
NOM. OPEN CIRCUIT VOLTAGE	265				
INPUT VOLTAGE AT LAMP DROPOUT.....	90	208			
INPUT WATTS	185				
RECOMMENDED FUSE (Amps).....	10	4			
CORE and COIL					
Dimension (A)	2.25				
Dimension (B)	3.87				
Weight (lbs.)	7				
Lead Lengths	12"				
CAPACITOR REQUIREMENT					
Microfarads	16.0				
Volts (min.)	280				
Fault Current Withstand (amps)					
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)					
High Potential Test (Volts)					
1 minute	2000				
2 seconds	2500				
Open Circuit Voltage Test (Volts)	235-290				
Short-Circuit Current Test (Amps)					
Secondary Current	2.05-2.55				
Input Current.....	1.20	0.50	-	-	-
	1.90	0.80			

Capacitor: 7C160M30



Capacitance: 16
Dia/Oval Dim: 1.5
Height: 3.75
Temp Rating: 105°C

Ignitor: LI533-H4



Ballast to Lamp Distance
(BTL) = 10 feet
Temp Rating: 105°C



Wiring Diagram:

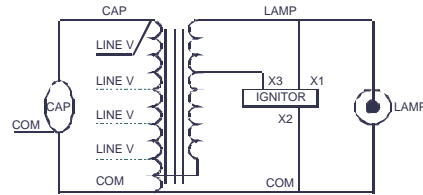


Fig. K3

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

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

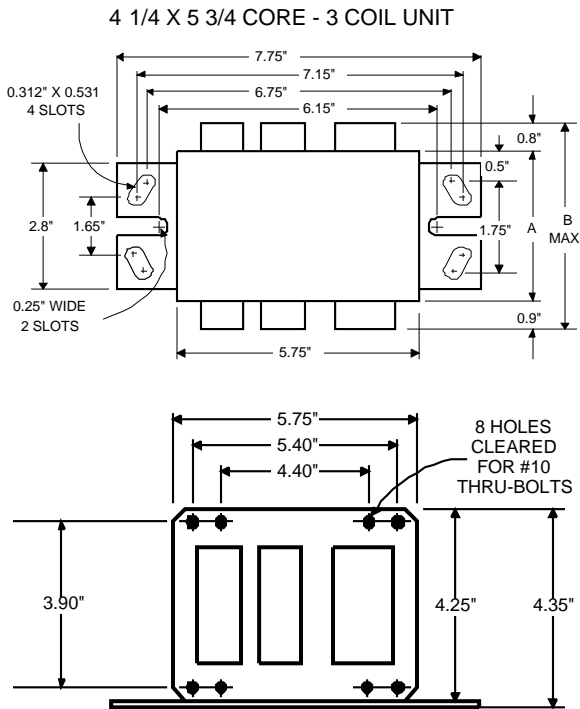
05/19/05



**Metal
Halide
Lamp Ballast**

**Catalog Number 71A5534T
For 175W M137 (Pulse Start)
60 Hz REGULATED LAG
Status: Active**

DIMENSIONS AND DATA



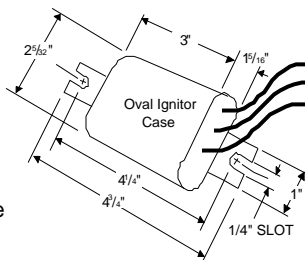
INPUT VOLTS	277			
CIRCUIT TYPE	REGULATED LAG			
POWER FACTOR (min)	90%			
REGULATION				
Line Volts	±10%			
Lamp Watts	±+4%.-6%			
LINE CURRENT (Amps)				
Operating.....	0.87			
Open Circuit.....	0.54			
Starting.....	0.43			
UL TEMPERATURE RATINGS				
Insulation Class	H(180°C)			
Coil Temperature Code	1029	A		
MIN. AMBIENT STARTING TEMP.	-40°F or -40°C			
NOM. OPEN CIRCUIT VOLTAGE	310			
INPUT VOLTAGE AT LAMP DROPOUT.....	195			
INPUT WATTS	220			
RECOMMENDED FUSE (Amps).....	2			
CORE and COIL				
Dimension (A)	1.70			
Dimension (B)	3.50			
Weight (lbs.)	12.5			
Lead Lengths	12"			
CAPACITOR REQUIREMENT				
Microfarads	17.0			
Volts (min.)	400			
Fault Current Withstand (amps)				
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)				
High Potential Test (Volts)				
1 minute	2000			
2 seconds	2500			
Open Circuit Voltage Test (Volts)	305-340			
Short-Circuit Current Test (Amps)				
Secondary Current	1.60-1.95			
Input Current.....	0.17	-	-	-
	0.30			

