North Instructional Building
Bronx Community College
Bronx, NY

# Technical Report 1b

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9/9/13

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# Part 1 – Electrical Systems and Scope of Work

1. Perform a Preliminary electrical load calculation based on the building type, per square foot NEC lighting and receptacle loads and demand factors, air condition and heating fuel sources and special equipment anticipated. Additional per square foot load information for HAVC systems will need to be researched and identified.

| | |
|---|---|
| FLA SWBD | 1667 A |
| FLA to kVA @ 480V x | 0.831 |
| Total Load | 1386 kVA |
| Building Area | 98,600 sqft |
| Calculated load/sqft | 14.1 W/sqft |
| **Estimated load/sqft** | **16 W/sqft** |

2. Identify the power company serving the building location.
- Serviced by campus power grid

3. Make a preliminary rate schedule selection and identify the service voltage.
- N/Z

4. Select the preliminary Building Utilization Voltage and what voltage would serve each of the following loads:

| Load | Voltage | Phase |
|---|---|---|
| **Lighting** | 277 V | Single phase |
| **Receptacle** | 120 V | Single phase |
| **Mechanical** | 480 V | 3 phase |
| **Elevators** | 480 V | 3 phase |

5. Identify Emergency Power Requirements based on the IBC and your building use and occupancy, and estimate the loads and preliminary voltage and fuel source selection.

- Building Classification – City University – W5
- IBC
  - Emergency Power - Exit signs, Means of egress illumination
  - Standby Power – Elevators, Smoke control systems

6. Identify any potential Special Occupancy Requirements based on Chapter 5 of the NEC (simply list them based on the table of contents).

- N/A

7. Identify any potential Special Equipment based on Chapter 6 of the NEC (simply list them based on the table of contents).

- Elevators, Information Technology Equipment, Integrated Electrical Systems

8. Based on your building type and use, provide a priority assessment (Low/Med/High) for the following characteristics:

- Reliability - High
- Power Quality - High
- Redundancy - Medium
- Initial Cost (low initial cost) - Low
- Long Term Ownership Cost - High
- Flexibility – Medium

9. Identify loads in the building that may desire Optional Back-up Power and determine if those loads should be provided back-up by a generator (long term) or UPS (short term) or both, and estimate the loads.

- Building Automation System
- Emergency Lighting
- HVAC System
- Fire Alarm System
- Sprinkler System
- Security System
- Data Stacks
- Telecom Stacks
- Access Control

10. Identify potential special/communications systems from the list below:

- Telecom system
- Fire Alarm
    - IBC Requirements
        - Activation of the fire alarm in Group A occupancies with an occupant load of 1,000 or more shall initiate a signal using an emergency voice/alarm communications system in accordance with NFPA 72.
        - Emergency voice/alarm communications systems shall be provided with an approved emergency power source.
- CATV
- Security - Motion Detector, Security Camera
- Access Control

11. Identify other Building Services required for the Special/Communications Systems
    - Building Automation System, Data Stacks, Automatic Transfer Switches (ATS), Shade Controls, Photo and Occupancy Sensors, A/V – speakers, Whiteboards, Projectors

12. Identify major equipment that will require space in the building
    - Emergency Generator
    - Switchboard
    - Distribution Panelboards
    - Branch Circuit Panelboards
    - Step-down Transformers
    - Automatic Transfer Switch
    - Data Equipment
    - Controls Panels
    - Lightning Protection System
    - Air Handling Units
    - Motors and Motor Starters
    - Fire Systems

## Part 2 – Understand and Describe the Electrical Systems as Currently Designed

1. Calculate the actual connected building loads, summarized in the following categories:

| Type | Load (KVA) |
|---|---|
| **Lighting** | 128.06 |
| **Receptacle** | 261.98 |
| **Mechanical** | 1067.18 |
| **Telecom** | 16.8 |
| **Security** | 13.01 |
| **A/V** | 8 |
| **Elevator** | 67.76 |
| **Generator Equipment** | 7 |
| **Café Refrigerator** | 1.2 |
| **Total** | 1571 |

2. Identify the actual power company rate schedule in place and service voltage.
    - N/A

3. Determine the Building Utilization Voltage; describe the fundamental design concept verbally including what voltage serves each of the following loads:

- The North Instructional Building receives 4.16 KV electric service from the campus. The electric service entering the building has two active and two spare lines connecting to the main switchboard (SWBD). The voltage is turned down from 4.16 KV to 480Y/277V power in the SWBD. The switchboard has eleven breakers, eight of which supply 480Y/277V power to four chiller compressors, a branch circuit power panelboard for the basement, a branch circuit power panelboard for the roof mechanical room, an emergency distribution panelboard, and two distribution panelboards supplying lighting and receptacle loads in the east and west wings. All equipment supplied by the branch circuit power panelboards runs off of 480V 3 phase power. The two distribution panelboards, one in the east wing and one in the west, supply 480/277V power to lighting panelboards supplying the basement and all three levels above grade. The emergency distribution panelboard is also supplied 480/277V power and is backed up by a diesel generator connected with an automatic transfer switch. The east and west distribution panelboards supply power for lighting and receptacle loads. The emergency distribution panel supplies power for elevators, emergency lighting and receptacle loads, security systems sprinkler systems, and smoke dampers. All lighting loads are operated at 277V single phase power and receptacle loads are stepped down locally from 480/277V at each lighting panelboard to 208/120 on the receptacle panelboards. Receptacles only receive 120V single phase power.

4. Identify and total all loads connected to the Emergency Power System, describe the power source, fuel source, size, voltage and describe the fundamentals of the Emergency Power Distribution System.

- Fuel Source – Diesel
- Size – 250KW
- Voltage – 480/277V, 3 phase, 4 wire
- System Fundamentals
    - When an outage occurs, two ATS switches flip to start up the generator and power the emergency distribution panelboard, sprinkler system, and fire alarm system. One ATS exchanges power from mains upstream from the generator for the fire alarm system. The second ATS exchanges power from mains downstream of the generator to supply the emergency distribution panelboard. Loads on the emergency panelboard include elevators 1 and 2, emergency lighting panelboards, emergency receptacle panelboards, and emergency branch circuit power panelboards for the mechanical rooms.

5. Identify any Special Occupancy Requirements found in the design documents (drawings and specifications) based on Chapter 5 of the NEC (simply list them based on the NEC table of contents) and where you found them (drawings or specifications).

- N/A

6. Identify any Special Equipment found in the design documents (drawings and specifications) based on Chapter 6 of the NEC (simply list them based on the NEC table of contents) and where you found them (drawings or specifications).

