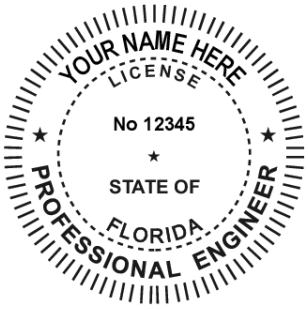
COMPANY
SLOGAN HERE

123 Easy Street
Nowhere, FL 99999

Project Number: BR549

Submitted by:
Your N. Here, P.E.
Electrical Engineer



Your N. Here, PE

Power Systems Studies

for

Commercial Building - Somewheresville, FL

Client: Betazoid Development, LLC

Revision 0

June 8, 2024

REVISION HISTORY

Rev#	Issued	Revision / Modification Description
0	6/8/2024	ISSUED FINAL
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1.0 EXECUTIVE SUMMARY

1.1 General

This summary report contains the results of analyses performed on the electrical distribution system for the Commercial Building in Somewheresville, FL. The purpose of this study is to evaluate electrical equipment used in this facility and provide adjustable circuit breaker settings and arc flash labels to the Client. System data and necessary modeling assumptions are provided under Section 2.0 – SHORT CIRCUIT ANALYSIS. A detailed One-line Diagram was developed from data supplied by the Client and on-site survey.

1.2 Scope of Work

- **Short-Circuit Analysis**

  Model the distribution system in SKM PTW® using the SKM Comprehensive Method and perform a short-circuit study to determine the available fault current at all busses throughout the distribution system. The scope of the study includes:

  - Analysis beginning at the incoming 480 volts distribution secondary side of the Utility Transformer, continues through the entirety of the system as shown in the One-line drawing.
  - Input data used in this study was furnished by the Client as well as on-side system survey performed by COMPANY.
  - The available fault currents calculated by the short-circuit study were used in the short circuit analyses. The incoming utility company available fault current data was supplied by the serving utility company, POCOEnergy.

- **Equipment Evaluation**

  Evaluate protective devices and busses using the SKM PTW® Equipment Evaluation Tool to determine if any devices or equipment is over-dutied or under-rated.

- **Coordination Study**

  Develop time-current coordination plots to derive coordinated settings for protective devices.

- **Arc Flash Analysis**

  Perform an arc flash incident energy analysis per NFPA 70E-2024, National Electrical Safety Code and IEEE 1584-2018 on the electrical distribution system and print labels on Avery® label stock.

  An incident energy analysis is defined by NFPA 70E to be a component of an arc flash risk assessment used to predict the incident energy of an arc flash event for a specified set of conditions.

- **Recommendations**

  Provide specific recommendations for improving the electrical distribution system performance and correcting any deficiencies found by the studies.

1.3 Results and Recommendations

- **Short-Circuit Study**

  The system was modeled for available bolted fault currents. Short-circuit currents were calculated for a three-phase bolted fault and single-line-to-ground fault at each bus shown on the One-Line diagram. Refer to the Appendices for Utility Data, Fault Current Report and the Final One-line diagram.

- **Equipment Evaluation**

  The Equipment Evaluation is based on the power system short-circuit current configuration. The short-circuit ratings of protective devices and other distribution equipment were evaluated using the SKM PTW® Equipment Evaluation Tool.

  Panelboards PDP3 and PDP4 and their Square D ED frame feeder breakers failed the evaluation. The ED frame breakers are 18 kAIC rated. There is more than 18kA of adjusted fault current available at these panelboards. There are no published series ratings available for the Square D breakers in PDP3 and PDP4 and the upstream GE circuit breakers. Replacement of all the ED frame breakers in PDP3 and PDP4 with Square D EG framed breakers is recommended. The EG frame breakers are 65kAIC rated at 480V.

  The SIFTER Control Panel also failed the evaluation. The label on this control panel indicated that is only 5kA rated. There is more than 5kA of fault current available. Consultation with the control panel manufacturer is necessary to formulate options to remedy this condition.

  There were also several other circuit breakers and panelboards in the study with a base AIC rating lower than the available fault current, however, published series ratings were able to be applied to increase the combination rating and pass the evaluation.

  Refer to the Appendices for the final Equipment Evaluation Reports.

- **Coordination Study**

  The time-current coordination plots of the protective overcurrent devices are shown in the Appendices. In developing the device settings, consideration was given to both isolation of faults, protection of cables, and protection of transformers.

  Efforts were made to provide the best coordination possible with the protective devices in the facility. It should be understood that coordination between two instantaneous trip units cannot be achieved for fault levels above the instantaneous pickup of the upstream device. There is some overlapping of curves that cannot be avoided.

- **Protective Device Settings**

  Nearly all of the main and feeder breakers on this project are adjustable to at least some degree. Coordination was achieved between all device Long Time and Short time pickup and delay curves between upstream and downstream devices with the existing settings for the most part with a couple of exceptions. Coordination within the Instantaneous region was not able to be achieved in most instances, due to significant overlap in many cases.

  There are recommended changes to the settings for the MSB MCB and to EH2 MCB to improve coordination with upstream or downstream devices.

  There were also several feeder breakers set to their maximum adjustment. Lowering of these settings to "MIN" does not affect coordination, but does lower the arc flash incident energy at the downstream panelboards. These feeder breakers are LDP L5, LDP L8, LDP L10, LDP L12 AND L13A MCB.

  Refer to the Appendices for the Protective Device Settings Reports and the project TCC plots. Reports for existing settings and recommended settings are included.

- **Arc Flash Incident Energy Analysis**

  Details of the arc flash incident energy analysis are shown in Section 4.0. Please note for this study, the arc flash hazard study has been calculated by performing an incident energy analysis per NFPA 70E and IEEE 1584-2018.

  Required Arc Flash PPE was determined by calculating the incident energy at the working distance per the equipment type. The incident energy at the working distance is printed on the label as well as the required PPE per NFPA 70E-2024 T130.5(g).

  Calculations for two different scenarios were performed per client direction and the scenario resulting in the highest incident energy at each individual bus is used on the arc flash labels. Those scenarios were:

  S0 – Base Project: Actual available fault current from the Utility Company with emergency loads on Normal Power.

  S1 – Scenario 1: Actual available fault current from the Utility Company with emergency loads on Generator Power.

  Results of the study revealed that the calculated incident energy at the line side of the MSB main circuit breaker was calculated to be in excess of 40 cal/cm^2. Calculated incident energy at the line side of disconnect DL13, the line side of LDP MCB, and the line side of L13A MCB and its downstream panels is in excess of 20 cal/cm^2. Most other busses are less than approximately 10 cal/cm^2 with the majority of busses under 2 cal/cm^2.

  The incident energy at panels downstream of L13A MCB (panels L13B, L13C and 13D) can be lowered by lowering the setting of L13A MCB.

Refer to the Appendices for the Arc Flash Report and the Arc Flash Labels.

- **Exclusions from the study**

  It should be noted that the transformer and assumed fused disconnect switch feeding the Tenant panel was not accessible. Access to this space was refused by the Tenant. The Tenant equipment was assumed to be located above an inaccessible ceiling space. The Tenant equipment is excluded from the study and no arc flash labels are able to be provided.

2.0 SHORT-CIRCUIT ANALYSIS

2.1 General

The short-circuit study determines the fault currents that flow in the system during various fault conditions. The calculated fault currents are used in the device evaluation and coordination studies. NEC-2023, Articles 110.24(A) and 408.6 requires that service entrance equipment and panelboards are labeled with the following pieces of information:

- Maximum available fault current
- Date on which the fault current was calculated

The arc flash labels will include the maximum bolted 3 phase fault current for all busses in this project, not just at the service equipment and panelboards.

Article 110.24(B) adds that if there is a modification that may change this fault current value, it must be recalculated. The field marking must be updated to reflect the new value of maximum fault current.

Separate "Z" (complex), "X" (reactive), and "R" (resistive) networks are used for the short-circuit analysis. Complex network reduction and the relationship E/Z are used to calculate the fault current magnitude and angle at each faulted bus. The complex equivalent circuit impedance, Z, is calculated by the reduction of the "Z" (complex) network. The X/R ratios calculated for each fault condition are based on the separate reduction of the X and R networks. These X/R ratios are used for the calculation of fault duty multipliers, and to evaluate the short-circuit ratings of system components.

The software is capable of generating multiple types of short-circuit reports for both balanced (three-phase bolted) and unbalanced (line-to-ground) faults. The reports that are generated depend on the system that is being evaluated.

For this project, the Unbalanced Fault Report has been generated and included in the Appendices.

2.2 Objectives

The objective of the short-circuit analysis is to calculate the maximum short-circuit currents produced by balanced three-phase and unbalanced faults at each bus shown on the One-Line diagram.

- **Short-Circuit System Model**

  The system was modeled for available fault currents. Short-circuit currents were calculated for a three-phase bolted fault and single-line-to-ground fault at each labeled bus shown on the study One-Line diagram.

2.3 Equipment Evaluation

The purpose of the equipment evaluation is to compare the maximum calculated short-circuit currents to the short-circuit ratings of protective devices. The comparison is made to determine if the device can interrupt or withstand the available fault currents of the electrical system to which the device is applied, as required by NEC Articles 110.9 and 110.10. The device evaluation follows the evaluation procedures outlined in IEEE Std 1584-2018 and applicable ANSI, NEMA, and UL standards.

The results of the short-circuit equipment evaluation are summarized in the Equipment Evaluation Reports in the Appendices. The tables corresponds to bus designations used in the One-Line diagram, "Manufacturer", "Status" (Pass, fail, unknown, or marginal), 'Type" (equipment category), calculated short-circuit duty, the equipment short-circuit rating, and the series rating (if applicable).

Panelboards PDP3 and PDP4 and their Square D ED frame feeder breakers failed the evaluation. The ED frame breakers are 18 kAIC rated. There is more than 18kA of adjusted fault current available at these panelboards. There are no published series ratings available for the Square D breakers in PDP3 and PDP4 and the upstream GE circuit breakers. Replacement of all the ED frame breakers in PDP3 and PDP4 with Square D EG framed breaker is recommended. The EG frame breakers are 65kAIC rated at 480V.

The SIFTER Control Panel also failed the evaluation. The label on this control panel indicated that is only 5kA rated. There is more than 5kA of fault current available. Consultation with the control panel manufacturer is necessary to formulate options to remedy this condition.

There were also several other circuit breakers and panelboards in the study with a base AIC rating lower than the available fault current, however, published series ratings were able to be applied to increase the combination rating and pass the evaluation.

- **For low voltage devices:**

  The calculated short-circuit duty is reported under "Calc Isc (kA)" and the device short-circuit rating is reported under "Dev Isc (kA)". The calculated duty has been adjusted accordingly per the system X/R and device test X/R.

2.4 Short-Circuit Results

Results can be found in the Unbalanced Fault Report and are also shown on the One-line diagram.

3.0 PROTECTIVE DEVICE COORDINATION STUDY

3.1 General

The protective device coordination study determines overcurrent protective relay settings, fuse selection and circuit breaker settings to provide an optimal compromise between protection and selectivity.

3.2 Objectives

Using the appropriate maximum fault currents, the time-current coordination curves were plotted as operating time versus current magnitudes to show protective device tripping and/or clearing characteristics and coordination among these devices.

Consideration was given to provide both selective isolation of faults and maximum protection of equipment such as cables, transformers, motors, etc.

To achieve the optimum protection and selectivity, the following guidelines were followed throughout the study:

- Ideally, the settings of any overcurrent device should be high enough to permit the continuous full-load operating capacity of the cables and the equipment they supply, and to ride through system temporary disturbances such as in-rush current. On the other hand, the settings should be low enough to provide overload and short-circuit protection under minimum fault conditions.
- Considering any two protective devices in series:
    - The maximum available fault current at the downstream device determines the upper limit of the coordination range between these two devices.
    - The minimum available fault current at the downstream device or the pick-up setting of the upstream device determines the lower limit of the coordination range.
    - Series instantaneous devices do not coordinate unless there is enough impedance between the two devices, such as a transformer.
    - When plotting coordination curves, certain time intervals must be maintained between the curves in order to ensure correct selectivity. These time intervals vary, depending on the device types. In general, however, the following must be taken into consideration when determining the appropriate time separation interval: Breaker clearing time, relay tolerances, induction disk over-travel, and a reasonable safety margin for error.

3.3 Codes and Standards

Protective device coordination was performed in accordance with IEEE Std 242™. Minimum guidelines for equipment protection, as outlined in the National Electrical Code (NEC) and applicable standards of the American National Standards Institute (ANSI), were followed.

Applicable requirements are summarized below.

➢ Cables

Power cables require overload and short-circuit protection to meet the requirements stated in NEC Article 240, and IEEE Std 242. The NEC further requires that the ampacity of low voltage cable (0-2000 Volts) be determined by NEC Article 310 .15. Cable de-rating based upon ambient temperature and the number of current carrying conductors in a raceway must also be applied. Medium voltage cable (2001-35,000 Volts) ampacity is defined by NEC Articles 240.100(A) and 310 .60.