Capacitor: 7C170P40

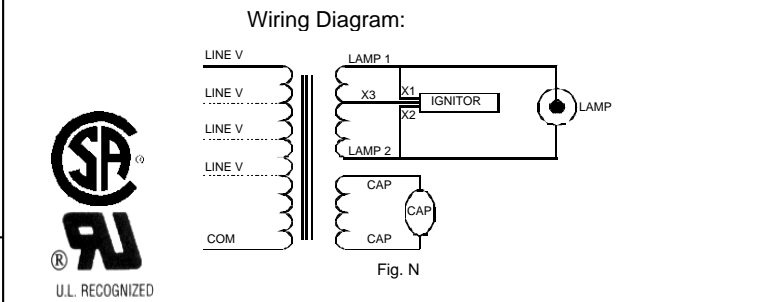


Capacitance: 17
Dia/Oval Dim: 1.75
Height: 3.75
Temp Rating: 105°C

Ignitor: LI534-H5



Ballast to Lamp Distance (BTL) = 2 feet
Temp Rating: 105°C



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

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

10/24/01

Appendix I:
Mechanical Equipment Load Schedule

MECHANICAL EQUIPMENT SCHEDULE

<u>TAG</u>	<u>DESCRIPTION</u>	<u>PANEL</u>	<u>LOAD AS ON DRAWINGS</u>	<u>MOTOR FULL LOAD CURRENT</u>	<u>VOLTAGE</u>	<u>PHASES</u>	<u>POWER FACTOR</u>	<u>LOAD IN KW</u>
AC-1A	Evaporator (Indoor AC)	EQD2B	1 HP	16	120	1	0.85	1.63
AC-1B	Condenser (Outdoor AC)	EQD2P	1 HP	8.8	208	2	0.85	1.56
AHU-1	Air Handling Unit	D4P	100 HP & 15 HP	155	480	3	0.85	109.53
AHU-2	Air Handling Unit	D4P	100 HP & 15 HP	155	480	3	0.85	109.53
AHU-3	Air Handling Unit	EQD4B	25 HP	34	480	3	0.85	24.03
B-1	Boiler	EQD4P	2 HP	3.4	480	3	0.85	2.40
CP-1	Condensate Pump	EQD4B	7.5 HP	11	480	3	0.85	7.77
CP-2	Condensate Pump	EQD4B	0.75 HP	1.6	480	3	0.7	0.93
CP-3	Condensate Pump	EQD4P	0.75 HP	1.6	480	3	0.7	0.93
CT-4	Cooling Tower	D4P	30 HP	40	480	3	0.88	29.26
CT-H	Cooling Tower Heaters	D4P	10 KW & 10 KW	-	480	3	1	20.00
CUH-1	Cabinet Unit Heater	GP1S	0.2 HP	5	120	1	1	0.60
CUH-2	Cabinet Unit Heater	GP1N	0.2 HP	5	120	1	0.7	0.42
CUH-3	Cabinet Unit Heater	GPBA	0.2 HP	5	120	1	0.7	0.42
CUH-4	Cabinet Unit Heater	GPBB	0.1 HP	2.5	120	1	0.7	0.21
CUH-5	Cabinet Unit Heater	GPBA	0.1 HP	2.5	120	1	0.7	0.21
CUH-6	Cabinet Unit Heater	GP3N	0.1 HP	2.5	120	1	0.7	0.21
EF-1A	Exhaust Fan	EQD4P	25 HP	34	480	3	0.8	22.61
EF-1B	Exhaust Fan	D4P	25 HP	34	480	3	0.8	22.61
EF-2A	Exhaust Fan	EQD4P	25 HP	34	480	3	0.8	22.61
EF-2B	Exhaust Fan	D4P	25 HP	34	480	3	0.8	22.61
EF-3A	Exhaust Fan	EQD4P	20 HP	27	480	3	0.8	17.96
EF-3B	Exhaust Fan	EQD4P	20 HP	27	480	3	0.8	17.96
F-4A	Greenhouse Fan	EQ3SA	0.05 HP	1.25	120	1	0.8	0.12
F-4B	Greenhouse Fan	EQ3SA	0.05 HP	1.25	120	1	0.8	0.12
F-4C	Greenhouse Fan	EQ3SA	0.05 HP	1.25	120	1	0.8	0.12
F-4D	Greenhouse Fan	EQ3SA	0.05 HP	1.25	120	1	0.8	0.12
F-4E	Greenhouse Fan	EQ3SA	0.05 HP	1.25	120	1	0.8	0.12
F-4F	Greenhouse Fan	EQ3SA	0.05 HP	1.25	120	1	0.8	0.12
F-5A	Fan	GP2N	0.25 HP	5.8	120	1	0.8	0.56
F-5B	Fan	GP3N	0.25 HP	5.8	120	1	0.8	0.56
F-5C	Fan	GP1N	0.25 HP	5.8	120	1	0.8	0.56
F-6	Fan	V2BA	150W	-	120	1	0.8	0.12
F-7	Fan	GP3S	0.14 HP	4	120	1	0.8	0.38
F-8	Fan	GPBB	0.25 HP	5.8	120	1	0.8	0.56
F-9	Chemical Exhaust Fan	EQ3SA	0.17 HP	4.4	120	1	0.8	0.42

UH-1A	Unit Heater	GP3N	0.05 HP	1.25	120	1	0.85	0.13
UH-1B	Unit Heater	GP3N	0.05 HP	1.25	120	1	0.85	0.13
UH-1C	Unit Heater	GPBA	0.05 HP	1.25	120	1	0.85	0.13
UH-2	Unit Heater	GPBA	0.05 HP	1.25	120	1	0.85	0.13
UH-3	Unit Heater	GPBA	9W	-	120	1	0.85	0.01
PP-1	Circulation Pump	GPBB	0.08 HP	2.2	120	1	0.7	0.18
PP-2	Circulation Pump	GPBB	0.17 HP	4.4	120	1	0.7	0.37
PP-2A	Circulation Pump	GPBB	0.08 HP	2.2	120	1	0.7	0.18
PP-3	Booster Pump	EQD4B	5 HP & 5 HP	15.2	480	3	0.85	10.74
PP-4	Air Compressor	EQD4B	15 HP & 15 HP	42	480	3	0.85	29.68
PP-6	Elevator Pump	EQD2B	0.5 HP	9.8	120	1	0.7	0.82