- Elevators – Drawings
- Information Technology Equipment – Specifications
- Integrated Electrical Systems – Drawings

7. Determine and document the following based on the design documents (drawings and specifications, most of this information will typically be found in the specifications). Include voltage and phase for each.

- Main Service and Distribution Equipment – Panelboard/Switchboard/Switchgear
    - Main Switchboard SWBD – 480/277V, 3 phase
    - Power Panelboard BSMT – 480/277V, 3 phase
    - Power Panelboard M – 480/277V, 3 phase
    - Distribution Panelboard A (west wing) – 480/277V, 3 phase
    - Distribution Panelboard B (east wing) – 480/277V, 3 phase
    - Lighting Panelboard BSMT – 480/277V, 3 phase
    - Lighting Panelboard GA – 480/277V, 3 phase
    - Lighting Panelboard GB – 480/277V, 3 phase
    - Lighting Panelboard 2A – 480/277V, 3 phase
    - Lighting Panelboard 2B – 480/277V, 3 phase
    - Lighting Panelboard 3A – 480/277V, 3 phase
    - Lighting Panelboard 3B – 480/277V, 3 phase
    - Lighting Panelboard M – 480/277V, 3 phase
    - Receptacle Panelboard BSMT – 208/120V, 3 phase
    - Receptacle Panelboard GA – 208/120V, 3 phase
    - Receptacle Panelboard GB – 208/120V, 3 phase
    - Receptacle Panelboard 2A – 208/120V, 3 phase
    - Receptacle Panelboard 2B – 208/120V, 3 phase
    - Receptacle Panelboard 3A – 208/120V, 3 phase
    - Receptacle Panelboard 3B – 208/120V, 3 phase
    - Receptacle Panelboard M – 208/120V, 3 phase

- Main Service Equipment – Single or Double Ended, Indoor/outdoor
    - 4.16kV, 3-phase, 60Hz Delta primary, Double Ended, Outdoor

- Main Service Transformer – indoor/outdoor, dry/liquid/utility owned
    - 1500/2000KVA, AA/FA Ventilated Dry-Type, 3-phase, 4.16KV Delta primary, 480/277V Wye Secondary, Indoor
- Distribution step down transformers – list types specified
    - T-1 – 9KVA, 208/120V, 3 phase
    - T-3 – 30KVA, 208/120V, 3 phase
    - T-4 – 48KVA, 208/120V, 3 phase
    - T-5 – 75KVA, 208/120V, 3 phase
- Panelboards – MCB/MLO, Plug-in/bolt-in, Copper/Aluminum
    - Distribution Panelboards
        - MCB, Bolt-in Lugs, Tin/silver-plated Copper

    - Branch Circuit Panelboards
        - MCB, Bolt-in Lugs, Tin/silver-plated Copper
- Main Risers and Feeders – wire and conduit/bus duct (list type – feeder/plug-in)
    - SWBD
        - Main 1 CB servicing CH-1, (3) 350kcmil & (1) #2G. in 2-1/2" C.
        - Main 2 CB servicing CH-1, (3) 350kcmil & (1) #2G. in 2-1/2" C.
        - Main 3 CB servicing CH-2, (3) 350kcmil & (1) #2G. in 2-1/2" C.
        - Main 4 CB servicing CH-2, (3) 350kcmil & (1) #2G. in 2-1/2" C.
        - Main 5 CB servicing DP-A, 2 sets of (4) 250kcmil & (1) #1/0G. in 3" C.
        - Main 6 CB servicing PP-BSMT, 2 sets of (4) 4/0 & (1) #2G. in 2-1/2" C.
        - Main 7 CB, Spare
        - Main 8 CB servicing DP-B, 2 sets of (4) 250kcmil & 1#1/0G. in 3" C.
        - Main 9 CB servicing PP-M, 2 sets of (4) 4/0 & 1#2G. in 2-1/2" C.
        - Main 10 CB servicing EDP, (4) 500kcmil & 1#3G. in 3-1/2" C.
        - Main 11 CB, Spare
- Conductors – copper/aluminum
    - Copper, solid for No. 10 AWG and smaller; stranded (Class B) for No. 8 AWG and larger
        - Type THHN/THWN for branch circuits, No. 8 AWG and smaller
        - Type THHN/THWN or XHHW for feeders and branch circuits, No. 6 AWG and larger
- Conduit – types used (if more than one) and application for each
    - A. Rigid galvanized steel conduits:
        - 1. All exterior raceways except incoming electric and telephone service.
        - 2. All fire alarm and security system raceways.
        - 3. All raceways run in slab and in masonry walls.
        - 4. All conduit elbows and stub-ups for below-grade conduits.
        - 5. Where required by Code.
    - B. Intermediate Metal Conduit:
        - 1. Permitted as a substitution for rigid galvanized steel only where specifically indicated.
        - 2. All exterior, exposed raceways.
    - C. Electrical Metallic Tubing (EMT):
        - 1. Raceways in dry indoor areas where permitted by code.
        - 2. Branch circuit wiring run in hung ceilings and dry wall partitions. Not permitted in masonry walls.
    - D. Schedule 40 PVC Conduit Encased in Reinforced Concrete Envelope:
        - 1. Incoming telephone service.
        - 2. Incoming electric service.
    - E. Schedule 80 PVC Conduit:
        - 1. Underground raceways, except stub-ups.
    - F. Flexible Metal Conduit:
        - 1. Connections to vibrating equipment including transformers.
        - 2. Final connections to recessed lighting fixtures.
    - G. Liquid-Tight Flexible Metal Conduit:
        - 1. Exterior locations or where exposed to outdoor environments.
        - 2. Moisture or humidity laden atmosphere, or wherever there is a possibility of seepage, leakage, dripping or other exposure to oil or water.
        - 3. Connections to all motors and generators.

    - H. Flexible conduit will be limited to short motor connections, transformer connections and connections to recessed lighting fixtures. Length of flexible connection shall be limited to 6 ft. for lights and eighteen inches for motors and transformers. Liquid tight flexible conduit shall be used for all equipment connections in mechanical rooms.
    - I. Fiberglass Reinforced Epoxy Conduit:
        - 1. 5 kV electric service feeders in reinforced concrete encasement.
    - J. The use of armored cable (B/X) metal-clad (type MC) cable shall not be permitted on this project.
- Receptacles- describe grade used
    - General Requirements:
        - 1. Wide double blade contacts designed to maintain positive pressure against both sides of plug or cap having flat fingers. Contacts shall be solid brass.
        - 2. Polarized grounding type with grounding contacts bonded to receptacle mounting strap or housing, except isolated ground receptacles. Mounting strap shall be plated steel.
        - 3. Contacts separated by impact resisting molded plastic insulating material.
        - 4. Receptacles shall be back and side wired, provide a green base ground screw terminal and a nylon face.
        - 5. Locking devices, where specified, to "lock" cap in place with simple twisting motion.
- Switch and Receptacle Faceplates – metal/plastic, standard/decorative
    - Thermoplastic with a nylon toggle handle. Handle color shall be Ivory.
- Motor Starters – individual/MCC, VSD's
    - Variable Frequency Drives, NEMA Rated Magnetic Starter, NEMA Rated Combination Starter/Disconnect Switch
- UPS – Type(s) specified
    - N/A - standby generator only

8. Identify loads in the building that are provided with Optional Back-up Power and describe if those loads are connected to a back-up generator or UPS or both, and their loads, voltage and phase.