➢ Transformers

A transformer is recommended to have protective devices on both primary and secondary side to meet the basic protection requirements for overloads and short-circuit withstand values. However, a transformer is permitted to be protected by only a primary side device if it meets the exceptions listed in NEC Article 240.4(F). In addition, the transformer protective devices must be able to withstand magnetizing inrush currents without tripping.

NEC protection requirements for transformers: Overcurrent devices should be selected, and settings should be recommended to provide overcurrent protection in accordance with NEC Article 450.3. Paragraph (A) specifies that transformers over 600 V comply with Table 450.3(A). Paragraph (B) specifies that transformers less than 600 V comply with Table 450.3(B).

Short-circuit thermal limits for transformers: The primary devices should be set on the basis that the transformers have short-circuit withstand capabilities as defined by IEEE Std C57.109™.

➢ Motors

The motors should have appropriate protective devices to meet the basic protection requirements for overloads and fault current withstand values. In addition, the motor short-circuit and ground fault protective devices should be set to ride through motor starting current.

3.4 Coordination Data

Feeder cable, motor, transformer, generator, circuit breaker and fuse data was furnished by the Client in the form of as-built drawings. Additional data was collected on-site by Company. This data is reflected in the One-line Diagram in the Appendices.

- Duplicate device size and rating is only shown once per TCC plot to reduce clutter.

3.5 Coordination Results

The time-current plots each device curve tagged with an arrow and label referencing its location on the plot's individual representative One-Line diagram. The device time-current characteristics are truncated at maximum through-fault current for a downstream fault.

Efforts were made to provide the best coordination possible with the protective devices in the project. Areas where breaker trip curves overlap indicate areas of possible non-selective breaker operation. Where possible, efforts were made to reduce non-selective breaker operation while maintaining adequate system protection. In some cases, because of device limitations, little can be done to improve device selectivity. Such device limitations include the fixed operating characteristic of a fuse, the built-in instantaneous or instantaneous "over-ride" elements of molded case circuit breakers, and the limited instantaneous trip range of trip units with an instantaneous trip function.

In cases involving redundant protective devices, non-selective breaker operation is of little or no concern. Protective devices are redundant if, regardless of which device opens, the same system outage occurs. Often, in order to improve overall system protection and coordination, redundant devices are intentionally set to overlap (i.e. non-selectively coordinate with) one another.

Nearly all of the main and feeder breakers on this project are adjustable to at least some degree. Coordination was achieved between all device Long Time and Short time pickup and delay curves between upstream and downstream devices with the existing settings for the most part with a couple of exceptions. Coordination within the Instantaneous region was not able to be achieved in most instances, due to significant overlap in many cases.

There are recommended changes to the settings for the MSB MCB and to EH2 MCB to improve coordination with upstream or downstream devices.

There were also several feeder breakers set to their maximum adjustment. Lowering of these settings to “MIN” does not affect coordination, but does lower the arc flash incident energy at the downstream panelboards. These feeder breakers are LDP L5, LDP L8, LDP L10, LDP L12 AND L13A MCB.

Refer to the Appendices for the Protective Device Settings Reports and the project TCC plots. Reports for existing settings and recommended settings are included.

3.6 Time-Current Characteristic Plots

Refer to the Appendices for the plotted coordination curves, which graphically indicate the degree of selectivity and protection obtained.

4.0 ARC FLASH INCIDENT ENERGY ANALYSIS

This section of the report contains the interpretation for the arc flash incident energy analysis. The calculations made in this arc flash incident energy analysis conform to NFPA 70E-2024 and are based on the information provided by the field survey and the customer. Actual heat and radiation exposure may be more or less than reflected in the analysis.

Only qualified electricians who are familiar with the installation and maintenance of electrical distribution equipment should perform work associated with such products. All recommendations of the manufacturer, warnings and cautions relating to the safety of personnel and equipment should be followed. All applicable health and safety laws, codes, standards, and procedures should be adhered to. All equipment should be de-energized prior to any maintenance or service. OSHA 1910.333 requirements should be adhered to. All guidelines of the latest edition of NFPA 70E should be followed, and in particular appropriate personal protective equipment must be provided and worn.

COMPANY, Inc. will not be responsible for the misuse or misapplication of the information contained in this analysis. Those providing service for electrical equipment should contact a COMPANY, Inc. representative, or other qualified individual, if any questions arise.

4.1 General

NFPA 70E-2024, Article 110.1(G) requires that an employer developed electrical safety program includes a risk assessment procedure that addresses worker exposure to electrical hazards. This procedure is meant to be used before performing work on or near any equipment at or above 50 volts or any time work is being performed where an electrical hazard exists. This analysis presents only the results of an incident energy evaluation conducted in accordance with 130.3(B)(1). Selection of personal protective equipment (PPE) should be made based on the incident energy level at the working distance which is presented in this report as part of an arc flash risk assessment to be made by the qualified person. Other components of an arc flash risk assessment including determination of whether or not an arc flash hazard exists for a given work task and the appropriate safe work practices to be employed should be completed by the qualified person performing the work. The risk of arc flash exposure when working on or near electrical equipment depends on a number of factors including the nature of the task being performed and the condition of the equipment. NFPA 70E-2024, Article 130(A) requires that employees use, and employers provide proper PPE for the tasks being performed. NFPA 70E, Table H.3(b) provides guidance for the selection of PPE based on calculated incident energy exposure.

NFPA 70E and IEEE Std 1584 provide equations and methods to calculate the arc flash boundary and incident energy at specific locations within a facility's electrical system. Any location where work may be performed on or near energized electrical conductors and circuit parts is subject to the arc flash standards. PPE used to guard against arc flash hazards should be considered the last line of defense. It is also important to note that the use of PPE is not intended to prevent all injuries from an arc flash. The goal of determining required PPE using the arc flash incident energy analysis is to identify the level of protection required to limit the

injury to the onset of a second degree burn in the event of an arc flash while avoiding the use of more protection than is needed so as to minimize hazards of heat stress, reduced visibility and limited body movement.

Although the arc flash calculation procedure is based upon NFPA 70E and IEEE Std

1584 equations and methods, it is a relatively new approach to determining the degree of required PPE. The calculations are derived from theory and research involving arc current incident energy measurements conducted under a specific set of controlled test conditions. Therefore, calculation results may be more severe or less severe than the hazard presented by an actual arc flash exposure. Also, the arc flash incident energy calculations do not take into account hazards associated with the splattering of molten metal, explosively propelled pieces of equipment and air pressure shock waves.

The results of this arc flash incident energy analysis are not intended to imply that personnel be permitted to work on exposed energized equipment or circuits. OSHA 1910.333 restricts the situations in which work is to be performed near or on energized equipment or circuits by stating, "Live parts to which an employee may be exposed shall be deenergized before the employee works on or near them, unless the employer can demonstrate that deenergizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations."

Even if work is not being performed directly on energized equipment, it is important that the proper PPE be used during some load interruption actions, during visual verification of the state of disconnecting devices, and during lockout/tagout procedures.

In accordance with NFPA 70E and IEEE Std 1584, the analysis software provides the calculation of these values. The equations used in these calculations are based on actual test values. These tests measured the calories per square centimeter (cal/cm^2) radiating from a simulated arcing fault at a theorized working distance of 18 inches.

4.2 Objectives

The intent of NFPA 70E and IEEE Std 1584 guidelines is to establish standard calculations to determine an approach boundary that will prevent the onset of a second-degree burn to the face and the torso of the worker. An incident energy of 1.2 cal/cm^2 represents the onset of a second-degree burn.

The arc flash incident energy analysis considers each medium and low voltage system location within the scope of the work.

Before the arc flash equations can be applied, a detailed short-circuit and protective device coordination study must be completed to include all locations where work may be performed on or near energized components, (e.g. motor control centers and power distribution panels). Since the short-circuit current must be calculated at every pertinent location and the clearing time of each location's upstream protective device is required, the arc flash circuit model is more detailed and extends deeper into the facility electrical distribution system than is typical of a basic short-circuit and protective device coordination

study. Accurate fault currents and device clearing times are extremely important in deriving reliable results. A conservative (high) fault current value could yield a faster clearing time of a protective device, depending upon its curve shape, and the calculated incident energy may actually be less than the incident energy calculated for a lower magnitude of fault current and a longer clearing time.

- **Arc Flash Scenarios**

  Since the greatest arc flash hazards may not result from the highest fault current, multiple scenarios must be analyzed and compared. The following modes of operation have been evaluated in order to determine the worst-case incident energy at each location in the system. It is important to determine the available short-circuit current for modes of operation that provide both the maximum and minimum available short-circuit currents. Study results are based upon the worst-case scenario incident energy.

  S0 – Base Project: Actual available fault current from the Utility Company with emergency loads on Normal Power.

  S1 – Scenario 1: Actual available fault current from the Utility Company with emergency loads on Generator Power.

  Results of the study revealed that the calculated incident energy at the line side of the MSB main circuit breaker was calculated to be in excess of 40 cal/cm^2. Calculated incident energy at the line side of disconnect DL13, the line side of LDP MCB, and the line side of L13A MCB and its downstream panels is in excess of 20 cal/cm^2. Most other busses are less than approximately 10 cal/cm^2 with the majority of busses under 2 cal/cm^2.

  The incidence energy at panels downstream of L13A MCB (panels L13B, L13C and 13D) can be lowered by lowering the setting of L13A MCB.

4.3 Arc Flash Incident Energy Analysis Results

The incident energy associated with an arc flash is dependent upon the following parameters:

- The maximum "bolted fault" three-phase short-circuit current available at the equipment and the minimum fault level at which the arc will self-sustain.
- The total protective device clearing time (upstream of the prospective arc location) at the maximum short-circuit current and the minimum fault level at which the arc will self-sustain.
- The distance of the worker from the prospective arc for the task to be performed.

The arc flash incident energy analysis results shown in Arc Flash Report are based on a protective device clearing time up to a maximum of 2 seconds. This is based on IEEE Std 1584 which states in Annex B, Instructions and Examples; "If the time is longer than two seconds, consider how long a person is likely to remain in the location of the arc flash. It is likely that a person exposed to an arc flash will move away quickly if it is physically possible, and two seconds is a reasonable maximum time for calculations. A person in a bucket truck or a person who has crawled into equipment will need more time to move away."

Two calculations are typically provided for labels on locations where there is adequate separation between the line side terminals of the main protective device, and the work location. The "Load Side" calculation provides the incident energy based on the main protective device clearing in the event of an arc flash incident. If the work location or task is such that the main breaker may not trip in the event of an arc flash incident, then the "Line Side" calculation for incident energy should be observed. This could occur if the main breaker is being racked-out, and a fault occurred on the line terminals. For this case, the next upstream device is the one that must clear the fault.

The fault current cannot easily be reduced, nor can the working distance be easily increased to lessen the incident energy. In many locations the protective device setting can be adjusted, or the trip unit upgraded to decrease the device interrupting time that will in turn decrease the incident energy. For a critical electrical distribution system, it is essential that the system reliability is not compromised. Settings for protective devices cannot be adjusted if the chance of nuisance trips within critical circuits is introduced. Each location where the incident energy is determined to be unacceptable by the facility Owner, must be individually evaluated to determine the most effective means of reducing the incident energy while maintaining the highest degree of reliability.

4.4 Arc Flash Report Heading Descriptions

The Arc Flash Report, shows results of the arc flash incident energy analysis. The following column headings describe the results.

- **Bus:**
  - ID: - The names in this column correlate to assigned equipment names.
  - Bus kV: - The values in this column show the nominal voltage of the bus location.
  - Equipment Category: - This column indicates whether the equipment is Switchgear, Panel, Cable or Open Air. The equipment type provides a default Gap value, and a distance exponent used in the IEEE incident energy equations.
  - Electrode Configuration: This column displays the IEEE 1584 Electrode Configuration within a box or enclosure used for the study for each bus. VCBB, VCB or HCB. VCBB was selected for panelboards with main breakers or main molded case switches. VCB was selected for panelboards without a main device. The SKM software then calculated and reported only on the worst case scenario for the VCBB configurations for each bus.
  - Gap (mm) This column displays the spacing between bus bars or conductors at the arc location.

- **Fault Current:**
  - Bolted Fault (kA), Bus: - This column shows the bolted fault current available for the equipment location referenced in Column #1. This current value corresponds to the system operating conditions that will result in the worst-case calculated value for incident energy.
  - Bolted Fault (kA), PD - This column shows the bolted fault current available for the bus protective device location referenced in Column #7. This current value

corresponds to the system operating conditions that will result in the worst-case calculated value for incident energy.

- PD Arc Fault (kA): This column displays the portion of calculated arcing fault currents that is contributed through the protective device. These values demonstrate a reduction in available fault current due to the arc resistance.

➢ **Protective Device:**

- Protective Device Name: - This column lists the name of the device primarily responsible for clearing a potential fault at the associated bus. Again, these device names correlate to the system model.
- Trip/Delay time (sec): - This column indicates the time required for a protective circuit breaker device to trip in seconds.

➢ **Arc Flash Boundary (ft):**

- This column displays the distance within which a person must be clothed in the appropriate PPE (Personal Protection Equipment).