PLUMBING EQUIPMENT SCHEDULE

<u>TAG</u>	<u>DESCRIPTION</u>	<u>PANEL</u>	<u>LOAD AS ON DRAWINGS</u>	<u>MOTOR FULL LOAD CURRENT</u>	<u>VOLTAGE</u>	<u>PHASES</u>	<u>POWER FACTOR</u>	<u>LOAD IN KW</u>
FP-1	Fire Pump	FPSE	30 HP	40	480	3	0.85	28.27
JP-1	Jockey Pump	FPSE	2 HP	3.4	480	3	0.85	2.40
P-22	Pump	EQD4B	15 HP	21	480	3	0.85	14.84
P-23	Standby Pump	D4BB	15 HP	21	480	3	0.85	14.84
P-24	Pump	EQD4B	15 HP	21	480	3	0.85	14.84
P-25	Standby Pump	D4BB	15 HP	21	480	3	0.85	14.84
P-26	Pump	D4P	5 HP	7.6	480	3	0.85	5.37
P-27	Pump	D4P	5 HP	7.6	480	3	0.85	5.37
P-28	Pump	D4P	5 HP	7.6	480	3	0.85	5.37
P-29	Pump	D4P	5 HP	7.6	480	3	0.85	5.37
P-30	Pump	D4BA	5 HP	7.6	480	3	0.85	5.37
P-31	Pump	D4BA	5 HP	7.6	480	3	0.85	5.37
PP-5	Special Waste Ejector	EQD4B	1.5 HP & 1.5 HP	6	480	3	0.85	4.24
PP-7	Purified Water Pumps	D4BB	2 HP & 2HP	6.8	480	1	0.85	2.77
WH-1	Water Heater	GPBB	20 A	-	120	1	1	2.40
WH-2	Water Heater	GPBB	20 A	-	120	1	1	2.40

ARCHITECTURAL EQUIPMENT SCHEDULE

<u>TAG</u>	<u>DESCRIPTION</u>	<u>PANEL</u>	<u>LOAD AS ON DRAWINGS</u>	<u>MOTOR FULL LOAD CURRENT</u>	<u>VOLTAGE</u>	<u>PHASES</u>	<u>POWER FACTOR</u>	<u>LOAD IN KW</u>
ELEV	Elevator	SWB-1	200A	-	600	3P	1	120.00

Note: Motor Full Load Currents are referenced from Tables 430.248 and 430.250 in the NEC.

Appendix J:
Service Entrance Size Calculations

DIMMING PANELS - LIGHTING LOADS

<u>PANEL</u>	<u>ROOM</u>	<u>ZONE</u>	<u>DESCRIPTION</u>	<u>VOLT.</u>	<u>LOAD PER FIXTURE</u>	<u>NUMBER OF FIXTURES</u>	<u>LOAD (KW)</u>	<u>P.F</u>	<u>DEMAND LOAD (VA)</u>
DM2P	Atrium	a	Track Lighting Vestible (H4A)	120	200	6	1200	1	1200
DM4P	Atrium	aa	Downlights (A17)	277	37	41	1517	0.98	1548
DM2P	Atrium	b	Track Lighting (H4)	120	200	2	400	1	400
DM4P	Atrium	bb	Wall Washers (A18)	277	37	30	1110	0.98	1133
EDM2P	Atrium	c	Halogen Downlights South (G12)	120	225	3	675	1	675
EDM4P	Atrium	cc	Downlights / Egress (A17)	277	37	26	962	0.98	982
EDM2P	Atrium	d	Halogen Downlights North (G12)	120	250	3	750	1	750
DM2P	Atrium	e	Cold Cathode Cove Light (C1)	120	6.5 W/FT	151 FT	1000	1	1000
EDM2P	Atrium	f	Decorative Pendant (F3)	120	525	2	1050	0.98	1071
EDM4P	Atrium	g	Down Light Entry Vestible (A19)	277	50	4	200	0.99	202
DM2P	Atrium	h	Track Lighting (G1)	120	300	3	900	1	900
DM2P	Atrium	j	Track Lighting (G1)	120	300	2	600	1	600
DM2P	Atrium	k	Track Lighting (G1)	120	300	3	900	1	900
DM2P	Atrium	l	Track Lighting (G1)	120	300	3	900	1	900
DM2P	Atrium	m	Track Lighting (G1)	120	300	4	1200	1	1200
DM2P	Atrium	n	Track Lighting (G1)	120	300	3	900	1	900
DM2P	Atrium	p	Track Lighting (G1)	120	300	3	900	1	900
DM2P	Atrium	q	Track Lighting (G1)	120	300	3	900	1	900
DM2P	Atrium	r	Track Lighting (G1)	120	300	3	900	1	900
DM2P	Atrium	s	Track Lighting (G1)	120	300	3	900	1	900
DM2P	Atrium	t	Track Lighting (G1)	120	300	3	900	1	900
DM2P	Atrium	v	Track Lighting (G1)	120	300	2	600	1	600
DM2P	Atrium	w	Track Lighting (G13)	120	75	13	975	1	975
DM2P	Humanities Commons	a	Decorative Chandelier (F4)	120	280	3	840	1	840
EDM4P	Humanities Commons	b	Adjustable Down Light (G2)	277	75	16	1200	1	1200
DM4P	Humanities Commons	c	Wall Washer (G5)	277	75	10	750	1	750
DM2P	Humanities Commons	d	Wall Sconce (D1)	120	80	5	400	1	400
DM4P	Humanities Commons	e	Adjustable Accent Light (G6)	277	75	2	150	1	150
DM2P	Humanities Commons	f	Picture Lights (D2/D2A)	120	80/160	2/4	800	1	800
DM4P	Humanities Commons	g	Adjustable Accent Light (G6)	277	75	2	150	1	150
DM4P	Lecture Hall	a	Cove Lighting (B3)	277	15 W/FT	34 FT	510	0.94	543
DM4P	Lecture Hall	b	Cove Lighting (B3)	277	15 W/FT	42 FT	630	0.94	670
DM4P	Lecture Hall	c	Cove Lighting (B3)	277	15 W/FT	50 FT	750	0.94	798
DM4P	Lecture Hall	d	Cove Lighting (B3)	277	15 W/FT	51 FT	765	0.94	814
EDM4P	Lecture Hall	e	Recessed Fluorescent Fixtures (A4A)	277	64	6	384	0.99	388