- All emergency loads are connected to a backup generator.
    - Sprinkler System with Jockey Pump
    - Elevators 1 & 2
    - Telecomm racks
    - Fire/Purge Smoke Dampers
    - Security Power
    - DDC Control Panels
    - Generator System
    - Door Motors
    - Emergency Lighting/Exit Signs
    - Condensers
    - Evaporators
    - Exhaust Fans

    * See Appendix for Load, Voltage, Phase in Emergency Panel Schedules

9. Identify special/communications systems found in the design documents from the list below. Identify any of these systems that are integrated with each other or other special systems such as lighting control, BAS systems, and demand shifting or demand management systems.

- Building Automation System (BAS) – open communication system
    - Lighting Controls System
    - HVAC System
    - Fire Alarm System
    - Security System
    - Automatic Transfer Switch Monitoring
    - Emergency Generator Monitoring
    - Network Equipment
    - Data collection and transmission

10. Identify other Building Services for Special/Communications Systems identified in the design documents:

- Telecomm System
- CATV
- LAN connections

11. Identify each of the dedicated electrical and communications systems spaces in the building, the total SF of those spaces, and calculate the percentage of the total building SF.

| Room # | Label | Area (sqft) |
|---|---|---|
| **005** | Switchgear Room | 826 |
| **002** | Emergency Generator Room | 947 |
| **004** | ATS Room | 105 |
| **003** | Telecom Room | 103 |
| **107** | Elec Closet | 64 |
| **108** | Data Closet | 64 |
| **139** | Elec Closet | 64 |
| **138** | Data Closet | 64 |
| **208** | Elec Closet | 39 |
| **207** | Data Closet | 54 |
| **263** | Elec Closet | 45 |
| **264** | Data Closet | 80 |
| **305** | Elec Closet | 38 |
| **304** | Data Closet | 55 |
| **312** | Elec Closet | 52 |
| **313** | Data Closet | 73 |
| | **Total Dedicated Elec/Comm Area** | **2673 sqft** |
| | Total Building Area | 98,600 sqft |
| | **Percent of Building Area** | **2.7 %** |

12. Identify any Energy Cost Savings or Energy Reduction techniques designed into the building electrical systems such as PV Arrays, Fuel Cells, Cogeneration, Demand Reduction

- The building received LEED Silver Certification

13. Provide a complete single line/riser diagram of the existing distribution system

- See Appendix

## Part 3 – Evaluate the as-designed systems against the Criteria developed in Part 1 and suggest potential changes

1. Compare your estimated and actual connected building loads and explain any differences and discrepancies.

| | Estimated | Calculated |
|---|---|---|
| **Estimated Load (W/sqft)** | 16 | - |
| **Building Area (sqft)** | 98,600 | - |
| **Total Load (KVA)** | **1,578 KVA** | **1571 KVA** |

*The estimated load allowance resulted in an accurate prediction of the calculated load for the overall building.

2. Power Company Rate Schedule – are other alternatives to the one in place available

- N/A

3. Building Utilization Voltage and fundamental distribution concepts – Would you suggest any changes and why you might suggest those changes. Describe how you would evaluate the options and make a choice. Look for design alternatives that, without changing the quality of materials, might provide cost savings, improve flexibility, improve reliability, or improve power quality. Address any effects those changes might have on the dedicated spaces required, mechanical systems, structural systems, etc.

- Further Investigation Required

4. Emergency Power System- Are there any noted discrepancies between identified code requirements in Part 1 with the as-designed conditions. Would you suggest any changes, particularly to the power source or fuels source, describe why you might suggest those changes. Describe how you would evaluate the options and make a choice. Address any effects those changes might have on the dedicated spaces required, mechanical systems, structural systems, etc.

- The Code requirements have been met.
- I would suggest keeping the diesel fuel source for its reliability and maintain the power of the generator for it is suitable for additional expansion to the system.

5. Based on your assessment in Part 1, Item 8, compared to your as-designed conditions, would you suggest any changes to the following items, and explain why you would suggest those changes. Address any effects those changes might have on the dedicated spaces required, mechanical systems, structural systems, etc.

- Reliability - High
- Power Quality - High
- Redundancy - Medium
- Initial Cost (low initial cost) - Low
- Long Term Ownership Cost - High
- Flexibility – Medium

*I do not believe I would change any of the above criteria. The system should be highly reliable to facilitate learning at all times and prevent disruptions. Power quality will be important to control with all of the complexities of non-linear loads from motors, VFDs, and other electronic devices. Some Redundancy should be developed within the system even if the building does not suit the most critical tasks. Since this is a campus building, the initial cost is not the greatest concern but the concern is rather in designing systems that will reduce the cost of long term ownership, even at the expense of the initial cost.

6. Optional Back-up Power and UPS systems – Describe any changes you might suggest and explain why.

- An estimation of risk may be necessary to determine if the long term backup generator is suitable to not disturb the BAS system and loss of important data. I would investigate the installation of a short term UPS system to sustain the BAS system and data collection by evaluating the BAS system's vulnerability to outages and the cost of the addition system. The system would take up additional space in the basement mechanical room.

7. Identify changes that could reduce the cost of ownership – more efficient transformers, UPS systems, VSD's, higher quality equipment. Describe how you would evaluate those changes.

- Advanced lighting/shading controls system, Higher efficiency transformers
    - New systems will need to be evaluated for their efficiency, cost savings, initial cost, and payback period against the existing systems.