➢ **Incident Energy (cal/cm^2):**

- Based on the arcing fault current, the total clearing time of the protective device, the bus bar gap, the grounding method, and the typical working distance, the column displays the results of the arc flash calculations at the reference location. This energy level directly corresponds to the appropriate PPE required for each location. NFPA 70E T130.5(g) provides guidance for the selection of PPE based on calculated incident energy exposure.

➢ **Working Distance (in):**

- This distance indicates the typical working distance associated with the system location.

➢ **PPE Level:**

- This column references the level of personnel protective equipment used in previous version of NFPA 70 E. This is not used for the labels on this project.

4.5 Arc Flash Labels

Arc flash warning labels are based on the Arc Flash Report results. Labels are provided for each work location and are provided in PDF format for printing on Avery 5524 label stock on a standard office laser printer per Client request. The label shall have an orange header with the wording, "WARNING".

The label shall include the following information (see example labels below):

- Arc flash boundary
- Incident energy
- Working distance

- Location designation
- Shock Hazard Exposure
- Limited Approach Boundary
- Restricted Approach Boundary
- Minimum PPE Requirements
- Upstream Protective Device
- Maximum available 3 phase bolted fault current at the bus
- Issue date.

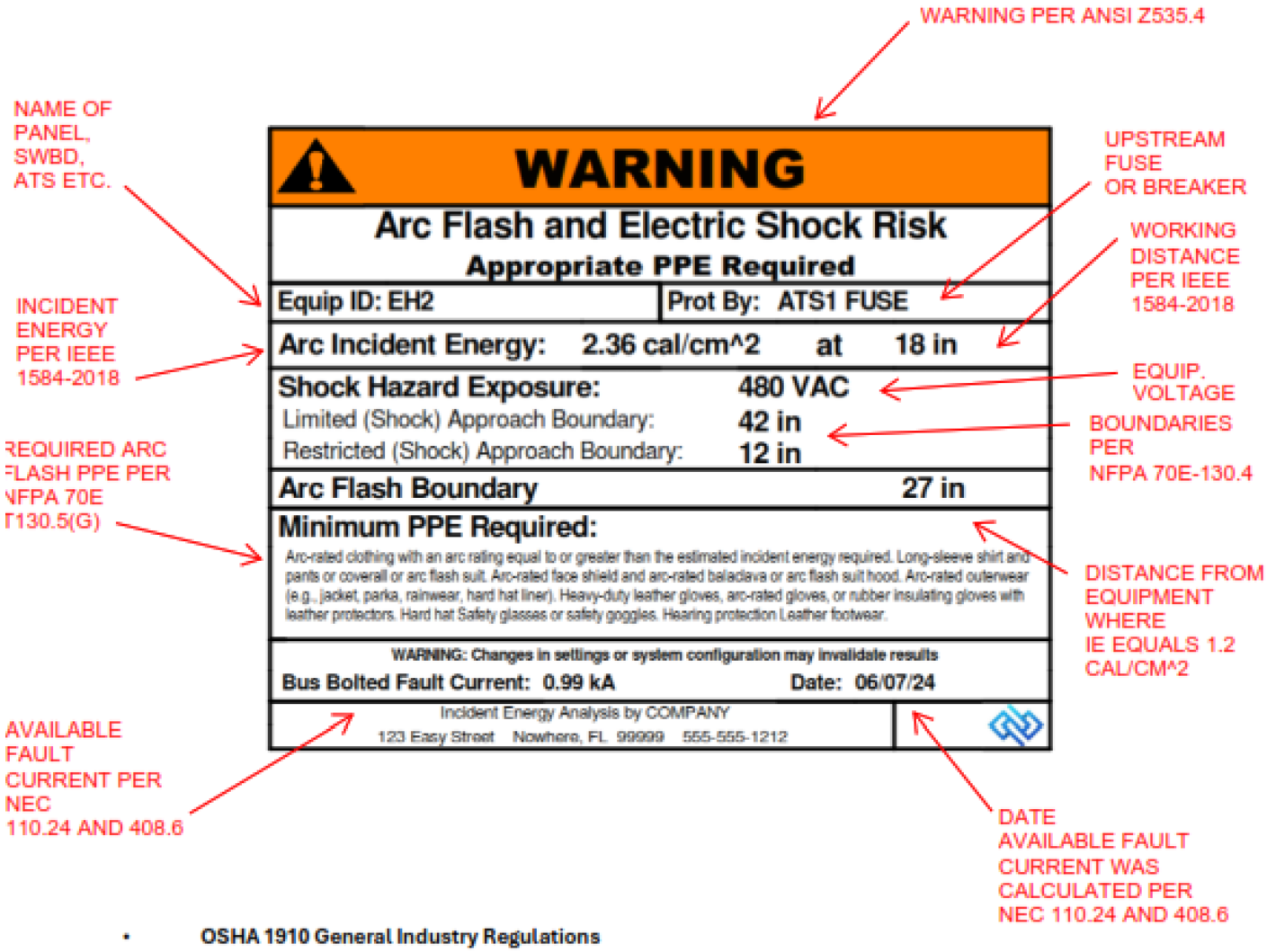
➢ **Electrical Shock Boundaries**

Approach boundaries to energized electrical conductors or circuit parts for shock protection (AC systems) are provided on the Arc Flash label. For any given voltage potential, there is a minimum safe electrical distance needed to protect non-insulated body parts from electrical shock. Conditions such as moisture or dust in the air, or altitude affect this minimum distance to some degree. Additionally, depending on the working situation, it may be necessary to add some distance as a safety factor in case of inadvertent movement of a worker's hand or tool.

- **Shock Hazard Exposure:** The normal AC operating voltage of the equipment or conductors where the work is to take place.
- **Limited Approach Boundary:** The closest distance from an exposed, energized (or potentially energized) conductor or part that an **unqualified** worker may approach, unless additional protective measures are used.
- **Restricted Approach Boundary**: The distance from exposed, energized conductors or circuit parts where only qualified workers are allowed, unless additional protective measures are used.

The definitions above used to determine the proper approach distances for Electrical Shock Hazards are based upon NFPA 70E. Refer to NFPA 70E for detailed information on approach boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection.

It is important to note that the shock protection boundaries and the arc flash boundary are independent of each other.



- **OSHA 1910 General Industry Regulations**

- Section 5 General Duty Clause: "Each employer SHALL furnish to each of his employees a workplace that is free from recognized hazards that are causing or likely to cause death or serious physical harm."

- Subpart I – PPE – Employer shall assess the workplace for hazards and provide appropriate PPE.

- Subpart S – Electrical safety requirements to safeguard employees. NFPA 70E is the standard used to provide part of this safeguarding. The following is an excerpt from the osha.gov website:

Question: Is NFPA 70E a voluntary standard and not something that OSHA enforces?

Response: OSHA approaches NFPA 70E from both a standards perspective and an enforcement perspective. From a standards perspective, OSHA views NFPA 70E as the primary consensus standard addressing electrical hazards associated with electrical utilization systems.

- **National Electrical Code**

- NEC Art 110.16 requires Arc-Flash Hazard Warning labels on electrical equipment likely to require examination, adjustment, servicing or maintenance while energized. The informational note in this article references NFPA 70E as a guide for this warning.

Figure 4.1 - Example Arc Flash Warning Label

4.6 Arc Flash Incident Energy Analysis Recommendations

Results of the study revealed that the calculated incident energy at the line side of the MSB main circuit breaker was calculated to be in excess of 40 cal/cm^2. Calculated incident energy at the line side of disconnect DL13, the line side of LDP MCB, and the line side of L13A MCB and its downstream panels is in excess of 20 cal/cm^2. Most other busses are less than approximately 10 cal/cm^2 with the majority of busses under 2 cal/cm^2.

The incident energy at panels downstream of L13A MCB (panels L13B, L13C and 13D) can be lowered by lowering the setting of L13A MCB.

Little can be done to reduce the IE at the line side of the main switchboard MSB without the cooperation of the utility company aside from installing an outdoor main circuit breaker or fused disconnect. That will only move the issue farther upstream. Adding an energy reduction maintenance mode function to the main circuit breaker will not have any effect on the IE at the line side of the main circuit breaker.

To reduce the IE at the line side of the main circuit breaker in switchboard LDP arc flash sensors and current transformers could be added to this switchboard along with interlock wiring to remotely trip the upstream circuit breaker in MSB feeding transformer XL1. This potential solution would need additional research and close coordination with the manufacturer of the distribution equipment to determine if it is possible or feasible. It is likely that breaker MSB LDP would have to be replaced with one capable of shunt trip.

Adding a maintenance mode switch and function to this same upstream breaker may also potentially reduce the IE at LDP by sacrificing downstream coordination with the transformer inrush and main and feeder breakers in LDP when in maintenance mode. This potential would have to be verified and coordinated with the manufacturer as well. It would also like require replacement of the breaker.

APPENDIX A - UTILITY DATA

POCO Energy

Your N. Here, PE
123 Easy Street
Nowhere, FL 99999
Fault Current - Commercial Example

Dear: Mr. Here

We are providing the following information based upon your request for the available short circuit current information for a coordination study or arc flash analysis. The Service Point is the secondary terminals of the POCO Energy supply transformer. POCO Energy provides this calculated value including the impedance on the source side of the supply transformer and the transformer impedance for the existing or proposed delivery transformer for the size and voltage installed. The short circuit current value provided is the utility design maximum fault current available at the Service Point based upon a bolted fault at the Service Point, given the existing source of feed. Also provided is the source side protection information which is needed for a coordination study or arc flash analysis. Configuration and system components are subject to change and may affect future available current values.

POCO Energy does not provide a "minimum fault current" for a customer location. The available fault current at a Service Point can range from very small to the maximum available fault current depending on the impedance in the fault path, which is normally on the customer's side of the Service Point. Since the source side protection information (fuse, vacuum fault interrupter, recloser, etc.) is provided, arc flash can be calculated for the full range of fault currents that will cause the source side protective device to interrupt which should be sufficient for arc flash analysis.

Referenced Service Location Address:

Somewheresville, FL

Referenced Service [redacted] Energy Utility Location ID: [redacted]

RMS symmetrical values

Primary L-L Voltage:	34.5kV
Primary 3 Phase Available Fault:	3317A
Primary X/R Ratio:	5.67
Transformer KVA: (self-cooled rating)	750kVA Padmount
Secondary Voltage:	480Y/277
Transformer %Z:	5.32

Transformer X/R Ratio (typical):	7.1
Available Fault at the Secondary Spades of the Transformer:	16,960
Nearest Automatic Interrupting device: (rating, type, setting or manufacturer's catalog number)	

Prepared by: Jack Reacher
Engineering Specialist

Prepared Date: 3/3/2020

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APPENDIX B – UNBALANCED FAULT REPORT

EXISTING CONDITIONS. RECOMMENDED BREAKER SETTINGS CHANGES DO NOT AFFECT RESULTS OF THIS REPORT

Project: Commercial Example
COMMERCIAL EXAMPLE
BR549

DAPPER Unbalanced Fault Report

Comprehensive Short Circuit Study Settings

Three Phase Fault	Yes	**Faulted Bus**	All Buses
Single Line to Ground	Yes	**Bus Voltages**	First Bus From Fault
Line to Line Fault	No	**Branch Currents**	First Branch From Fault
Line to Line to Ground	No	**Phase or Sequence**	Report phase quantities
Motor Contribution	Yes	**Fault Current Calculation**	Initial Symmetrical RMS (with 1/2 Cycle Asym)
Transformer Tap	No	**Asym Fault Current at Time**	0.50 **Cycles**
Xformer Phase Shift	Yes		

Fault Location Bus Name	Bus Voltage	3-Phase Amps	3-Phase MVA	3P X/R	SLG Amps	SLG MVA	SLG X/R	Mom Amps	---------3P Asym Amps-------- 3 Cycles	5 Cycles	8 Cycles
ACCU1	480	2,471	2.05	0.22	1,474	0.41	0.16	2,471	2,471	2,471	2,471
ACCU2	480	2,136	1.78	0.20	1,269	0.35	0.14	2,136	2,136	2,136	2,136
ACCU3	480	2,568	2.13	0.25	1,537	0.43	0.18	2,568	2,568	2,568	2,568
ACCU4	480	1,655	1.38	0.17	978	0.27	0.12	1,655	1,655	1,655	1,655
AHU-1 NFDS	480	9,759	8.11	1.67	7,257	2.01	1.19	9,985	9,759	9,759	9,759
AHU-2 NFDS	480	2,357	1.96	0.31	1,398	0.39	0.21	2,357	2,357	2,357	2,357
AHU-3 NFDS	480	1,431	1.19	0.27	836	0.23	0.19	1,431	1,431	1,431	1,431
AHU-4 NFDS	480	2,439	2.03	0.31	1,449	0.40	0.22	2,439	2,439	2,439	2,439
AHU-5 NFDS	480	1,625	1.35	0.28	952	0.26	0.19	1,625	1,625	1,625	1,625
AHU-6 NFDS	480	2,387	1.98	0.31	1,416	0.39	0.21	2,387	2,387	2,387	2,387