DIMMING PANELS - LIGHTING LOADS

<u>PANEL</u>	<u>ROOM</u>	<u>ZONE</u>	<u>DESCRIPTION</u>	<u>VOLT.</u>	<u>LOAD PER FIXTURE</u>	<u>NUMBER OF FIXTURES</u>	<u>LOAD (KW)</u>	<u>P.F</u>	<u>DEMAND LOAD (VA)</u>
EDM4P	Lecture Hall	f	Recessed Fluorescent Fixtures (A4A)	277	64	18	1152	0.99	1164
EDM4P	Lecture Hall	g	Recessed Fluorescent Fixtures (A4A)	277	64	17	1088	0.99	1099
EDM4P	Lecture Hall	h	Step Lighting (D5)	277	15	12	180	0.99	182
EDM4P	Lecture Hall	j	Ramp Lighting (W5)	277	9	4	36	0.99	36
EDM4P	Lecture Hall	k	Down Light Vestible (A17B)	277	34	2	68	0.98	69
EDM4P	Lecture Hall	l	Down Light Egress (A17B)	277	34	2	68	0.98	69
DM4P	Lecture Hall	m	Down Light Rear (A17B)	277	34	7	238	0.98	243
DM4P	Lecture Hall	n	Wall Wash South (A18B)	277	34	5	170	0.98	173
DM4P	Lecture Hall	p	Wall Wash North (A18B)	277	34	9	306	0.98	312
DM2P	Lecture Hall	q	Adjustable Down Light North (G8)	120	225	1	225	1	225
DM2P	Lecture Hall	r	Adjustable Down Light South (G8)	120	225	1	225	1	225
DM2P	Lecture Hall	s	Halogen Downlight (G9)	120	75	1	75	1	75
DM2P	Lecture Hall	t	Halogen Downlight (G9)	120	75	1	75	1	75
DM2P	Lecture Hall	u	Adjustable Halogen (G10)	120	75	1	75	1	75
DM2P	Lecture Hall	v	Adjustable Halogen (G10)	120	75	1	75	1	75
EDM2PV	Vivarium	a	R4A	120	70	4	280	0.98	286
EDM2PV	Vivarium	b	R3A (Two Lamps Each Fixture)	120	70	7	490	0.98	500
EDM2PV	Vivarium	c	R3A (One Lamp Each Fixture)	120	35	7	245	0.98	250
EDM2PV	Vivarium	d	R3A (Two Lamps Each Fixture)	120	70	5	350	0.98	357
EDM2PV	Vivarium	e	R3A (One Lamp Each Fixture)	120	35	5	175	0.98	179
EDM2PV	Vivarium	f	F3	120	80	11	880	0.98	898
EDM2PV	Vivarium	g	F3	120	80	11	880	0.98	898
EDM2PV	Vivarium	h	S1 (Every Other Lamp)	120	75	16	1200	1	1200
EDM2PV	Vivarium	j	S1 (Every Other Lamp)	120	75	15	1125	1	1125
EDM2PV	Vivarium	k	F3	120	80	13	1040	0.98	1061
EDM2PV	Vivarium	m	F3	120	80	13	1040	0.98	1061
EDM2PV	Vivarium	n	S1 (Every Other Lamp)	120	75	16	1200	1	1200
EDM2PV	Vivarium	p	S1 (Every Other Lamp)	120	75	15	1125	1	1125
TOTAL VA									42176

LIGHTING PANELS - LOADING

<u>TAG</u>	<u>VOLTAGE</u>	<u>MAIN (A)</u>	<u>MULTIPLIER</u>	<u>DEMAND LOAD (VA)</u>
L4B	480	60	0.65	18720
V4BA	480	60	0.65	18720
E4B	480	60	0.65	18720
L1NA	480	60	0.65	18720
L1SA	480	60	0.65	18720
L2NA	480	60	0.65	18720
L2SA	480	60	0.65	18720
L3NA	480	60	0.65	18720
L3SA	480	60	0.65	18720
E4P	480	100	0.65	31200
TOTAL VA				199680

RECEPTACLE PANELS - LOADING

<u>TAG</u>	<u>VOLTAGE</u>	<u>MAIN (A)</u>	<u>MULTIPLIER</u>	<u>DEMAND LOAD (VA)</u>
V2BA	208	150	0.65	20280
GPBA	208	100	0.65	13520
GPBB	208	100	0.65	13520
GP1N	208	100	0.65	13520
R1NA	208	225	0.65	30420
R1NB	208	60	0.65	8112
R1NC	208	60	0.65	8112
R1ND	208	60	0.65	8112
EQ1S	208	60	0.65	8112
GP1S	208	100	0.65	13520
R1SA	208	60	0.65	8112
R1SB	208	60	0.65	8112
R1SC	208	60	0.65	8112
R1SD	208	60	0.65	8112
GP2N	208	125	0.65	16900
R2NA	208	60	0.65	8112
R2NB	208	150	0.65	20280
R2NC	208	150	0.65	20280
EQ2S	208	225	0.65	30420
GP2S	208	150	0.65	20280
R2SA	208	150	0.65	20280
R2SB	208	60	0.65	8112
GP3N	208	100	0.65	13520
R3NA	208	60	0.65	8112
R3NB	208	150	0.65	20280
R3NC	208	150	0.65	20280
EQ3S	208	225	0.65	30420
EQ3SA	208	100	0.65	13520
GP3S	208	100	0.65	13520
R3SA	208	125	0.65	16900
R3SB	208	150	0.65	20280
R3SC	208	225	0.65	30420
R3SD	208	60	0.65	8112
R3SE	208	100	0.65	13520
E2P	208	60	0.65	8112
EQ2P	208	400	0.65	54080
TOTAL VA				585416