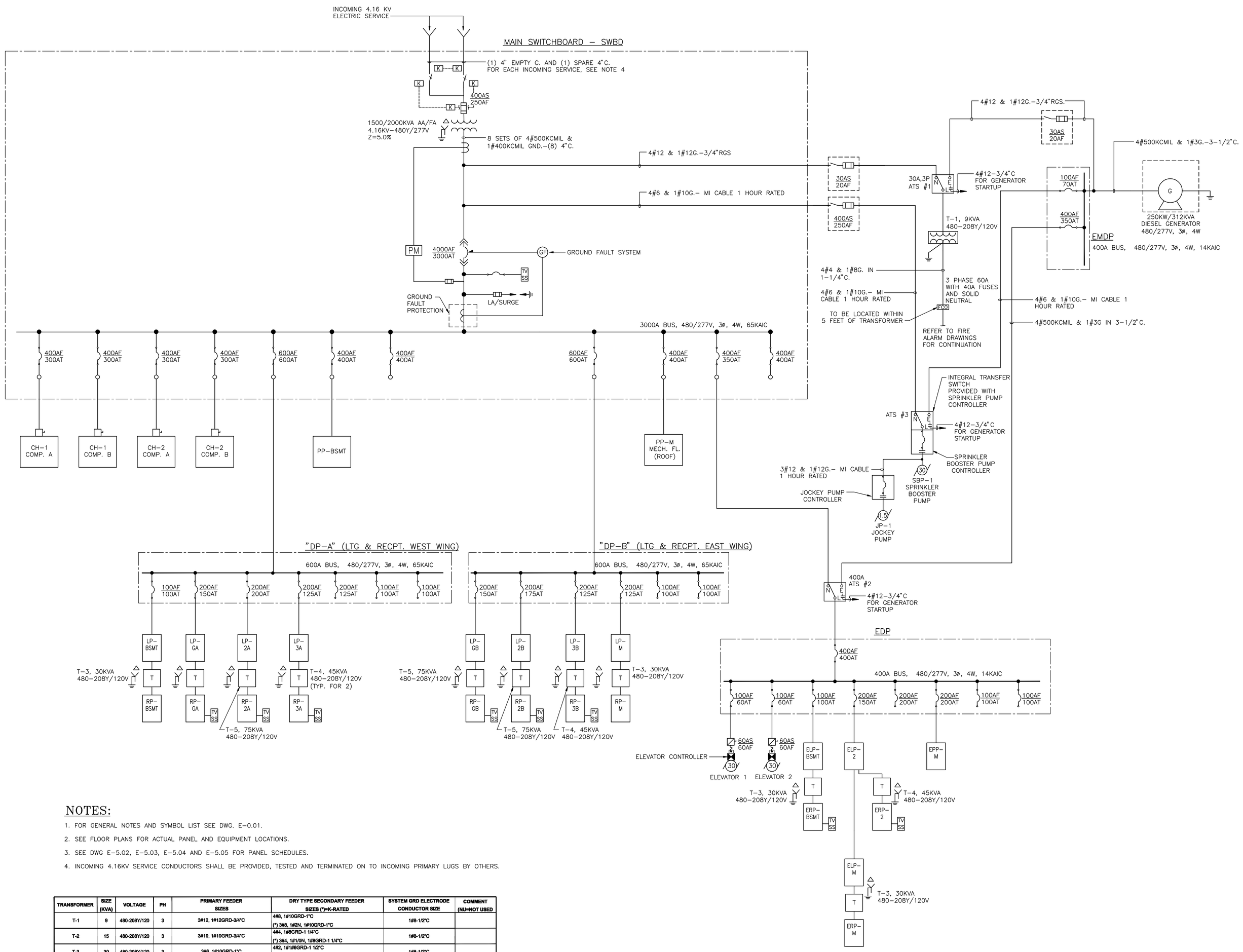
8. Identify any potential systems integration you might suggest that is not already incorporated into the design. Discuss what the advantages and disadvantages would be and how it would affect other systems.

- The building is already equipped with a complex integrated system.

9. Identify any Energy Cost Savings or Energy Reduction techniques that could be designed into the building electrical systems such as PV Arrays, Fuel Cells, Cogeneration, Demand Reduction, Demand Shifting, Wind Generation, etc. What effect would LEED Certification have on the electrical systems design (if it is not already LEED Certified).

- Photovoltaic
  - Advantages
    - Generates Power
  - Disadvantages
    - Maintenance – mounted on roof
    - Must Tie in to electrical system 3 stories below
    - High initial cost
  - Effect on System
    - Require DC-AC inverter
    - Require space for equipment

# Appendix




## NOTES:

1. FOR GENERAL NOTES AND SYMBOL LIST SEE DWG. E–0.01.
2. SEE FLOOR PLANS FOR ACTUAL PANEL AND EQUIPMENT LOCATIONS.
3. SEE DWG E–5.02, E–5.03, E–5.04 AND E–5.05 FOR PANEL SCHEDULES.
4. INCOMING 4.16KV SERVICE CONDUCTORS SHALL BE PROVIDED, TESTED AND TERMINATED ON TO INCOMING PRIMARY LUGS BY OTHERS.