Fault Location Bus Name	Bus Voltage	3-Phase Amps	3-Phase MVA	3P X/R	SLG Amps	SLG MVA	SLG X/R	Mom Amps	---------3P Asym Amps--------		
									3 Cycles	5 Cycles	8 Cycles
ATS1 LOAD SIDE	480	9,856	8.19	0.90	6,971	1.93	0.60	9,865	9,856	9,856	9,856
ATS2 LOAD SIDE	480	13,570	11.28	1.88	11,441	3.17	1.32	14,044	13,570	13,570	13,570
AUTOCLAVE NFD	480	3,507	2.92	0.42	2,153	0.60	0.31	3,507	3,507	3,507	3,507
AUX BLDG	208	2,902	1.05	1.12	3,066	0.37	1.27	2,913	2,902	2,902	2,902
DATS1	480	997	0.83	15.02	994	0.28	12.75	1,517	1,074	1,012	998
DATS2	480	997	0.83	17.06	995	0.28	15.43	1,540	1,101	1,022	1,000
DL13	208	14,276	5.14	4.12	15,958	1.92	3.87	17,101	14,278	14,276	14,276
DXEL1 FDS	480	2,421	2.01	0.35	1,458	0.40	0.26	2,421	2,421	2,421	2,421
EF-K1 NFDS	208	289	0.10	0.14	168	0.02	0.09	289	289	289	289
EF-K2 NFDS	208	304	0.11	0.14	176	0.02	0.09	304	304	304	304
EH1	480	13,120	10.91	1.73	10,834	3.00	1.20	13,461	13,120	13,120	13,120
EH2	480	9,287	7.72	0.83	6,446	1.79	0.55	9,292	9,287	9,287	9,287
EL1	208	1,562	0.56	1.46	1,638	0.20	1.57	1,583	1,562	1,562	1,562
EL1A	208	1,551	0.56	1.44	1,619	0.19	1.53	1,571	1,551	1,551	1,551
EL1B	208	1,540	0.55	1.42	1,600	0.19	1.50	1,559	1,540	1,540	1,540
ELEV FDS	480	3,260	2.71	0.47	1,973	0.55	0.34	3,260	3,260	3,260	3,260
GEN LINE SIDE	480	1,001	0.83	20.00	1,001	0.28	20.00	1,570	1,143	1,043	1,008
GLYPUMP NFDS	480	1,734	1.44	0.16	1,022	0.28	0.11	1,734	1,734	1,734	1,734
H1	480	15,868	13.19	4.78	15,044	4.17	4.15	19,675	15,874	15,868	15,868
H2	480	15,557	12.93	3.88	14,550	4.03	3.13	18,387	15,558	15,557	15,557
H3	480	15,271	12.70	3.57	14,131	3.92	2.81	17,708	15,271	15,271	15,271
H4	480	3,668	3.05	0.43	2,253	0.62	0.32	3,668	3,668	3,668	3,668
HOIST NFDS	480	5,426	4.51	0.49	3,419	0.95	0.34	5,426	5,426	5,426	5,426
L10	208	2,829	1.02	0.58	1,771	0.21	0.43	2,830	2,829	2,829	2,829
L11A	208	12,463	4.49	2.51	12,444	1.49	1.80	13,440	12,463	12,463	12,463
L11B	208	12,144	4.37	2.35	11,889	1.43	1.67	12,955	12,144	12,144	12,144

Fault Location Bus Name	Bus Voltage	3-Phase Amps	3-Phase MVA	3P X/R	SLG Amps	SLG MVA	SLG X/R	Mom Amps	---------3P Asym Amps--------		
									3 Cycles	5 Cycles	8 Cycles
L12	208	2,997	1.08	0.87	1,970	0.24	0.68	2,999	2,997	2,997	2,997
L13A	208	9,146	3.29	1.64	8,483	1.02	1.55	9,342	9,146	9,146	9,146
L13B	208	9,063	3.27	1.62	8,386	1.01	1.53	9,251	9,063	9,063	9,063
L13C	208	8,982	3.24	1.61	8,290	1.00	1.52	9,161	8,982	8,982	8,982
L13D	208	8,902	3.21	1.59	8,197	0.98	1.51	9,073	8,902	8,902	8,902
L1A	208	12,382	4.46	2.46	12,302	1.48	1.77	13,314	12,382	12,382	12,382
L1B	208	12,066	4.35	2.32	11,756	1.41	1.64	12,841	12,066	12,066	12,066
L2A	208	12,792	4.61	2.69	13,037	1.57	1.97	13,974	12,792	12,792	12,792
L2B	208	12,463	4.49	2.51	12,444	1.49	1.80	13,440	12,463	12,463	12,463
L3	208	12,544	4.52	2.55	12,589	1.51	1.84	13,568	12,544	12,544	12,544
L4A	208	11,920	4.29	2.25	11,502	1.38	1.58	12,632	11,920	11,920	11,920
L4B	208	11,545	4.16	2.11	10,890	1.31	1.46	12,116	11,545	11,545	11,545
L5A	208	4,206	1.52	0.83	2,820	0.34	0.61	4,208	4,206	4,206	4,206
L5B	208	4,147	1.49	0.82	2,775	0.33	0.61	4,148	4,147	4,147	4,147
L5C	208	4,089	1.47	0.81	2,731	0.33	0.60	4,091	4,089	4,089	4,089
L6A	208	11,464	4.13	2.08	10,768	1.29	1.44	12,007	11,464	11,464	11,464
L6B	208	11,109	4.00	1.96	10,217	1.23	1.35	11,548	11,109	11,109	11,109
L7A	208	13,926	5.02	3.62	15,213	1.83	3.00	16,195	13,926	13,926	13,926
L7B	208	13,567	4.89	3.26	14,506	1.74	2.56	15,415	13,567	13,567	13,567
L8	208	1,742	0.63	0.36	1,054	0.13	0.27	1,742	1,742	1,742	1,742
L9	208	2,105	0.76	0.45	1,293	0.16	0.34	2,105	2,105	2,105	2,105
LDP	208	14,477	5.22	4.38	16,319	1.96	4.16	17,591	14,479	14,477	14,477
LDP2	208	6,212	2.24	3.52	6,560	0.79	3.37	7,178	6,212	6,212	6,212
MSB	480	16,782	13.95	6.36	16,355	4.53	6.48	22,165	16,826	16,782	16,782
MULT1 CTL	480	11,988	9.97	1.79	9,695	2.69	1.29	12,341	11,988	11,988	11,988
MULT2 CTL	480	12,857	10.69	2.05	10,777	2.99	1.50	13,447	12,857	12,857	12,857

Fault Location Bus Name	Bus Voltage	3-Phase Amps	3-Phase MVA	3P X/R	SLG Amps	SLG MVA	SLG X/R	Mom Amps	---------3P Asym Amps--------		
									3 Cycles	5 Cycles	8 Cycles
MULT3 CTL	480	12,945	10.76	1.97	10,846	3.01	1.43	13,466	12,945	12,945	12,945
MULT4 CTL	480	13,225	11.00	1.84	11,070	3.07	1.31	13,656	13,225	13,225	13,225
PAD MT SECONDA	480	16,866	14.02	6.54	16,495	4.57	6.73	22,410	16,919	16,867	16,866
PDP1	480	16,495	13.71	5.64	15,954	4.42	5.64	21,229	16,516	16,496	16,495
PDP2	480	16,364	13.60	5.03	15,795	4.38	4.95	20,524	16,373	16,364	16,364
PDP3	480	16,251	13.51	5.15	15,613	4.33	5.09	20,495	16,262	16,251	16,251
PDP4	480	16,196	13.46	5.05	15,542	4.31	4.98	20,337	16,205	16,196	16,196
RTU-1 NEW FDS	208	1,175	0.42	0.30	691	0.08	0.21	1,175	1,175	1,175	1,175
SHRED1 NFDS	480	3,596	2.99	0.30	2,176	0.60	0.20	3,596	3,596	3,596	3,596
SHRED2 NFDS	480	818	0.68	0.14	478	0.13	0.10	818	818	818	818
SIFTER CP	208	5,903	2.13	3.14	6,035	0.72	2.79	6,654	5,903	5,903	5,903
WIREWAY SPLICE	480	999	0.83	17.97	997	0.28	16.75	1,550	1,115	1,029	1,002
XL LOAD SIDE	208	14,873	5.36	5.02	17,062	2.05	4.94	18,648	14,881	14,873	14,873

APPENDIX C - EQUIPMENT EVALUATION REPORTS

EQUIPMENT EVALUATION REPORT - ALL BUSSES

Equipment Evaluation Report - All Buses

	Bus	Status	Manufacturer	Type	Bus Voltage	VD%	LF Current	Design Amps	Ampacity	LF Rating%	Design%	Calc Isc kA	Dev Isc kA	Series Rating kA
1	PDP3	Failed	UL 67	LV Panelboard	480	1.68	73.68	40.70	600.0	12.28	6.78	*18.28 (*N1)	18.00	
1	PDP4	Failed	UL 67	LV Panelboard	480	1.68	61.38	33.47	600.0	10.23	5.58	*18.14 (*N1)	18.00	
2	SIFTER CP	Failed	UL 67	LV Panelboard	208	1.68			250.0			*6.94 (*N1)	5.00	
3	AHU-1 NFDS	Marginal	NFDS	NFDS	480	2.19	92.47	113.07	200.0	46.24	56.53	*9.76	10.00	
4	L13A	Marginal	UL 67	LV Panelboard	208	1.70			600.0			*9.15	10.00	
4	L13B	Marginal	UL 67	LV Panelboard	208	1.70			600.0			*9.06	10.00	
	AHU-2 NFDS	Passed	NFDS	NFDS	480	2.11	12.32	15.08	60.0	20.53	25.13	2.36	10.00	
	AHU-3 NFDS	Passed	NFDS	NFDS	480	2.42	12.36	15.08	60.0	20.60	25.13	1.43	10.00	
	AHU-4 NFDS	Passed	NFDS	NFDS	480	2.09	12.32	15.08	60.0	20.53	25.13	2.44	10.00	
	AHU-5 NFDS	Passed	NFDS	NFDS	480	2.32	12.35	15.08	60.0	20.58	25.13	1.63	10.00	
	AHU-6 NFDS	Passed	NFDS	NFDS	480	2.10	12.32	15.08	60.0	20.53	25.13	2.39	10.00	
	ATS1 LOAD SIDE	Passed	GENERAC	ATS	480	1.66			100.0			9.86	14.00	25.00
	ATS2 LOAD SIDE	Passed	GENERAC	ATS	480	1.67	6.17		200.0	3.08		13.83 (*N1)	14.00	25.00
	AUX BLDG	Passed	FDS	FDS	208	1.66			200.0			3.07	100.00	
	DATS1	Passed	FDS	FDS	480	0.01			60.0			1.18 (*N1)	100.00	
	DATS2	Passed	FDS	FDS	480	0.01			200.0			1.19 (*N1)	100.00	
	DL13	Passed	UL 67	LV Panelboard	208	1.70			600.0			15.96	100.00	
	DXEL1 FDS	Passed	FDS	FDS	480	1.87	6.17		100.0	6.17		2.42	100.00	
	EF-K1 NFDS	Passed	NFDS	NFDS	208	2.33	2.14	2.61	30.0	7.12	8.70	0.29	10.00	
	EH1	Passed	UL 67	LV Panelboard	480	1.67	6.17		225.0	2.74		13.12	14.00	65.00
	EH2	Passed	UL 67	LV Panelboard	480	1.66			225.0			9.29	14.00	
	EL1	Passed	UL 67	LV Panelboard	208	2.49	14.24		225.0	6.33		1.64	10.00	
	EL1A	Passed	UL 67	LV Panelboard	208	2.50	14.24		225.0	6.33		1.62	10.00	
	EL1B	Passed	UL 67	LV Panelboard	208	2.51	14.24		225.0	6.33		1.60	10.00	
	ELEV FDS	Passed	FDS	FDS	480	2.14	18.49	22.61	100.0	18.49	22.61	3.26	100.00	

1. REPLACE ED CB'S WITH EG
2. CONSULT SIFTER CP MANUFACTURER
3. NO SERIES RATING AVAILABLE. MARGINALLY PASSES.
4. NO SERIES RATING AVAILABLE. MARGINALLY PASSES.