MECHANICAL EQUIPMENT SCHEDULE

<u>TAG</u>	<u>DESCRIPTION</u>	<u>CURR.</u>	<u>VOLT.</u>	<u>PHASES</u>	<u>P. F.</u>	<u>LOAD (KW)</u>	<u>LOAD (KVA)</u>	<u>DEMAND FACTOR</u>	<u>DEMAND LOAD</u>
AC-1A	Evaporator (Indoor AC)	16	120	1	0.85	1.63	1.92	0.8	1.536
AC-1B	Condenser (Outdoor AC)	8.8	208	2	0.85	1.56	1.8304	0.8	1.46432
AHU-1	Air Handling Unit	155	480	3	0.85	109.53	128.865	0.8	103.0917
AHU-2	Air Handling Unit	155	480	3	0.85	109.53	128.865	0.8	103.0917
AHU-3	Air Handling Unit	34	480	3	0.85	24.03	28.2671	0.8	22.61366
B-1	Boiler	3.4	480	3	0.85	2.40	2.82671	0.8	2.261366
CP-1	Condensate Pump	11	480	3	0.85	7.77	9.14523	0.8	7.316183
CP-2	Condensate Pump	1.6	480	3	0.7	0.93	1.33022	0.8	1.064172
CP-3	Condensate Pump	1.6	480	3	0.7	0.93	1.33022	0.8	1.064172
CT-4	Cooling Tower	40	480	3	0.88	29.26	33.2554	0.8	26.6043
CT-H	Cooling Tower Heaters	-	480	3	1	20.00	20	0.8	16
CUH-1	Cabinet Unit Heater	5	120	1	1	0.60	0.6	0.8	0.48
CUH-2	Cabinet Unit Heater	5	120	1	0.7	0.42	0.6	0.8	0.48
CUH-3	Cabinet Unit Heater	5	120	1	0.7	0.42	0.6	0.8	0.48
CUH-4	Cabinet Unit Heater	2.5	120	1	0.7	0.21	0.3	0.8	0.24
CUH-5	Cabinet Unit Heater	2.5	120	1	0.7	0.21	0.3	0.8	0.24
CUH-6	Cabinet Unit Heater	2.5	120	1	0.7	0.21	0.3	0.8	0.24
EF-1A	Exhaust Fan	34	480	3	0.8	22.61	28.2671	0.8	22.61366
EF-1B	Exhaust Fan	34	480	3	0.8	22.61	28.2671	0.8	22.61366
EF-2A	Exhaust Fan	34	480	3	0.8	22.61	28.2671	0.8	22.61366
EF-2B	Exhaust Fan	34	480	3	0.8	22.61	28.2671	0.8	22.61366
EF-3A	Exhaust Fan	27	480	3	0.8	17.96	22.4474	0.8	17.9579
EF-3B	Exhaust Fan	27	480	3	0.8	17.96	22.4474	0.8	17.9579
F-4A	Greenhouse Fan	1.25	120	1	0.8	0.12	0.15	0.8	0.12
F-4B	Greenhouse Fan	1.25	120	1	0.8	0.12	0.15	0.8	0.12
F-4C	Greenhouse Fan	1.25	120	1	0.8	0.12	0.15	0.8	0.12
F-4D	Greenhouse Fan	1.25	120	1	0.8	0.12	0.15	0.8	0.12
F-4E	Greenhouse Fan	1.25	120	1	0.8	0.12	0.15	0.8	0.12
F-4F	Greenhouse Fan	1.25	120	1	0.8	0.12	0.15	0.8	0.12
F-5A	Fan	5.8	120	1	0.8	0.56	0.696	0.8	0.5568
F-5B	Fan	5.8	120	1	0.8	0.56	0.696	0.8	0.5568
F-5C	Fan	5.8	120	1	0.8	0.56	0.696	0.8	0.5568
F-6	Fan	-	120	1	0.8	0.12	0.15	0.8	0.12
F-7	Fan	4	120	1	0.8	0.38	0.48	0.8	0.384
F-8	Fan	5.8	120	1	0.8	0.56	0.696	0.8	0.5568
F-9	Chemical Exhaust Fan	4.4	120	1	0.8	0.42	0.528	0.8	0.4224
UH-1A	Unit Heater	1.25	120	1	0.85	0.13	0.15	0.8	0.12
UH-1B	Unit Heater	1.25	120	1	0.85	0.13	0.15	0.8	0.12
UH-1C	Unit Heater	1.25	120	1	0.85	0.13	0.15	0.8	0.12
UH-2	Unit Heater	1.25	120	1	0.85	0.13	0.15	0.8	0.12
UH-3	Unit Heater	-	120	1	0.85	0.01	0.01059	0.8	0.008471
PP-1	Circulation Pump	2.2	120	1	0.7	0.18	0.264	0.8	0.2112
PP-2	Circulation Pump	4.4	120	1	0.7	0.37	0.528	0.8	0.4224
PP-2A	Circulation Pump	2.2	120	1	0.7	0.18	0.264	0.8	0.2112
PP-3	Booster Pump	15.2	480	3	0.85	10.74	12.637	0.8	10.10963
PP-4	Air Compressor	42	480	3	0.85	29.68	34.9181	0.8	27.93452
PP-6	Elevator Pump	9.8	120	1	0.7	0.82	1.176	0.8	0.9408