| TRANSFORMER | SIZE (KVA) | VOLTAGE | PH | PRIMARY FEEDER SIZES | DRY TYPE SECONDARY FEEDER SIZES (*)=K-RATED | SYSTEM GRD ELECTRODE CONDUCTOR SIZE | COMMENT (NU=NOT USED |
|---|---|---|---|---|---|---|---|
| T-1 | 9 | 480-208Y/120 | 3 | 3#12, 1#12GRD-3/4"C | 4#8, 1#10GRD-1"C<br>(*) 3#8, 1#2N, 1#10GRD-1"C | 1#8-1/2"C | |
| T-2 | 15 | 480-208Y/120 | 3 | 3#10, 1#10GRD-3/4"C | 4#4, 1#8GRD-1 1/4"C<br>(*) 3#4, 1#1/0N, 1#8GRD-1 1/4"C | 1#8-1/2"C | |
| T-3 | 30 | 480-208Y/120 | 3 | 3#6, 1#10GRD-1"C | 4#2, 1#1#6GRD-1 1/2"C<br>(*) 3#2, 1#4/0N, 1#6GRD-2" C | 1#8-1/2"C | |
| T-4 | 45 | 480-208Y/120 | 3 | 3#4, 1#8GRD-1 1/4C | 4#1/0, 1#6GRD-2"C<br>(*) 3#1/0, 2#1/0N, 1#6GRD-2"C | 1#6-1/2"C | |
| T-5 | 75 | 480-208Y/120 | 3 | 3#1/0, 1#6GRD-1 1/2"C | 4-250KCMIL, 1#4GRD-2 1/2"C<br>(*) 3-250KCMIL, 2-250KCMIL N<br>1#4GRD-3"C | 1#2-1/2"C | |
| T-6 | 112.5 | 480-208Y/120 | 3 | 3#2/0, 1#6GRD-2"C | 4-500KCMIL, 1#2GRD-3"C<br>(*) 3-500KCMIL, 2-500KCMIL N<br>1#2GRD-3 1/2"C | 1#1/0-3/4"C | |
| T-7 | 150 | 480-208Y/120 | 3 | 3#4/0, 1#4GRD-2"C | 2 SETS(4-250KCMIL, 1#1/0GRD-2 1/2"C)<br>(*) 2 SETS(3-250KCMIL, 2-250KCMIL N<br>1#1/0GRD-3"C | 1#1/0-3/4"C | |
| T-8 | 225 | 480-208Y/120 | 3 | 3-500KCMIL, 1#2GRD-3"C | 2 SETS(4-500KCMIL, 1#1/0GRD-3"C)<br>(*) 2 SETS(3-500KCMIL, 2-500KCMIL N,<br>1#1/0GRD-3 1/2"C) | 1#2/0-3/4"C | |
| T-9 | 300 | 480-208Y/120 | 3 | 2 SETS(3#4/0, 1#2GRD-2"C) | 3 SETS(4-500KCMIL, 1#3/0GRD-3"C)<br>(*) 3 SETS(3-500KCMIL, 2-500KCMIL N,<br>1#3/0GRD-3 1/2"C) | 1#3/0-1/4"C | |
| T-10 | 500 | 480-208Y/120 | 3 | 2 SETS(3-500KCNIL, 1#1/0GRD-3"C) | 5 SETS(4-500KCMIL, 1-250KCMIL GRD-3 1/2")<br>(*) 5 SETS(3-500KCMIL, 2-500KCMIL N,<br>1-250KCMIL GRD-3 1/2") | 1#3/0-1"C | |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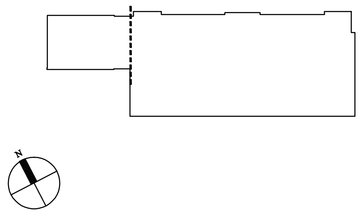
KEY PLAN



| No. | ISSUE | DATE |
|---|---|---|
| 6 | CONSTRUCTION DOCUMENTS (100%) | 08/29/20( |
| 5 | CONSTRUCTION DOCUMENTS (90%) | 06/27/20( |
| 4 | CONSTRUCTION DOCUMENTS (60%) | 04/11/20( |
| 3 | CONSTRUCTION DOCUMENTS (30% INTERNAL REVIEW) | 02/22/20( |
| 2 | DESIGN DEVELOPMENT SUBMISSION (60%) | 04/30/20( |
| 1 | SCHEMATIC DESIGN SUBMISSION (30%) | 11/08/20( |

# NORTH INSTRUCTIONAL BUILDING

BRONX COMMUNITY COLLEGE, BRONX, NEW YORK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ELECTRICAL – ONE LINE DIAGRAM

| | |
|---|---|
| Project No. 7257.000 | Date 2008-08-29 |
| CAD File No. | Scale NTS |
| Drawing No. | E-4.01 |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: BASEMENT — PANEL DESIGNATION: LP-BSM I

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| A | BSMT | SITE LIGHTING | LP-BSMT # 1,3,5,7 | ✓ | ✓ | | |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: GROUND FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: LP-GA

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| B | 1ST | GENERAL | LP-GA # 7,9 | ✓ | | ✓ | |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: GROUND FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: LP-GB

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| B | 1ST | GENERAL | LP-GB # 5,7,9 | ✓ | | ✓ | |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: SECOND FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: LP-2A

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| C | 2ND | LIBRARY | LP-2A# 7,9 | ✓ | | ✓ | |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: SECOND FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: LP-2B

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| C | 2ND | LIBRARY | LP-2B # 1,3,7 | ✓ | | ✓ | |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: THIRD FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: LP-3A

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| D | 3RD | LIBRARY | LP-3A # 1,3,5,7,9,11,13 | ✓ | | ✓ | |
| D | 3RD | LAW LIBRARY | LP-3A # 15 | ✓ | | ✓ | |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: THIRD FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: LP-3B

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| D | 3RD | LIBRARY | LP-3B # 1,3,5,7,9,11,12,13 | ✓ | | ✓ | |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: BASEMENT — PANEL DESIGNATION: ELP-BSM I

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| E | BSMT | GENERAL | ELP-BSMT# 1 | | | | ACTIVATE ON EMERGENCY |
| H | 1ST | GROUND FLOOR | ELP-BSMT# 5,17 | ✓ | | ✓ | ACTIVATE ON EMERGENCY |
| J | 1ST | BUILDING LTG | ELP-BSMT# 15 | ✓ | ✓ | | ACTIVATE ON EMERGENCY |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: SECOND FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: ELP-2

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| K | 2ND | 2ND FLOOR | ELP-2# 1,15 | ✓ | | ✓ | ACTIVATE ON EMERGENCY |
| L | 3RD | 3RD FLOOR | ELP-2# 5,9,13 | ✓ | | ✓ | ACTIVATE ON EMERGENCY |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: SECOND FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: ERP-2

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| M | 2ND | 2ND FLOOR | ERP-2# 1,2,3,4 | ✓ | | ✓ | ACTIVATE ON EMERGENCY |
| F | 2ND | 2ND FLOOR | ERP-2# 5,6 | | | | ACTIVATE ON EMERGENCY ONLY |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: MEZZANINE — PANEL DESIGNATION: ELP-M

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| G | MEZZ | MECH ROOM | ELP-M# 1 | | | | ACTIVATE ON EMERGENCY |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: SECOND FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: RP-2A

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| N | 2ND | LIBRARY | RP-2A # 10 | ✓ | | ✓ | |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: SECOND FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: RP-2B

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| N | 2ND | LIBRARY | RP-2B # 10 | ✓ | | ✓ | |