Bus	Status	Manufacturer	Type	Bus Voltage	VD%	LF Current	Design Amps	Ampacity	LF Rating%	Design%	Calc Isc kA	Dev Isc kA	Series Rating kA
GLYPUMP NFDS	Passed	NFDS	NFDS	480	1.78	2.46	3.02	30.0	8.19	10.05	1.73	10.00	
H1	Passed	UL 67	LV Panelboard	480	1.66			225.0			20.66 (*N1)	14.00	65.00
H2	Passed	UL 67	LV Panelboard	480	1.66			225.0			19.28 (*N1)	14.00	65.00
H3	Passed	UL 67	LV Panelboard	480	1.66			225.0			18.53 (*N1)	14.00	65.00
H4	Passed	UL 67	LV Panelboard	480	1.66			125.0			3.67	14.00	
HOIST NFDS	Passed	NFDS	NFDS	480	1.75	6.14	7.54	60.0	10.23	12.56	5.43	10.00	
L10	Passed	UL 67	LV Panelboard	208	1.96	8.55	10.44	100.0	8.55	10.44	2.83	10.00	
L11A	Passed	UL 67	LV Panelboard	208	1.70			225.0			13.74 (*N1)	10.00	65.00
L11B	Passed	UL 67	LV Panelboard	208	1.70			225.0			13.15 (*N1)	10.00	65.00
L12	Passed	UL 67	LV Panelboard	208	1.70			225.0			3.00	10.00	
L13C	Passed	UL 67	LV Panelboard	208	1.70			600.0			8.98	10.00	
L13D	Passed	UL 67	LV Panelboard	208	1.70			600.0			8.90	10.00	
L1A	Passed	UL 67	LV Panelboard	208	1.70			225.0			13.59 (*N1)	10.00	65.00
L1B	Passed	UL 67	LV Panelboard	208	1.70			225.0			13.01 (*N1)	10.00	65.00
L2A	Passed	UL 67	LV Panelboard	208	1.70			225.0			14.38 (*N1)	10.00	65.00
L2B	Passed	UL 67	LV Panelboard	208	1.70			225.0			13.74 (*N1)	10.00	65.00
L3	Passed	UL 67	LV Panelboard	208	1.70			225.0			13.89 (*N1)	10.00	65.00
L4A	Passed	UL 67	LV Panelboard	208	1.71	4.27	4.70	225.0	1.90	2.09	12.76 (*N1)	10.00	65.00
L4B	Passed	UL 67	LV Panelboard	208	1.71			225.0			12.13 (*N1)	10.00	65.00
L5A	Passed	UL 67	LV Panelboard	208	1.70			225.0			4.21	10.00	
L5B	Passed	UL 67	LV Panelboard	208	1.70			225.0			4.15	10.00	
L5C	Passed	UL 67	LV Panelboard	208	1.70			225.0			4.09	10.00	
L6A	Passed	UL 67	LV Panelboard	208	1.70			225.0			12.00 (*N1)	10.00	65.00
L6B	Passed	UL 67	LV Panelboard	208	1.70			225.0			11.44 (*N1)	10.00	65.00
L7A	Passed	UL 67	LV Panelboard	208	1.70			225.0			17.63 (*N1)	10.00	65.00

Bus	Status	Manufacturer	Type	Bus Voltage	VD%	LF Current	Design Amps	Ampacity	LF Rating%	Design%	Calc Isc kA	Dev Isc kA	Series Rating kA
L7B	Passed	UL 67	LV Panelboard	208	1.70			225.0			16.09 (*N1)	10.00	65.00
L8	Passed	UL 67	LV Panelboard	208	1.70			225.0			1.74	10.00	
L9	Passed	UL 67	LV Panelboard	208	1.70			225.0			2.10	10.00	
LDP	Passed	UL 67	LV Panelboard	208	1.70	12.82	14.61	1200.0	1.07	1.22	16.32	42.00	
LDP2	Passed	UL 67	LV Panelboard	208	1.68			350.0			6.56	25.00	
MSB	Passed	UL 891	LV Switchboard	480	1.66	344.56	293.94	3000.0	11.49	9.80	17.70 (*N1)	65.00	
MULT1 CTL	Passed	UL 67	LV Panelboard	480	1.80	36.84	19.00	150.0	24.56	12.66	11.99	18.00	
MULT2 CTL	Passed	UL 67	LV Panelboard	480	1.77	36.83	22.61	150.0	24.56	15.08	12.86	18.00	
MULT3 CTL	Passed	UL 67	LV Panelboard	480	1.75	30.69	19.00	125.0	24.55	15.20	12.94	18.00	
MULT4 CTL	Passed	UL 67	LV Panelboard	480	1.75	30.69	15.38	100.0	30.69	15.38	13.23	18.00	
PAD MT SECONDARY	Passed	XF	XF	480	1.64	344.56	293.94	3000.0	11.49	9.80	23.41 (*N1)	100.00	
PDP1	Passed	UL 67	LV Panelboard	480	1.67	61.66	63.32	600.0	10.28	10.55	16.99 (*N1)	65.00	
PDP2	Passed	UL 67	LV Panelboard	480	1.66	25.44	26.45	400.0	6.36	6.61	16.46 (*N1)	65.00	
RTU-1 NEW FDS	Passed	FDS	FDS	208	2.34	8.55	10.44	30.0	28.50	34.79	1.18	100.00	
SHRED1 NFDS	Passed	NFDS	NFDS	480	1.72	2.45	3.02	30.0	8.18	10.05	3.60	10.00	
SHRED2 NFDS	Passed	NFDS	NFDS	480	1.91	2.46	3.02	30.0	8.20	10.05	0.82	10.00	
XL LOAD SIDE	Passed	XF	XF	208	1.70	12.82	14.61	1200.0	1.07	1.22	17.06	22.00	
(*N1) System X/R higher than Test X/R, Calc INT kA modified based on low voltage factor.													
(*Calc Isc kA) Device did not pass. Device is either Marginal (90%) or Failed (100%) of device library Isc rating.													

EQUIPMENT EVALUATION REPORT - ALL PROTECTIVE DEVICES

All Protection Devices - Equipment Evaluation Report Based on Balanced System Study Module Comprehensive Fault Analysis Bus Data

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
1	PDP3 ACCU1	Failed	ED	480	0.00	0.00	*18.28 (*N1)	
	PDP3		15-125A	480	30.00	30.00	18.00	
	SQUARE D		ED	100.00	0.00	0.00	*101.53	
1	PDP3 ACCU2	Failed	ED	480	0.00	0.00	*18.28 (*N1)	
	PDP3		15-125A	480	30.00	30.00	18.00	
	SQUARE D		ED	100.00	0.00	0.00	*101.53	
1	PDP4 ACCU3	Failed	ED	480	0.00	0.00	*18.14 (*N1)	
	PDP4		15-125A	480	35.00	35.00	18.00	
	SQUARE D		ED	100.00	0.00	0.00	*100.77	
1	PDP4 ACCU4	Failed	ED	480	0.00	0.00	*18.14 (*N1)	
	PDP4		15-125A	480	30.00	30.00	18.00	
	SQUARE D		ED	100.00	0.00	0.00	*100.77	
1	PDP4 MULT3	Failed	ED	480	30.69	19.00	*18.14 (*N1)	
	PDP4		15-125A	480	125.00	125.00	18.00	
	SQUARE D		ED	100.00	24.55	15.20	*100.77	
1	PDP4 MULT4	Failed	ED	480	30.69	15.38	*18.14 (*N1)	
	PDP4		15-125A	480	110.00	110.00	18.00	
	SQUARE D		ED	100.00	27.90	13.98	*100.77	
2	AHU-1 SW	Marginal	DS	480	92.47	113.07	*9.76	
	AHU-1 NFDS		30-1200A	600	200.00	200.00	10.00/10.00	
	UL 98		200A	80.00	46.24	56.53	*97.59	
	DL13 FUSE	Passed	FLNR_ID, 250V Class RK5	208	0.00	0.00	15.96	
	DL13		35-600A	250	600.00	600.00	200.00	
	LITTELFUSE		FLNRID	83.20	0.00	0.00	7.98	

1. REPLACE ED FRAME BREAKER WITH EG FRAME TO INCREASE RATING TO 65KA

2. REPLACE WITH FUSIBLE SWITCH IF DESIRED. NOT REQUIRED. MARGINALLY PASSES.

Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
EL1 MCB	Passed	THQD	208	14.24	0.00	1.64	
EL1		100-225A	240	150.00	150.00	22.00	
GE		THQD	86.67	9.49	0.00	7.45	
L10 RTU-1 NEW	Passed	THQL	208	8.55	10.44	2.83	
L10		15-125A	240	30.00	30.00	10.00	
GE		THQL	86.67	28.50	34.79	28.29	
L12 MCB	Passed	TQD	208	0.00	0.00	3.00	
L12		100-225A	240	200.00	200.00	10.00	
GE		TQD	86.67	0.00	0.00	29.97	
L13A MCB	Passed	SGHA, Spectra RMS	208	0.00	0.00	9.15	
L13A		125-600A	240	600.00	600.00	65.00	
GE		SGHA	86.67	0.00	0.00	14.07	
LD EF-K1	Passed	THQB	208	2.14	2.61	12.76 (*N1)	
L4A		15-100A	240	20.00	20.00	10.00/65.00	
GE		THQB	86.67	10.69	13.05	19.63	
LD EF-K2	Passed	THQB	208	2.14	2.61	12.76 (*N1)	
L4A		15-100A	240	20.00	20.00	10.00/65.00	
GE		THQB	86.67	10.68	13.05	19.63	
LDP L1	Passed	SFHA, Spectra RMS	208	0.00	0.00	16.32	
LDP		70-250A	240	225.00	225.00	65.00	
GE		SFHA	86.67	0.00	0.00	25.11	
LDP L10	Passed	SELA, Spectra RMS	208	8.55	10.44	16.32	
LDP		15-150A	240	100.00	100.00	100.00	

Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
GE		SELA	86.67	8.55	10.44	16.32	
LDP L11	Passed	SFHA, Spectra RMS	208	0.00	0.00	16.32	
LDP		70-250A	240	225.00	225.00	65.00	
GE		SFHA	86.67	0.00	0.00	25.11	
LDP L12	Passed	SFLA, Spectra RMS	208	0.00	0.00	16.32	
LDP		70-250A	240	200.00	200.00	100.00	
GE		SFLA	86.67	0.00	0.00	16.32	
LDP L2	Passed	SFHA, Spectra RMS	208	0.00	0.00	16.32	
LDP		70-250A	240	225.00	225.00	65.00	
GE		SFHA	86.67	0.00	0.00	25.11	
LDP L3	Passed	SFHA, Spectra RMS	208	0.00	0.00	16.32	
LDP		70-250A	240	225.00	225.00	65.00	
GE		SFHA	86.67	0.00	0.00	25.11	
LDP L4	Passed	SFHA, Spectra RMS	208	4.27	4.70	16.32	
LDP		70-250A	240	225.00	225.00	65.00	
GE		SFHA	86.67	1.90	2.09	25.11	
LDP L5	Passed	SFHA, Spectra RMS	208	0.00	0.00	16.32	
LDP		70-250A	240	225.00	225.00	65.00	
GE		SFHA	86.67	0.00	0.00	25.11	
LDP L6	Passed	SFHA, Spectra RMS	208	0.00	0.00	16.32	
LDP		70-250A	240	225.00	225.00	65.00	
GE		SFHA	86.67	0.00	0.00	25.11	
LDP L7	Passed	SFHA, Spectra RMS	208	0.00	0.00	16.32	

Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
LDP		70-250A	240	225.00	225.00	65.00	
GE		SFHA	86.67	0.00	0.00	25.11	
LDP L8	Passed	SEHA, Spectra RMS	208	0.00	0.00	16.32	
LDP		15-150A	240	150.00	150.00	65.00	
GE		SEHA	86.67	0.00	0.00	25.11	
LDP L9	Passed	SFHA, Spectra RMS	208	0.00	0.00	16.32	
LDP		70-250A	240	225.00	225.00	65.00	
GE		SFHA	86.67	0.00	0.00	25.11	
LDP MCB	Passed	SKHA, Spectra RMS	208	12.82	14.61	16.32	
LDP		300-1200A	240	1200.00	1200.00	65.00	
GE		SKHHA	86.67	1.07	1.22	25.11	
LDP2 MCB	Passed	LA	208	0.00	0.00	6.56	
LDP2		125-400A	240	250.00	250.00	42.00	
SQUARE D		LA	86.67	0.00	0.00	15.62	
LDP2 SIFTER	Passed	J-Frame, Powerpact	208	0.00	0.00	6.56	
LDP2		150-250A, UL	240	250.00	250.00	25.00	
SQUARE D		JD	86.67	0.00	0.00	26.24	
RTU-1 NEW FUSE	Passed	FRN-R, 250V Class RK5	208	8.55	10.44	1.18	
RTU-1 NEW FDS		0.1-600A	250	30.00	30.00	200.00	
BUSSMANN		FRN-R	83.20	28.50	34.79	0.59	
AHU-2 SW	Passed	DS	480	12.32	15.08	2.36	
AHU-2 NFDS		30-1200A	600	60.00	60.00	10.00/10.00	
UL 98		60A	80.00	20.53	25.13	23.57	