PLUMBING EQUIPMENT SCHEDULE

<u>TAG</u>	<u>DESCRIPTION</u>	<u>CURR.</u>	<u>VOLT.</u>	<u>PHASES</u>	<u>P. F.</u>	<u>LOAD (KW)</u>	<u>LOAD (KVA)</u>	<u>DEMAND FACTOR</u>	<u>DEMAND LOAD</u>
FP-1	Fire Pump	40	480	3	0.85	28.27	33.2554	0	0
JP-1	Jockey Pump	3.4	480	3	0.85	2.40	2.82671	0	0
P-22	Pump	21	480	3	0.85	14.84	17.4591	0.8	13.96726
P-23	Standby Pump	21	480	3	0.85	14.84	17.4591	0.8	13.96726
P-24	Pump	21	480	3	0.85	14.84	17.4591	0.8	13.96726
P-25	Standby Pump	21	480	3	0.85	14.84	17.4591	0.8	13.96726
P-26	Pump	7.6	480	3	0.85	5.37	6.31852	0.8	5.054817
P-27	Pump	7.6	480	3	0.85	5.37	6.31852	0.8	5.054817
P-28	Pump	7.6	480	3	0.85	5.37	6.31852	0.8	5.054817
P-29	Pump	7.6	480	3	0.85	5.37	6.31852	0.8	5.054817
P-30	Pump	7.6	480	3	0.85	5.37	6.31852	0.8	5.054817
P-31	Pump	7.6	480	3	0.85	5.37	6.31852	0.8	5.054817
PP-5	Special Waste Ejector	6	480	3	0.85	4.24	4.98831	0.8	3.990645
PP-7	Purified Water Pumps	6.8	480	1	0.85	2.77	3.264	0.8	2.6112
WH-1	Water Heater	0.5	120	1	1	0.06	0.06	0.8	0.048
WH-2	Water Heater	0.5	120	1	1	0.06	0.06	0.8	0.048

ARCHITECTURAL EQUIPMENT SCHEDULE

<u>TAG</u>	<u>DESCRIPTION</u>	<u>CURR.</u>	<u>VOLT.</u>	<u>PHASES</u>	<u>P. F.</u>	<u>LOAD (KW)</u>	<u>LOAD (KVA)</u>	<u>DEMAND FACTOR</u>	<u>DEMAND LOAD</u>
ELEV	Elevator	-	600	3P	1	120.00	120	0	0

TOTAL KVA 551.72552
TOTAL VA 551725.52

Method 1 - Square Foot Method

Building Area: square feet

Building Type: College Building
 College Laboratory

Voltage: V

Loading Information:

College Building VA / sq. ft
College Laboratory VA / sq. ft

Calculations:

Allowance for Building Portion VA
Allowance for Lab Portion VA
15% Future Use/Growth VA
Total VA VA

Service Entrance Size A

Switchboard Size A

Method 2 - Square Foot Method & Actual Loading

Building Area: square feet

Building Type: School Building

Voltage: V

Loading Information:

Lighting	<input type="text" value="3"/> VA / sq. ft
Receptacles	<input type="text" value="1"/> VA / sq. ft
Mechanical	<input type="text" value="7"/> VA / sq. ft

Demand Factors

Lighting	<input type="text" value="1"/>	
Receptacles	<input type="text" value="1"/> first 10,000 VA	<input type="text" value="0.5"/> all remaining VA
Mechanical	<input type="text" value="0.8"/>	

Calculations:

Allowance for Lighting	<input type="text" value="312000"/> VA
Allowance for Receptacles	<input type="text" value="57000"/> VA
Allowance for Mechanical	<input type="text" value="582400"/> VA
15% Future Use/Growth	<input type="text" value="142710"/> VA
Total VA	<input type="text" value="1094110"/> VA

Service Entrance Size A

Switchboard Size A

Method 3 - Actual Loading

Voltage: V

Loading Information:

Dimming Panels	<input type="text" value="42176"/>	VA
Other Lighting Panels	<input type="text" value="199680"/>	VA
Receptacle Panels	<input type="text" value="585416"/>	VA
Mechanical	<input type="text" value="845738.98"/>	VA

Demand Factors

Lighting	<input type="text" value="1"/>		
Receptacles	<input type="text" value="1"/>	first 10,000 VA	<input type="text" value="0.5"/> all remaining VA
Mechanical	<input type="text" value="0.8"/>	most loads	<input type="text" value="0"/> elevator, fire and jockey pump

Calculations:

Demand Load - Lighting	<input type="text" value="241856"/>	VA
Demand Load - Receptacles	<input type="text" value="297708"/>	VA
Demand Load - Mechanical	<input type="text" value="551726"/>	VA
15% Future Use/Growth	<input type="text" value="163693"/>	VA
Total VA	<input type="text" value="1254983"/>	VA

Service Entrance Size A

Switchboard Size A

Appendix K:
Utility Rate Structure

**RATE SCHEDULE LP-4
LARGE GENERAL SERVICE AT 12,470 VOLTS**

(C)

APPLICATION RATE SCHEDULE LP-4

This Rate Schedule is for large general service supplied from available lines of 12,470 volts when the customer furnishes and maintains all equipment necessary to transform the energy from line voltage. New applications with voltage levels higher or lower than 12,470 volts will not be accepted after January 1, 2005.