LOCATION: MECHANICAL ROOM — REMARKS: 65KAIC — DISTRIBUTION PANEL DESIGNATION: EPP-BSMT

SERVICE: 480/277 VOLTS, 3 PHASE, 4 WIRE
MAINS: 225 AMPS
MOUNTING: FLOOR
NEUTRAL: YES
GROUNDING: GROUND BUS: YES; ISOLATED GROUND BUS: NO

| Circuit Number | PROTECTIVE DEVICE: TYPE | SWITCH /FRAME (AMP) | POLES | FUSE/TRIP (AMP) | FEEDER | SERVICE | REMARKS | LOAD: CONNECTED (KVA) | LOAD: DEMAND FACTOR | LOAD: DEMAND (KVA) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CB | 100 | 3 | 15 | 3#8 & 1#10G. IN 3/4"C. | SP-1 | - | 0.9 | 80% | 0.7 |
| 2 | CB | 100 | 3 | 15 | 3#8 & 1#10G. IN 3/4"C. | SP-2 | - | 0.9 | 80% | 0.7 |
| 3 | CB | 100 | 3 | 20 | - | SPARE | - | | | 0.0 |
| 4 | CB | 100 | 3 | 35 | - | SPARE | - | | | 0.0 |
| 5 | CB | 100 | 3 | 20 | - | SPARE | - | | | 0.0 |
| 6 | CB | 100 | 3 | 35 | - | SPARE | - | | | 0.0 |
| 7 | CB | 100 | 3 | 35 | - | SPARE | - | | | 0.0 |
| 8 | CB | 100 | 3 | 100 | - | SPARE | - | | | 0.0 |
| | | | | | | | TOTAL CONNECTED LOAD(KVA): | 1.8 | | |
| | | | | | | | DEMAND LOAD(KVA): | | | 1.4 |
| | | | | | | | DEMAND FACTOR: | | | 1.0 |
| | | | | | | | TOTAL DEMAND LOAD(KVA): | | | 1.4 |
| | | | | | | | TOTAL DEMAND LOAD x | 1.25 | SPARE | 1.8 |
| | | | | | | | AMPERE (at | 480 | V) | 2.1 |

LOCATION: EMERGENCY GENERATOR ROOM — REMARKS: 14KAIC — DISTRIBUTION PANEL DESIGNATION: EMDP

SERVICE: 480/277 VOLTS, 3 PHASE
MAINS: 400 AMPS, 4 WIRE
MOUNTING: FLOOR
NEUTRAL: YES
GROUNDING: GROUND BUS: YES; ISOLATED GROUND BUS: NO

| Circuit Number | PROTECTIVE DEVICE: TYPE | SWITCH /FRAME (AMP) | POLES | FUSE/TRIP (AMP) | FEEDER | SERVICE | REMARKS | LOAD: CONNECTED (KVA) | LOAD: DEMAND FACTOR | LOAD: DEMAND (KVA) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CB | 100 | 3 | 70 | 4#8 & 1#10G. MI CABLE | JP-1 AND SP-1 | VIA ATS#4 | 34.3 | 100% | 34.3 |
| 2 | CB | 400 | 3 | 350 | 4-500KCMIL & 1#3G. IN 3-1/2"C. | EDP | VIA ATS#2 | 210.2 | 100% | 210.2 |
| | | | | | | | TOTAL CONNECTED LOAD(KVA): | 244.5 | | |
| | | | | | | | DEMAND LOAD(KVA): | | | 244.5 |
| | | | | | | | DEMAND FACTOR: | | | 1.0 |
| | | | | | | | TOTAL DEMAND LOAD(KVA): | | | 244.5 |
| | | | | | | | TOTAL DEMAND LOAD x | 1.25 | SPARE | 305.6 |
| | | | | | | | AMPERE (at | 480 | V) | 367.5 |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: THIRD FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: RP-3A

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| D | 3RD | LIBRARY | RP-3A # 3,14,24 | ✓ | | ✓ | |
| A | 3RD | LOW ROOF | RP-3A # 10 | ✓ | | ✓ | |

## LIGHTING CONTROL PANEL SCHEDULE

LOCATION: THIRD FLOOR ELECTRICAL CLOSET — PANEL DESIGNATION: RP-3B

| ZONE | FLOOR | AREA | CIRCUITS | CONTROL DEVICE: TIME CLOCK | CONTROL DEVICE: PHOTO CELL | CONTROL DEVICE: SWITCH | REMARKS |
|---|---|---|---|---|---|---|---|
| D | 3RD | LIBRARY | RP-3B # 7 | ✓ | | ✓ | |

LOCATION: BASEMENT ATS ROOM — REMARKS: 10KAIC — PANEL DESIGNATION: ERP-BSMT

SERVICE: 208/120 VOLTS, 3 PHASE, 4 WIRE
MAINS: 225 AMPS
MOUNTING TYPE: SURFACE
GROUNDING: GROUND BUS: YES; ISOLATED GRD. BUS: NO
MAIN OVERCURRENT PROTECTION: M.C.B.: 100 AMPS; M.L.O.: NO
POLES: 30

| SERVICE TO: | A | B | C | SIZE | NO. | NO. | SIZE | A | B | C | SERVICE TO: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BASEMENT TELECOMM RACK | 1.08 | | | 20 | 1 | - 2 | 15 / 2P | 0.11 | | | AC-9 |
| BASEMENT TELECOMM RACK | | 1.08 | | 20 | 3 | 4 | | | 0.11 | | |
| BASEMENT TELECOMM RACK | | | 1.08 | 20 | 5 | 6 | 20 | | | 1.20 | GENERATOR JACKET HEATER |
| GENERATOR ALT. HEATER | 0.10 | | | 20 | 7 | - 8 | / 2P | 1.20 | | | |
| GENERATOR PANEL HEATER | | 0.10 | | 20 | 9 | 10 | 20 | | 1.20 | | GENERATOR BATTERY CHARGER |
| DOOR MOTOR | | | 0.80 | 20 | 11 | 12 | 20 | | | 0.20 | DDC CONTROL PANEL |
| DOOR MOTOR | 0.80 | | | 20 | 13 | - 14 | 20 | 0.20 | | | DDC CONTROL PANEL |
| DOOR MOTOR | | 0.80 | | 20 | 15 | 16 | 20 | | 0.20 | | DDC CONTROL PANEL |
| DOOR MOTOR | | | 0.80 | 20 | 17 | 18 | 20 | | | 0.10 | DDC CONTROL PANEL |
| SP-1 | 0.83 | | | 15 | 19 | - 20 | 15 | 0.83 | | | SP-2 |
| SPARE | | | | 20 | 21 | 22 | 20 | | | | SPARE |
| SPARE | | | | 20 | 23 | 24 | 20 | | | | SPARE |
| SPARE | | | | 20 | 25 | - 26 | 20 | | | | SPARE |
| SPARE | | | | 20 | 27 | 28 | 20 | | | | SPARE |
| SPARE | | | | 20 | 29 | 30 | 20 | | | | SPARE |
| SUBTOTALS | 2.81 | 1.98 | 2.68 | | | | | 2.34 | 1.51 | 1.50 | |

TOTAL LOADS: 5.15 KVA PHASE A, 42.89 A PHASE A; 3.49 KVA PHASE B, 29.09 A PHASE B; 4.18 KVA PHASE C, 34.83 A PHASE C
TOTAL CONNECTED LOAD: 12.82 KVA
CONNECTED LOAD (PWR): 12.82 KVA
DEMAND FACTOR (PWR): 100%
DEMAND LOAD: 12.82 KVA
DEM. LOAD x 1.25 SPARE: 16.02 KVA
AMP: (at 208 V) 44 A