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
	AHU-3 SW	Passed	DS	480	12.36	15.08	1.43	
	AHU-3 NFDS		30-1200A	600	60.00	60.00	10.00/10.00	
	UL 98		60A	80.00	20.60	25.13	14.31	
	AHU-4 SW	Passed	DS	480	12.32	15.08	2.44	
	AHU-4 NFDS		30-1200A	600	60.00	60.00	10.00/10.00	
	UL 98		60A	80.00	20.53	25.13	24.39	
	AHU-5 SW	Passed	DS	480	12.35	15.08	1.63	
	AHU-5 NFDS		30-1200A	600	60.00	60.00	10.00/10.00	
	UL 98		60A	80.00	20.58	25.13	16.25	
	AHU-6 SW	Passed	DS	480	12.32	15.08	2.39	
	AHU-6 NFDS		30-1200A	600	60.00	60.00	10.00/10.00	
	UL 98		60A	80.00	20.53	25.13	23.87	
	AUTOCLAVE SW	Passed	DS	480	12.27	12.03	3.51	
	AUTOCLAVE NFDS		30-1200A	600	30.00	30.00	10.00/10.00	
	UL 98		30A	80.00	40.90	40.09	35.07	
	ATS1 FUSE	Passed	FLSRID, 600V Class RK5	480	0.00	0.00	1.18 (*N1)	
	DATS1		15-600A	600	60.00	60.00	200.00	
	LITTELFUSE		FLSRID	80.00	0.00	0.00	0.59	
	ATS2 FUSE	Passed	FLSRID, 600V Class RK5	480	0.00	0.00	1.20 (*N1)	
	DATS2		15-600A	600	125.00	125.00	200.00	
	LITTELFUSE		FLSRID	80.00	0.00	0.00	0.60	
	DXEL1	Passed	FLSRID, 600V Class RK5	480	6.17	0.00	2.42	
	DXEL1 FDS		15-600A	600	70.00	70.00	300.00	
	LITTELFUSE		FLSRID	80.00	8.81	0.00	0.81	

Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
EH1 DTELA	Passed	TED (E-100 Line)	480	6.17	0.00	13.58 (*N1)	
EH1		15-100A, 2-3 Pole	480	70.00	70.00	14.00/65.00	
GE		TED	100.00	8.81	0.00	20.89	
EH1 MCB	Passed	SFLA, Spectra RMS	480	6.17	0.00	13.12	
EH1		70-250A	480	125.00	125.00	65.00	
GE		SFLA	100.00	4.94	0.00	20.18	
EH2 MCB	Passed	SELA, Spectra RMS	480	0.00	0.00	9.29	
EH2		15-150A	480	50.00	50.00	65.00	
GE		SELA	100.00	0.00	0.00	14.29	
ELEV FUSE	Passed	TRS, 600V Class RK5	480	18.49	22.61	3.26	
ELEV FDS		15-600A	600	80.00	80.00	200.00	
GOULD SHAWMUT		TRS	80.00	23.11	28.27	1.63	
GEN MCB	Passed	GBU	480	0.00	0.00	1.35 (*N1)	
GEN LINE SIDE		40-630A	480	175.00	175.00	18.00	
GENERAC		GBU	100.00	0.00	0.00	7.52	
GLYPUMP SW	Passed	DS	480	2.46	3.02	1.73	
GLYPUMP NFDS		30-1200A	600	30.00	30.00	10.00/10.00	
UL 98		30A	80.00	8.19	10.05	17.34	
HOIST SW	Passed	DS	480	6.14	7.54	5.43	
HOIST NFDS		30-1200A	600	30.00	30.00	10.00/10.00	
UL 98		30A	80.00	20.46	25.13	54.26	
MSB AHU-1	Passed	SFLA, Spectra RMS	480	92.47	113.07	17.70 (*N1)	
MSB		70-250A	480	200.00	200.00	65.00	

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
	GE		SFLA	100.00	46.24	56.53	27.23	
	MSB ATS1	Passed	SELA, Spectra RMS	480	0.00	0.00	17.70 (*N1)	
	MSB		15-150A	480	50.00	50.00	65.00	
	GE		SELA	100.00	0.00	0.00	27.23	
	MSB ATS2	Passed	SELA, Spectra RMS	480	6.17	0.00	17.70 (*N1)	
	MSB		15-150A	480	125.00	125.00	65.00	
	GE		SELA	100.00	4.94	0.00	27.23	
	MSB AUX BLDG	Passed	SELA, Spectra RMS	480	0.00	0.00	17.70 (*N1)	
	MSB		15-150A	480	125.00	125.00	65.00	
	GE		SELA	100.00	0.00	0.00	27.23	
	MSB ELEV	Passed	SELA, Spectra RMS	480	18.49	22.61	17.70 (*N1)	
	MSB		15-150A	480	80.00	80.00	65.00	
	GE		SELA	100.00	23.11	28.27	27.23	
	MSB H1	Passed	SFLA, Spectra RMS	480	0.00	0.00	17.70 (*N1)	
	MSB		70-250A	480	225.00	225.00	65.00	
	GE		SFLA	100.00	0.00	0.00	27.23	
	MSB H2	Passed	SFLA, Spectra RMS	480	0.00	0.00	17.70 (*N1)	
	MSB		70-250A	480	225.00	225.00	65.00	
	GE		SFLA	100.00	0.00	0.00	27.23	
	MSB H3	Passed	SFLA, Spectra RMS	480	0.00	0.00	17.70 (*N1)	
	MSB		70-250A	480	225.00	225.00	65.00	
	GE		SFLA	100.00	0.00	0.00	27.23	
	MSB H4	Passed	SELA, Spectra RMS	480	0.00	0.00	17.70 (*N1)	

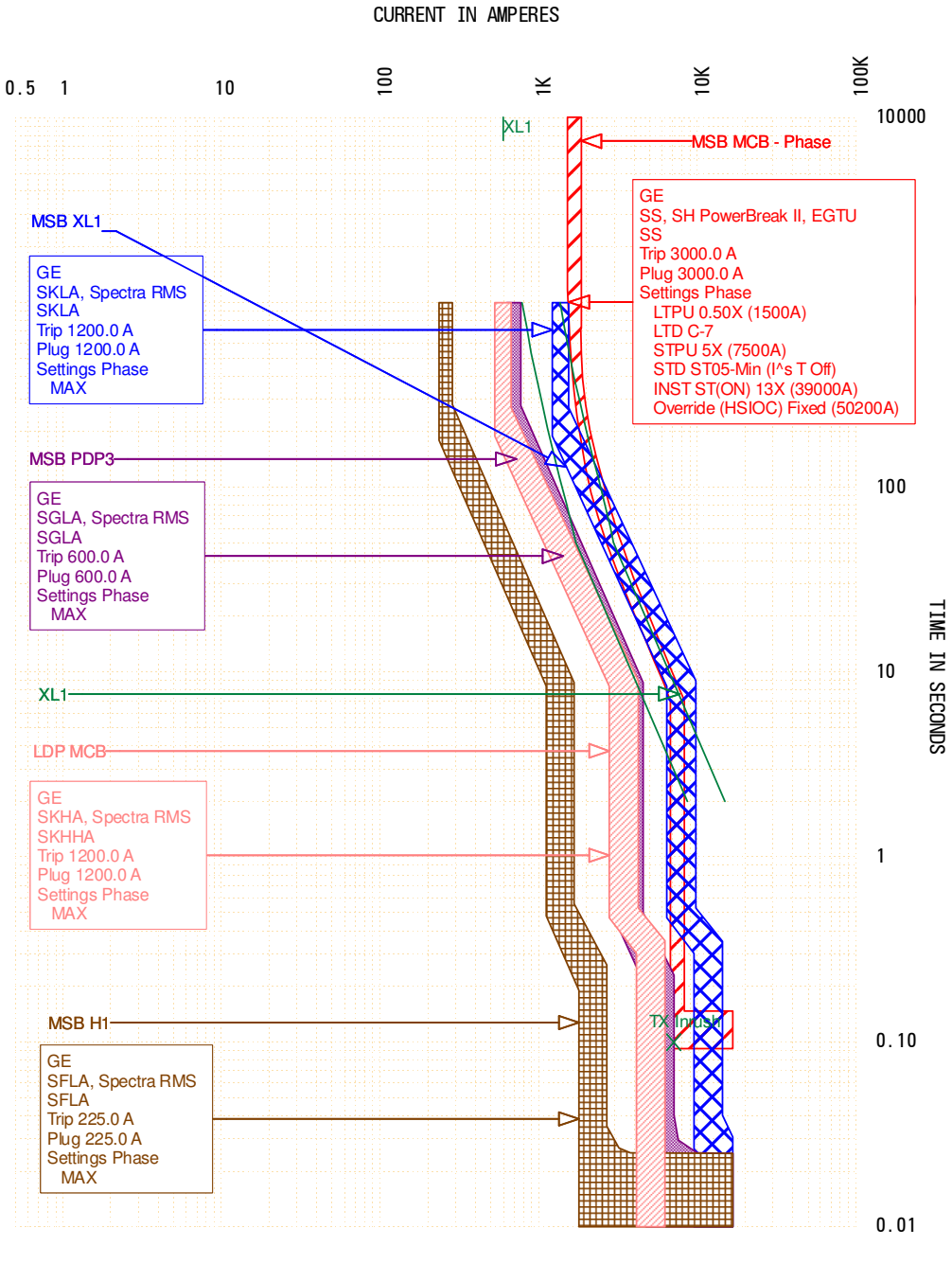
Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
MSB		15-150A	480	125.00	125.00	65.00	
GE		SELA	100.00	0.00	0.00	27.23	
MSB PDP1	Passed	SGLA, Spectra RMS	480	61.66	63.32	17.70 (*N1)	
MSB		125-600A	480	600.00	600.00	65.00	
GE		SGLA	100.00	10.28	10.55	27.23	
MSB PDP2	Passed	SGLA, Spectra RMS	480	25.44	26.45	17.70 (*N1)	
MSB		125-600A	480	400.00	400.00	65.00	
GE		SGLA	100.00	6.36	6.61	27.23	
MSB PDP3	Passed	SGLA, Spectra RMS	480	73.68	40.70	17.70 (*N1)	
MSB		125-600A	480	600.00	600.00	65.00	
GE		SGLA	100.00	12.28	6.78	27.23	
MSB PDP4	Passed	SGLA, Spectra RMS	480	61.38	33.47	17.70 (*N1)	
MSB		125-600A	480	600.00	600.00	65.00	
GE		SGLA	100.00	10.23	5.58	27.23	
MSB XL1	Passed	SKLA, Spectra RMS	480	5.56	6.33	17.70 (*N1)	
MSB		300-1200A	480	1200.00	1200.00	65.00	
GE		SKLA	100.00	0.46	0.53	27.23	
PDP1 AHU-2	Passed	FB, 2 & 3-Pole 480V	480	12.32	15.08	16.99 (*N1)	
PDP1		15-100A	480	50.00	50.00	65.00	
GE		FBN	100.00	24.64	30.15	26.15	
PDP1 AHU-3	Passed	FB, 2 & 3-Pole 480V	480	12.36	15.08	16.99 (*N1)	
PDP1		15-100A	480	50.00	50.00	65.00	
GE		FBN	100.00	24.72	30.15	26.15	

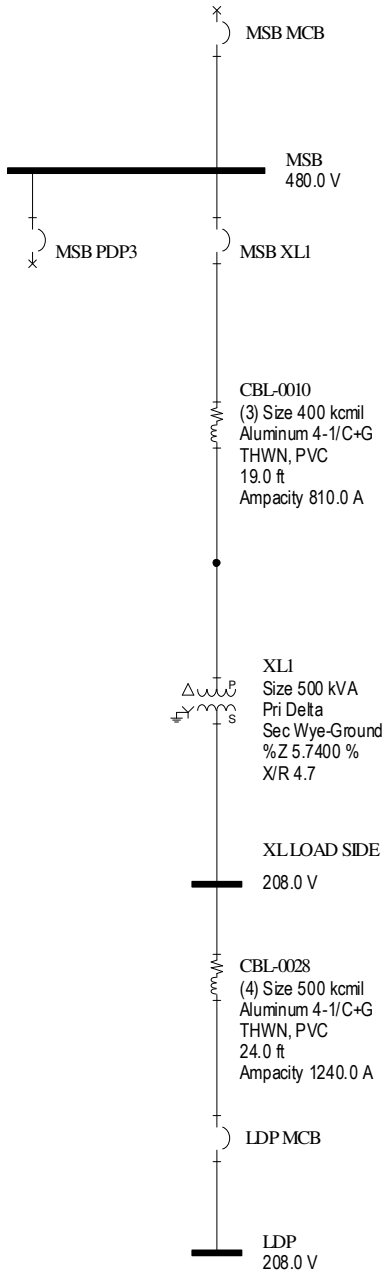
	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
	PDP1 AHU-4	Passed	FB, 2 & 3-Pole 480V	480	12.32	15.08	16.99 (*N1)	
	PDP1		15-100A	480	50.00	50.00	65.00	
	GE		FBN	100.00	24.64	30.15	26.15	
	PDP1 AHU-5	Passed	FB, 2 & 3-Pole 480V	480	12.35	15.08	16.99 (*N1)	
	PDP1		15-100A	480	50.00	50.00	65.00	
	GE		FBN	100.00	24.69	30.15	26.15	
	PDP1 AHU-6	Passed	FB, 2 & 3-Pole 480V	480	12.32	15.08	16.99 (*N1)	
	PDP1		15-100A	480	50.00	50.00	65.00	
	GE		FBN	100.00	24.64	30.15	26.15	
	PDP2 AUTOCLAVE	Passed	FB, 2 & 3-Pole 480V	480	12.27	12.03	16.46 (*N1)	
	PDP2		15-100A	480	60.00	60.00	65.00	
	GE		FBN	100.00	20.45	20.05	25.32	
	PDP2 GLYPUMP	Passed	FB, 2 & 3-Pole 480V	480	2.46	3.02	16.46 (*N1)	
	PDP2		15-100A	480	20.00	20.00	65.00	
	GE		FBN	100.00	12.28	15.08	25.32	
	PDP2 HOIST	Passed	FB, 2 & 3-Pole 480V	480	6.14	7.54	16.46 (*N1)	
	PDP2		15-100A	480	60.00	60.00	65.00	
	GE		FBN	100.00	10.23	12.56	25.32	
	PDP2 SHRED1	Passed	FB, 2 & 3-Pole 480V	480	2.45	3.02	16.46 (*N1)	
	PDP2		15-100A	480	20.00	20.00	65.00	
	GE		FBN	100.00	12.27	15.08	25.32	
	PDP2 SHRED2	Passed	FB, 2 & 3-Pole 480V	480	2.46	3.02	16.46 (*N1)	
	PDP2		15-100A	480	20.00	20.00	65.00	
	GE		FBN	100.00	12.30	15.08	25.32	

Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	Continuous Amps LF/Dev/ Rating%	Design Amps Design/Dev/Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%
PDP3 MULT1	Passed	HJ	480	36.84	19.00	16.43 (*N1)	
PDP3		15-150A	480	150.00	150.00	65.00	
SQUARE D		HJ	100.00	24.56	12.66	25.28	
PDP3 MULT2	Passed	HJ	480	36.83	22.61	16.43 (*N1)	
PDP3		15-150A	480	150.00	150.00	65.00	
SQUARE D		HJ	100.00	24.56	15.08	25.28	
PDP4 XL2	Passed	J-Frame, Powerpact	480	0.00	0.00	16.31 (*N1)	
PDP4		150-250A, UL	480	150.00	150.00	65.00	
SQUARE D		JJ	100.00	0.00	0.00	25.09	
SHRED1 SW	Passed	DS	480	2.45	3.02	3.60	
SHRED1 NFDS		30-1200A	600	30.00	30.00	10.00/10.00	
UL 98		30A	80.00	8.18	10.05	35.96	
SHRED2 SW	Passed	DS	480	2.46	3.02	0.82	
SHRED2 NFDS		30-1200A	600	30.00	30.00	10.00/10.00	
UL 98		30A	80.00	8.20	10.05	8.18	
MSB MCB	Passed (*N3)	SS, SH PowerBreak II, EGTU	480	344.56	293.94	17.70 (*N1)	
MSB		LSI (CB), 2500 - 3000AF, UL 489	480	3000.00	3000.00	100.00	
GE		SS	100.00	11.49	9.80	17.70	
(*N1) System X/R higher than Test X/R, Calc INT kA modified based on low voltage factor.							
(*N3) Arc Flash Line/Load Side Evaluation IE > 40cal/cm^2.							
(*Calc INT kA) Device did not pass. Device is either Marginal (90%) or Failed (100%) of device library interrupting rating.							