NET MONTHLY RATE

Distribution Charge

- \$2.312 per kilowatt for all kilowatts of the Billing KW.
- 0.000 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.000 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.000 cts. per KWH for all additional KWH.

(D)

Competitive Transition Charge (Effective 1-1-05 through 12-31-05)

- \$0.231 per kilowatt for all kilowatts of the Billing KW.
- 0.298 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.231 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.201 cts. per KWH for all additional KWH.

Competitive Transition Charge (Effective 1-1-06 through 12-31-06)

- \$0.238 per kilowatt for all kilowatts of the Billing KW.
- 0.300 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.231 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.202 cts. per KWH for all additional KWH.

Competitive Transition Charge (Effective 1-1-07 through 12-31-07)

- \$0.232 per kilowatt for all kilowatts of the Billing KW.
- 0.290 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.224 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.195 cts. per KWH for all additional KWH.

Competitive Transition Charge (Effective 1-1-08 through 12-31-08)

- \$0.139 per kilowatt for all kilowatts of the Billing KW.
- 0.172 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.133 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.116 cts. per KWH for all additional KWH.

Competitive Transition Charge (Effective 1-1-09 through 12-31-09)

- \$0.809 per kilowatt for all kilowatts of the Billing KW.
- 1.012 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.781 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.682 cts. per KWH for all additional KWH.

(Continued)

RATE SCHEDULE LP-4 (CONTINUED)

(C)

Intangible Transition Charge (Effective 1-1-05 through 12-31-05)

- \$0.729 per kilowatt for all kilowatts of the Billing KW.
- 0.927 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.715 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.624 cts. per KWH for all additional KWH.

Intangible Transition Charge (Effective 1-1-06 through 12-31-06)

- \$0.717 per kilowatt for all kilowatts of the Billing KW.
- 0.873 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.673 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.587 cts. per KWH for all additional KWH.

Intangible Transition Charge (Effective 1-1-07 through 12-31-07)

- \$0.679 per kilowatt for all kilowatts of the Billing KW.
- 0.848 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.654 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.570 cts. per KWH for all additional KWH.

(D)
(D)
(D)
(D)

Intangible Transition Charge (Effective 1-1-08 through 12-31-08)

- \$0.744 per kilowatt for all kilowatts of the Billing KW.
- 0.925 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.714 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.623 cts. per KWH for all additional KWH.

Intangible Transition Charge (Effective 1-1-09 through 12-31-09)

- \$0.000 per kilowatt for all kilowatts of the Billing KW.
- 0.000 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 0.000 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 0.000 cts. per KWH for all additional KWH.

The Company will provide capacity (KW) and energy (KWH) under this Rate Schedule for customers who receive Basic Utility Supply Service from the Company.

Capacity and Energy Charge (Effective 1-1-05 through 12-31-05)

- \$3.753 per kilowatt for all kilowatts of the Billing KW.
- 4.513 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 3.397 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 2.917 cts. per KWH for all additional KWH.

Capacity and Energy Charge (Effective 1-1-06 through 12-31-06)

- \$4.006 per kilowatt for all kilowatts of the Billing KW.
- 4.850 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW.
- 3.650 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW.
- 3.138 cts. per KWH for all additional KWH.

(Continued)

RATE SCHEDULE LP-4 (CONTINUED)

(C)

Capacity and Energy Charge (Effective 1-1-07 through 12-31-07)

- \$4.046 per kilowatt for all kilowatts of the Billing KW. **(I)**
- 4.908 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW. **(I)**
- 3.696 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW. **(I)**
- 3.175 cts. per KWH for all additional KWH. **(I)**

Capacity and Energy Charge (Effective 1-1-08 through 12-31-08)

- \$4.107 per kilowatt for all kilowatts of the Billing KW. **(I)**
- 4.987 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW. **(I)**
- 3.758 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW. **(I)**
- 3.229 cts. per KWH for all additional KWH **(I)**

Capacity and Energy Charge (Effective 1-1-09 through 12-31-09)

- \$4.198 per kilowatt for all kilowatts of the Billing KW. **(I)**
- 5.095 cts. per KWH for the first 200 KWH per kilowatt of the Billing KW. **(I)**
- 3.841 cts. per KWH for the next 200 KWH per kilowatt of the Billing KW. **(I)**
- 3.302 cts. per KWH for all additional KWH. **(I)**

Transmission Charge

(C)

The Company will provide and charge for transmission service consistent with the PJM Open Access Transmission Tariff approved or accepted by the Federal Energy Regulatory Commission for customers who receive Basic Utility Supply Service from the Company unless such customers obtain transmission service from another provider. The Transmission Service Charge included in this Tariff applies to all kWh billed under this Rate Schedule.

MONTHLY MINIMUMS

(C)

The Minimum Billing Demand is 25 KW.

The Monthly Minimum Distribution Charge is 25 KW times the demand step of the effective Distribution Charge. The Monthly Minimum Competitive Transition Charge is 25 KW times the demand step of the effective Competitive Transition Charge. The Monthly Minimum Intangible Transition Charge is 25 KW times the demand step of the effective Intangible Transition Charge. The Monthly Minimum Capacity and Energy Charge is 25 KW times the demand step of the effective Capacity and Energy Charge.

Monthly Minimums apply to services provided by the Company.

BILLING KW

The Billing KW is the average number of kilowatts supplied during the 15 minute period of maximum use during the current billing period.