LOCATION: 2ND FLOOR ELEC. CLOSET A — REMARKS: 10KAIC, SIEMENS TYPE I3 PANEL — PANEL DESIGNATION: ERP-2

SERVICE: 208/120 VOLTS, 3 PHASE, 4 WIRE
MAINS: 225 AMPS
MOUNTING TYPE: SURFACE
GROUNDING: GROUND BUS: YES; ISOLATED GRD. BUS: NO
MAIN OVERCURRENT PROTECTION: M.C.B.: 150 AMPS; M.L.O.: NO
POLES: 84

| SERVICE TO: | A | B | C | SIZE | NO. | NO. | SIZE | A | B | C | SERVICE TO: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TABLE LIGHTING 2ND FLOOR | 0.48 | | | 20 | 1 | - 2 | 20 | 0.48 | | | TABLE LIGHTING 2ND FLOOR |
| TABLE LIGHTING 2ND FLOOR | | 0.48 | | 20 | 3 | 4 | 20 | | 0.48 | | TABLE LIGHTING 2ND FLOOR |
| CARREL LIGHTING | | | 0.20 | 20 | 5 | 6 | 20 | | | 0.20 | CARREL LIGHTING |
| 1ST FLOOR TELECOMM RACK | 1.08 | | | 20 | 7 | - 8 | 20 | 1.08 | | | 1ST FLOOR TELECOMM RACK |
| 1ST FLOOR SECURITY POWER | | 1.08 | | 20 | 9 | 10 | 20 | | 1.00 | | FIRE/PURGE SMOKE DAMPERS |
| FIRE/PURGE SMOKE DAMPERS | | | 1.00 | 20 | 11 | 12 | 20 | | | 1.00 | FIRE/PURGE SMOKE DAMPERS |
| FIRE/PURGE SMOKE DAMPERS | 1.00 | | | 20 | 13 | - 14 | 20 | 0.20 | | | ELEVATOR PIT |
| ELEVATOR CLOSET | | 0.18 | | 20 | 15 | 16 | 20 | | 0.20 | | ELEVATOR PIT |
| ELEVATOR CLOSET | | | 0.18 | 20 | 17 | 18 | 20 | | | 0.20 | ELEVATOR CAB LIGHTS |
| ELEVATOR CAB LIGHTS | 0.20 | | | 20 | 19 | - 20 | 20 | 0.50 | | | SECURITY OFFICE |
| 1ST FLOOR TELECOMM RACK | | 1.08 | | 20 | 21 | 22 | 20 | | 0.50 | | SECURITY OFFICE |
| 1ST FLOOR TELECOMM RACK | | | 1.08 | 20 | 23 | 24 | 20 | | | 0.18 | 1ST FLOOR SECURITY POWER |
| 2ND FLOOR TELECOMM RACK | 1.08 | | | 20 | 25 | - 26 | 20 | 0.18 | | | 2ND FLOORSECURITY POWER |
| 2ND FLOOR TELECOMM RACK | | 1.08 | | 20 | 27 | 28 | 20 | | 1.08 | | 2ND FLOOR TELECOMM RACK |
| 2ND FLOOR SECURITY POWER | | | 0.18 | 20 | 29 | 30 | 20 | | | 1.08 | 2ND FLOOR TELECOMM RACK |
| 3RD FLOOR TELECOMM RACK | 1.08 | | | 20 | 31 | - 32 | 20 | 0.18 | | | 3RD FLOOR SECURITY POWER |
| 3RD FLOOR TELECOMM RACK | | 1.08 | | 20 | 33 | 34 | 20 | | 1.08 | | 3RD FLOOR TELECOMM RACK |
| 3RD FLOOR SECURITY POWER | | | 0.18 | 20 | 35 | 36 | 20 | | | 1.08 | 3RD FLOOR TELECOMM RACK |
| AC-1 | 0.04 | | | 20 | 37 | - 38 | 20 | 0.04 | | | AC-3 |
| | | 0.04 | | 20 | 39 | 40 | 20 | | 0.04 | | |
| AC-2 | | | 0.04 | 20 | 41 | 42 | 20 | | | 0.04 | AC-4 |
| | 0.04 | | | 20 | 43 | - 44 | 20 | 0.04 | | | |
| AC-5 | | 0.04 | | 20 | 45 | 46 | 20 | | 0.04 | | AC-6 |
| | | | 0.04 | 20 | 47 | 48 | 20 | | | 0.04 | |
| AC-7 | 0.04 | | | 20 | 49 | - 50 | 20 | 0.04 | | | AC-8 |
| | | 0.04 | | 20 | 51 | 52 | 20 | | 0.04 | | |
| DDC CONTROL PANEL | | | 0.10 | 20 | 53 | 54 | 20 | | | | SPARE |
| DDC CONTROL PANEL | 0.10 | | | 20 | 55 | - 56 | 20 | | | | SPARE |
| SPARE | | | | 20 | 57 | 58 | 20 | | | | SPARE |
| SPARE | | | | 20 | 59 | 60 | 20 | | | | SPARE |
| SPARE | | | | 20 | 61 | - 62 | 20 | | | | SPARE |
| SPARE | | | | 20 | 63 | 64 | 20 | | | | SPARE |
| SPARE | | | | 20 | 65 | 66 | 20 | | | | SPARE |
| SPARE | | | | 20 | 67 | - 68 | 20 | | | | SPARE |
| SPARE | | | | 20 | 69 | 70 | 20 | | | | SPARE |
| SPARE | | | | 20 | 71 | 72 | 20 | | | | SPARE |
| SPARE | | | | 20 | 73 | - 74 | 20 | | | | SPARE |
| SPARE | | | | 20 | 75 | 76 | 20 | | | | SPARE |
| SPARE | | | | 20 | 77 | 78 | 20 | | | | SPARE |
| SPARE | | | | 20 | 79 | - 80 | 20 | | | | SPARE |
| SPARE | | | | 20 | 81 | 82 | 20 | | | | SPARE |
| SPARE | | | | 20 | 83 | 84 | 20 | | | | SPARE |
| SUBTOTALS | 5.14 | 5.10 | 3.00 | | | | | 2.74 | 4.46 | 3.82 | |

TOTAL LOADS: 7.88 KVA PHASE A, 65.65 A PHASE A; 9.56 KVA PHASE B, 79.67 A PHASE B; 6.82 KVA PHASE C, 56.83 A PHASE C
TOTAL CONNECTED LOAD: 24.26 KVA
CONNECTED LOAD (PWR): 24.26 KVA
DEMAND FACTOR (PWR): 100%
DEMAND LOAD: 24.26 KVA
DEM. LOAD x 1.25 SPARE: 30.32 KVA
AMP: (at 208 V) 84 A