(Continued)

RATE SCHEDULE LP-4 (CONTINUED)

(C)

BILLING KW (Continued)

Time-of-Day metering and billing is available on request for an additional charge of \$13.95 per month for a minimum period of one year. The Billing KW applicable to the charges under this Rate Schedule is the average number of kilowatts supplied during the 15 minute period of maximum use during the on-peak hours of the current billing period. For new applications, this provision is limited to customers of the Company who have not had the opportunity to purchase capacity and energy from their choice of electric generation supplier pursuant to the enrollment procedures contained in the commission's order at Docket Nos. M-00960890F.0014 and M-00960890F.0015. No new applications will be accepted after January 1, 2000.

(D)

ON-PEAK HOURS

On-peak hours for billing purposes are 7 a.m. to 3 p.m., 8 a.m. to 4 p.m., or 9 a.m. to 5 p.m. local time, at the option of the customer, Mondays to Fridays inclusive except, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. The Company's system on-peak period is 7 a.m. to 9 p.m. local time.

INDUSTRIAL DEVELOPMENT INITIATIVES RIDER

The Industrial Development Initiatives Rider included in this Tariff applies to eligible customers served under this Rate Schedule, except for customers served under the Economic Development Initiatives Rider.

ECONOMIC DEVELOPMENT INITIATIVES RIDER

The Economic Development Initiatives Rider included in this Tariff applies to eligible customers served under this Rate Schedule, except for customers served under the Industrial Development Initiatives Rider.

OFF-PEAK SPACE CONDITIONING AND WATER HEATING (Effective 1-1-05)

For customers served under this Rate Schedule, off-peak energy for storage space conditioning and/or water heating may be supplied exclusively through a separate submeter and billed separately at a charge of \$14.65 per month, plus a Distribution Charge of 0.387 cts. per KWH, plus the following Competitive Transition Charge, Intangible Transition Charge and, for customers who receive Basic Utility Supply Service from the Company, the following Capacity and Energy Charge, with a monthly minimum charge of \$14.65. Any billing KW resulting from usage during on-peak hours is billed at Rate Schedule charges. For new applications, this provision is limited to customers of the Company who have not had the opportunity to purchase capacity and energy from their choice of electric generation supplier pursuant to the enrollment procedures contained in the commission's order at Docket Nos. M-00960890F.0014 and M-00960890F.0015. No new applications will be accepted after January 1, 2000.

(Continued)

RATE SCHEDULE LP-4 (CONTINUED)

(C)

<u>Effective</u>	<u>Competitive Transition Charge</u>	<u>Intangible Transition Charge</u>	<u>Capacity and Energy Charge</u>
1-1-05 through 12-31-05	0.172 cts. per KWH (I)	0.850 cts. per KWH (I)	2.004 cts. per KWH (I)
1-1-06 through 12-31-06	0.173 cts. per KWH (I)	0.843 cts. per KWH (I)	2.022 cts. per KWH (I)
1-1-07 through 12-31-07	0.165 cts. per KWH (I)	0.806 cts. per KWH (I)	2.073 cts. per KWH (I)
1-1-08 through 12-31-08	0.147 cts. per KWH (I)	0.786 cts. per KWH (I)	2.141 cts. per KWH (I)
1-1-09 through 12-31-09	0.860 cts. per KWH (I)	0.000 cts. per KWH	2.233 cts. per KWH (I)

Transmission Charge

(C)

The Company will provide and charge for transmission service consistent with the PJM Open Access Transmission Tariff approved or accepted by the Federal Energy Regulatory Commission for customers who receive Basic Utility Supply Service from the Company unless such customers obtain transmission service from another provider. The Transmission Service Charge included in this Tariff applies to all kWh billed under this Rate Schedule.

Service through the separate meter may be used between the off-peak hours of 7 p.m. to 7 a.m. local time, Mondays to Fridays inclusive, and all day Saturday, Sunday and the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

COMPETITIVE TRANSITION CHARGE RECONCILIATION RIDER

The Competitive Transition Charge Reconciliation Rider included in this Tariff applies to the Competitive Transition Charges under this Rate Schedule.

INTANGIBLE TRANSITION CHARGE RECONCILIATION RIDER

The Intangible Transition Charge Reconciliation Rider included in this Tariff applies to the Intangible Transition Charges under this Rate Schedule.

SUSTAINABLE ENERGY FUND RIDER

The Sustainable Energy Fund Rider included in this Tariff applies to the Distribution Charges under this Rate Schedule.

METERING AND BILLING CREDIT RIDER

The Metering and Billing Credit Rider included in this Tariff applies to the Distribution Charges under this Rate Schedule.

(C)

DEMAND SIDE INITIATIVE RIDER (EXPERIMENTAL)

The Demand Side Initiative Rider included in this Tariff is available to eligible customers served under this Rate Schedule.

(Continued)

(I) Indicates Increase **(D)** Indicates Decrease **(C)** Indicates Change

RATE SCHEDULE LP-4 (CONTINUED)

(C)

GENERATION RATE ADJUSTMENT RIDER

The Generation Rate Adjustment Rider included in this Tariff is available to eligible customers served under this Rate Schedule.

STATE TAX ADJUSTMENT SURCHARGE

The State Tax Adjustment Surcharge included in this Tariff is applied to charges under this Rate Schedule, except for charges under the Generation Rate Adjustment Rider.

PAYMENT

The above net rate applies when bills are paid on or before the due date specified on the bill, which is not less than 15 days from the date bill is mailed. When not so paid, the gross rate applies which is the above net rate plus 5% on the first \$200.00 of the then unpaid balance of the monthly bill and 2% on the remainder thereof.

CONTRACT PERIOD

Service under this Rate Schedule is for an initial term of one (1) year from the date service is first rendered, unless the Company and the customer mutually agree to a different term in the contract for service.