LOCATION: MECHANICAL ROOM — REMARKS: 14KAIC, SIEMENS TYPE I3 PANEL — PANEL DESIGNATION: ELP-M

SERVICE: 480/277 VOLTS, 3 PHASE, 4 WIRE
MAINS: 225 AMPS
MOUNTING TYPE: SURFACE
GROUNDING: GROUND BUS: YES; ISOLATED GRD. BUS: NO
MAIN OVERCURRENT PROTECTION: M.C.B.: 100 AMPS; M.L.O.: NO
POLES: 18

| SERVICE TO: | A | B | C | SIZE | NO. | NO. | SIZE | A | B | C | SERVICE TO: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MECH. ROOM LIGHTING | 1.82 | | | 20 | 1 | - 2 | 45 / 3P | 10.15 | | | |
| EXT SIGNS | | 0.10 | | 20 | 3 | 4 | | | 10.15 | | ERP-M VIA TRANSFORMER |
| SPARE | | | | 20 | 5 | 6 | | | | 7.40 | |
| SPARE | | | | 20 | 7 | - 8 | 20 | | | | SPARE |
| SPARE | | | | 20 | 9 | 10 | 20 | | | | SPARE |
| SPARE | | | | 20 | 11 | 12 | 20 | | | | SPARE |
| SPARE | | | | 20 | 13 | - 14 | 20 | | | | SPARE |
| SPARE | | | | 20 | 15 | 16 | 20 | | | | SPARE |
| SPARE | | | | 20 | 17 | 18 | 20 | | | | SPARE |
| SUBTOTALS | 1.82 | 0.10 | 0.00 | | | | | 10.15 | 10.15 | 7.40 | |

TOTAL LOADS: 11.96 KVA PHASE A, 43.19 A PHASE A; 10.25 KVA PHASE B, 37 A PHASE B; 7.40 KVA PHASE C, 26.73 A PHASE C
TOTAL CONNECTED LOAD: 29.62 KVA
CONNECTED LOAD (LTG): 29.62 KVA
DEMAND FACTOR (LTG): 100%
DEMAND LOAD: 29.62 KVA
DEM. LOAD x 1.25 SPARE: 37.02 KVA
AMP: (at 480 V) 45 A

LOCATION: MECHANICAL ROOM — REMARKS: 10KAIC — PANEL DESIGNATION: ERP-M

SERVICE: 208/120 VOLTS, 3 PHASE, 4 WIRE
MAINS: 225 AMPS
MOUNTING TYPE: SURFACE
GROUNDING: GROUND BUS: YES; ISOLATED GRD. BUS: NO
MAIN OVERCURRENT PROTECTION: M.C.B.: 100 AMPS; M.L.O.: NO
POLES: 30

| SERVICE TO: | A | B | C | SIZE | NO. | NO. | SIZE | A | B | C | SERVICE TO: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FIRE/SMOKE DAMPERS | 0.80 | | | 20 | 1 | - 2 | 20 | 0.70 | | | ROOF HATCH |
| FIRE/SMOKE DAMPERS | | 0.80 | | 20 | 3 | 4 | 20 | | 0.70 | | ROOF HATCH |
| FIRE/SMOKE DAMPERS | | | 0.80 | 20 | 5 | 6 | 50 | | | 3.00 | |
| CU-3 | 2.44 | | | 50 | 7 | - 8 | / 3P | 3.00 | | | CU-1 |
| | | 2.44 | | / 2P | 9 | 10 | | | 3.00 | | |
| | | | 3.00 | 50 | 11 | 12 | 20 | | | 0.20 | DDC CONTROL PANEL |
| CU-2 | 3.00 | | | | 13 | - 14 | 20 | 0.20 | | | DDC CONTROL PANEL |
| | | 3.00 | | / 3P | 15 | 16 | 20 | | 0.20 | | DDC CONTROL PANEL |
| SMOKE DAMPERS | | | 0.20 | 20 | 17 | 18 | 20 | | | 0.20 | DDC CONTROL PANEL |
| SPARE | | | | 20 | 19 | - 20 | 20 | | | | SPARE |
| SPARE | | | | 20 | 21 | 22 | 20 | | | | SPARE |
| SPARE | | | | 20 | 23 | 24 | 20 | | | | SPARE |
| SPARE | | | | 20 | 25 | - 26 | 20 | | | | SPARE |
| SPARE | | | | 20 | 27 | 28 | 20 | | | | SPARE |
| SPARE | | | | 20 | 29 | 30 | 20 | | | | SPARE |
| SUBTOTALS | 6.25 | 6.25 | 4.00 | | | | | 3.90 | 3.90 | 3.40 | |

TOTAL LOADS: 10.15 KVA PHASE A, 84.57 A PHASE A; 10.15 KVA PHASE B, 84.57 A PHASE B; 7.40 KVA PHASE C, 61.7 A PHASE C
TOTAL CONNECTED LOAD: 27.70 KVA
CONNECTED LOAD (PWR): 27.70 KVA
DEMAND FACTOR (PWR): 80%
DEMAND LOAD: 22.16 KVA
DEM. LOAD x 1.25 SPARE: 27.70 KVA
AMP: (at 208 V) 77 A


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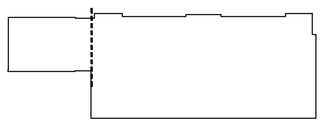
KEY PLAN



| No. | ISSUE | DATE |
|---|---|---|
| 6 | CONSTRUCTION DOCUMENTS (100%) | 08/29/200 |
| 5 | CONSTRUCTION DOCUMENTS (90%) | 06/27/200 |
| 4 | CONSTRUCTION DOCUMENTS (60%) | 04/11/200 |
| 3 | CONSTRUCTION DOCUMENTS (30% INTERNAL REVIEW) | 02/22/200 |
| 2 | DESIGN DEVELOPMENT SUBMISSION (60%) | 04/30/200 |
| 1 | SCHEMATIC DESIGN SUBMISSION (30%) | 11/08/200 |

# NORTH INSTRUCTIONAL BUILDING

BRONX COMMUNITY COLLEGE, BRONX, NEW YORK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ELECTRICAL – PANEL SCHEDULES
SHEET NO. 4

| Project No. | Date |
|---|---|
| 1251.000 | 2008-08-29 |
| CAD File No. | Scale |
| | NONE |

Drawing No.

**E-5.05**