APPENDIX D - TCC PLOTS – EXISTING

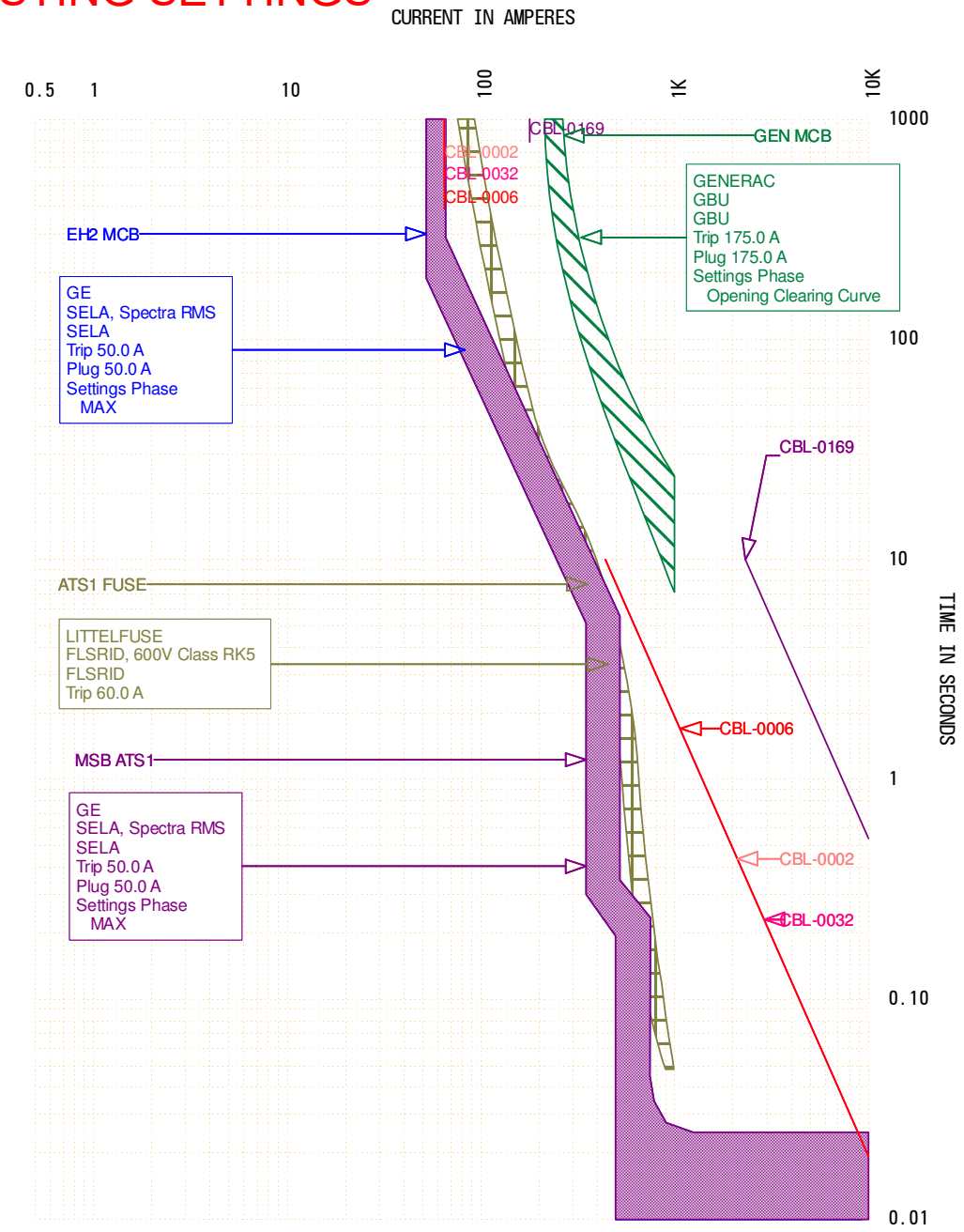
EXISTING SETTINGS

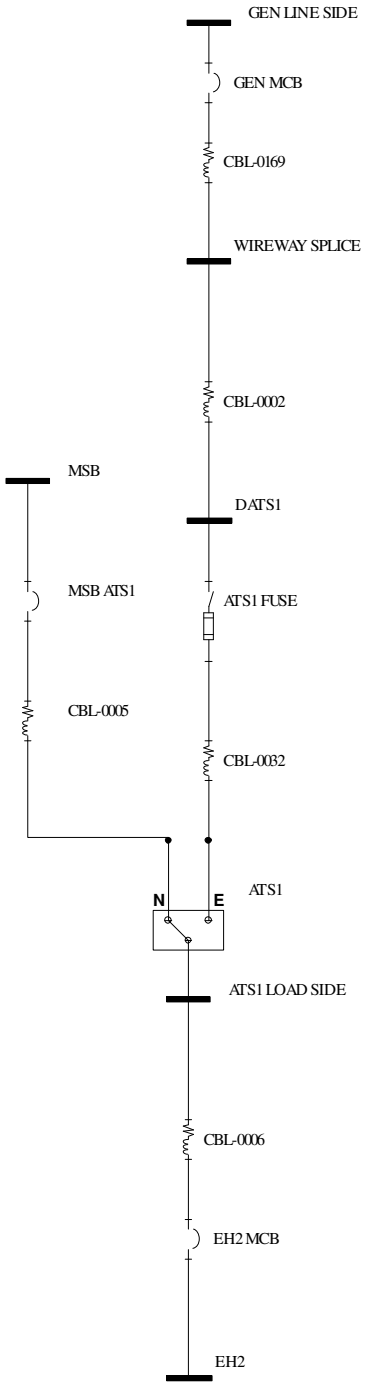




TCC: MSB Current Scale x 1 Reference Voltage: 480 June 7, 2024

EXISTING SETTINGS

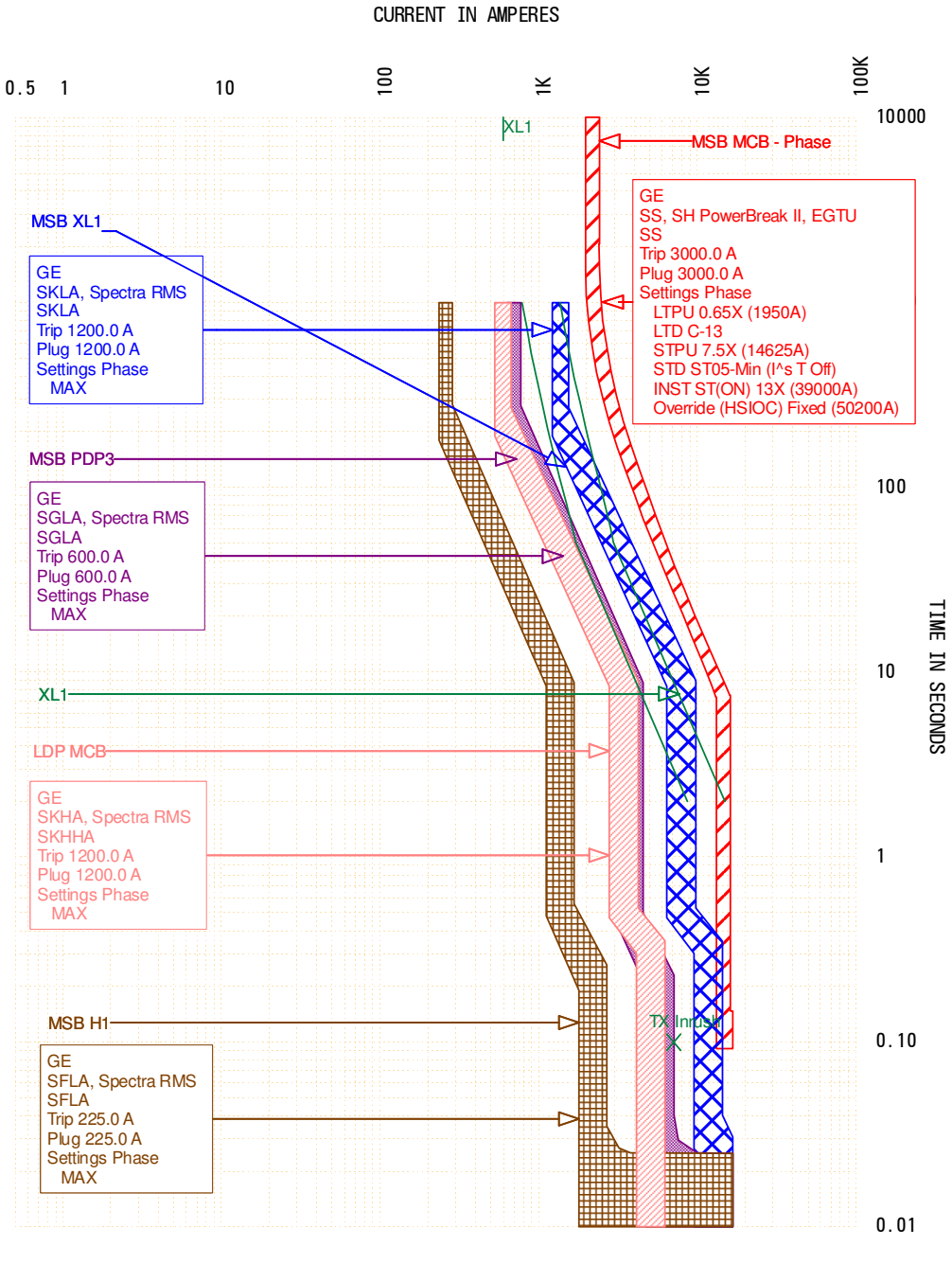


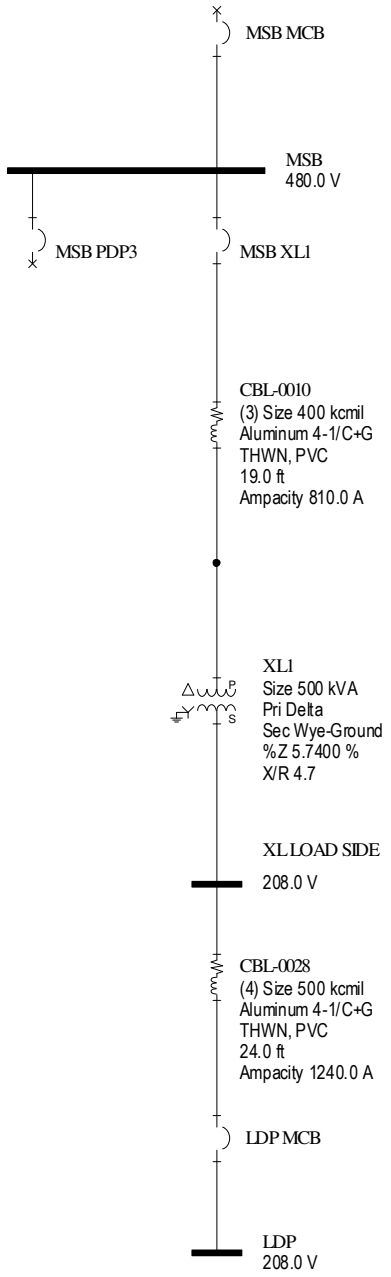


TCC: GEN ATS1 Current Scale x 1 Reference Voltage: 480 June 7, 2024

APPENDIX E - TCC PLOTS - RECOMMENDED

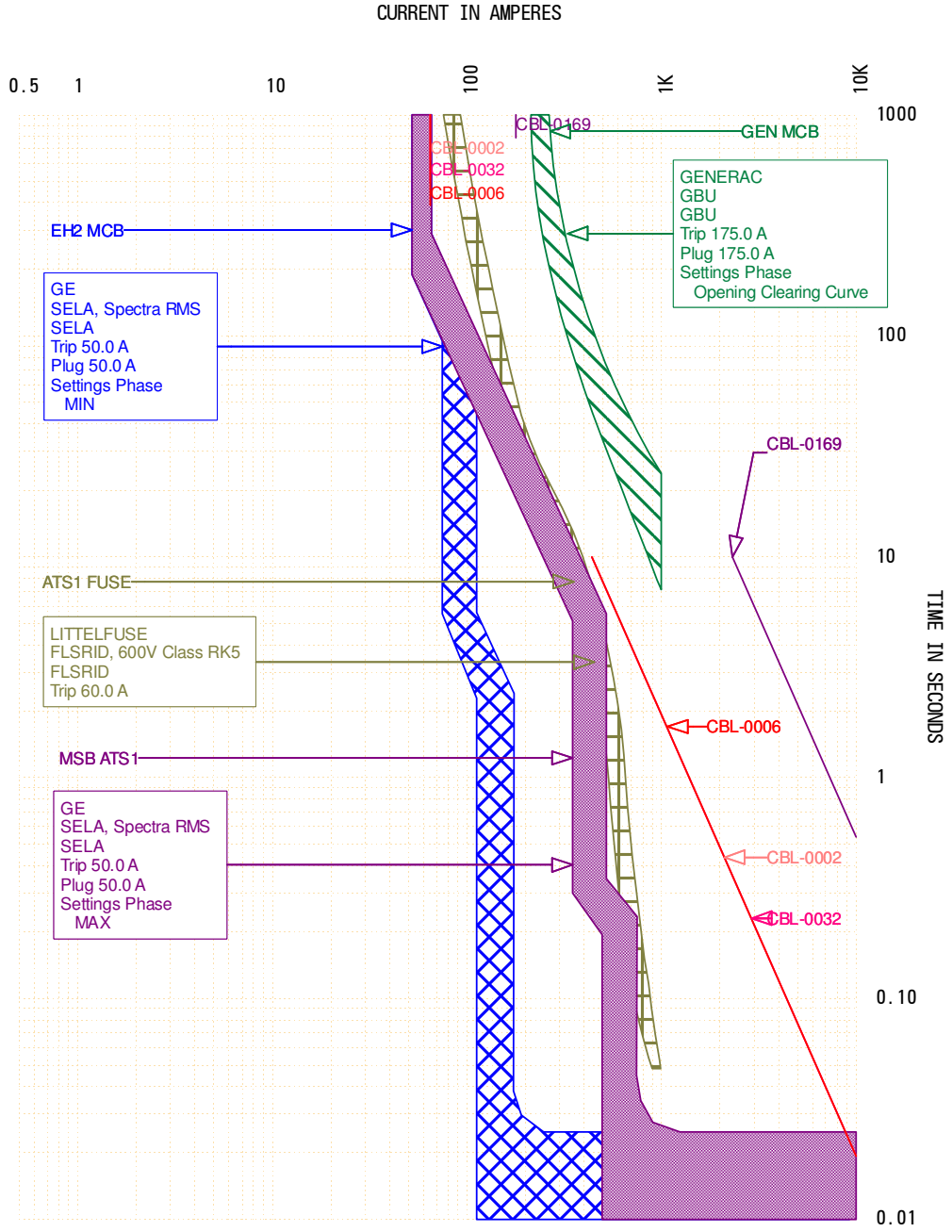
RECOMMENDED SETTINGS

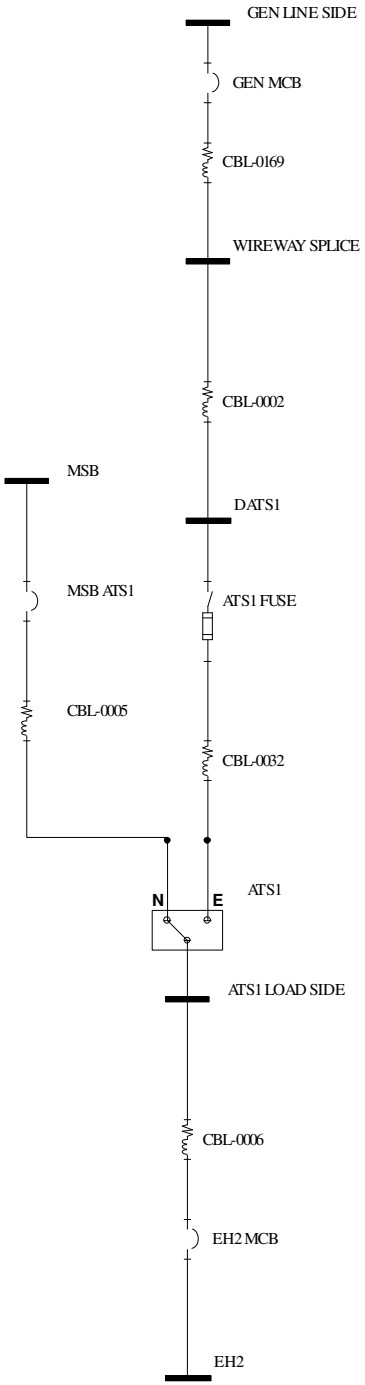




TCC: MSB Current Scale x 1 Reference Voltage: 480 June 7, 2024

RECOMMENDED SETTINGS





TCC: GEN ATS1 Current Scale x 1 Reference Voltage: 480 June 7, 2024

APPENDIX F – SETTINGS REPORTS - EXISTING

EXISTING FUSES

Project: Commercial Example
COMMERCIAL EXAMPLE
BR549

Low Voltage Fuses

Prot Dev	Func Name	Connected Bus	Voltage	Manufacturer	Type	Description	Cartridge	Cartridge Size	Trip
ATS1 FUSE	Phase	DATS1	480	LITTELFUSE	FLSRID, 600V Class RK5	15-600A	FLSRID	60.000	60.000
ATS2 FUSE	Phase	DATS2	480	LITTELFUSE	FLSRID, 600V Class RK5	15-600A	FLSRID	125.000	125.000
DL13 FUSE	Phase	DL13	208	LITTELFUSE	FLNR_ID, 250V Class RK5	35-600A	FLNRID	600.000	600.000
DXEL1	Phase	DXEL1 FDS	480	LITTELFUSE	FLSRID, 600V Class RK5	15-600A	FLSRID	70.000	70.000
ELEV FUSE	Phase	ELEV FDS	480	GOULD SHAWMUT	TRS, 600V Class RK5	15-600A	TRS	80.000	80.000
RTU TEN FUSE	Phase	RTU TEN FDS	208	LITTELFUSE	FLNR_ID, 250V Class RK5	35-600A	FLNRID	45.000	45.000
RTU-1 NEW FUSE	Phase	RTU-1 NEW FDS	208	BUSSMANN	FRN-R, 250V Class RK5	0.1-600A	FRN-R	30.000	30.000
TENANT FDS FUSE	Phase	FDS TENANT	208	BUSSMANN	FRN-R, 250V Class RK5	0.1-600A	FRN-R	125.000	125.000

EXISTING SETTINGS FOR MSB MAIN BREAKER

Project: Commercial Example
BASE PROJECT

COMMERCIAL EXAMPLE
BR549

ADJUSTABLE LOW VOLTAGE CIRCUIT BREAKER SETTINGS

DESIGNATION		FRAME				TRIP UNIT								
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	SETTINGS					
									L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME	I^s T	INST P.U.
MSB MCB	Phase	3,000	100	GE	SS	3,000 3,000	LSI (CB), 2500 - 3000AF, UL 489	SS, SH PowerBreak II, EGTU	0.50X	C-7	5X	ST05-M	Out	13X
MSB MCB	GF	3,000	100	GE	SS	3,000 3,000	GF, 2500-3000AF	SS, SH PowerBreak I & II, EGTU	0.37	GFD05			Out	

EXISTING BREAKER SETTINGS REPORT

Project: Commercial Example
BASE PROJECT

COMMERCIAL EXAMPLE
BR549

LOW VOLTAGE THERMAL MAGNETIC MOLDED CASE BREAKERS SETTINGS

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
EH1 EH1 DTELA	80	GE	TED	70 70	15-100A, 2-3 Pole	TED (E-100 Line)	Fixed	
EH1 EH1 MCB	250	GE	SFLA	125 125	70-250A	SFLA, Spectra RMS	MAX	
EH2 EH2 MCB	50	GE	SELA	50 50	15-150A	SELA, Spectra RMS	MAX	
EL1 EL1 MCB	225	GE	THQD	150 150	100-225A	THQD	Fixed	
GEN LINE SIDE GEN MCB	200	GENERAC	GBU	175 175	40-630A	GBU	Opening Clearing Curve	
L10 L10 RTU-1 NEW	50	GE	THQL	30 30	15-125A	THQL	Fixed	
L12 L12 MCB	225	GE	TQD	200 200	100-225A	TQD	Fixed	
L13A L13A MCB	600	GE	SGHA	600 600	125-600A	SGHA, Spectra RMS	MAX	
L4A LD EF-K1	20	GE	THQB	20 20	15-100A	THQB	Fixed	
L4A LD EF-K2	20	GE	THQB	20 20	15-100A	THQB	Fixed	
LDP LDP L1	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
LDP LDP L10	100	GE	SELA	100 100	15-150A	SELA, Spectra RMS	MAX	
LDP LDP L11	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L12	250	GE	SFLA	200 200	70-250A	SFLA, Spectra RMS	MAX	
LDP LDP L2	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L3	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L4	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L5	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L6	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L7	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L8	150	GE	SEHA	150 150	15-150A	SEHA, Spectra RMS	MAX	
LDP LDP L9	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP MCB	1,200	GE	SKHHA	1,200 1,200	300-1200A	SKHA, Spectra RMS	MAX	
LDP2 LDP2 MCB	400	SQUARE D	LA	250 250	125-400A	LA	Thermal Curve	INST LO
LDP2 LDP2 SIFTER	250	SQUARE D	JD	250 250	150-250A, UL	J-Frame, Powerpact	Thermal Curve	INST (5-10 x Trip) Low
MSB MSB AHU-1	250	GE	SFLA	200 200	70-250A	SFLA, Spectra RMS	MAX	
MSB MSB ATS1	50	GE	SELA	50 50	15-150A	SELA, Spectra RMS	MAX	

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug		Description	TYPE/MODEL	LT SETTING	INST SETTING
MSB MSB ATS2	125	GE	SELA	125	125	15-150A	SELA, Spectra RMS	MAX	
MSB MSB AUX BLDG	125	GE	SELA	125	125	15-150A	SELA, Spectra RMS	MAX	
MSB MSB ELEV	80	GE	SELA	80	80	15-150A	SELA, Spectra RMS	MAX	
MSB MSB H1	250	GE	SFLA	225	225	70-250A	SFLA, Spectra RMS	MAX	
MSB MSB H2	250	GE	SFLA	225	225	70-250A	SFLA, Spectra RMS	MAX	
MSB MSB H3	250	GE	SFLA	225	225	70-250A	SFLA, Spectra RMS	MAX	
MSB MSB H4	125	GE	SELA	125	125	15-150A	SELA, Spectra RMS	MAX	
MSB MSB PDP1	600	GE	SGLA	600	600	125-600A	SGLA, Spectra RMS	MAX	
MSB MSB PDP2	600	GE	SGLA	400	400	125-600A	SGLA, Spectra RMS	MAX	
MSB MSB PDP3	600	GE	SGLA	600	600	125-600A	SGLA, Spectra RMS	MAX	
MSB MSB PDP4	600	GE	SGLA	600	600	125-600A	SGLA, Spectra RMS	MAX	
MSB MSB TENANT	70	GE	SELA	70	70	15-150A	SELA, Spectra RMS	MIN	
MSB MSB XL1	1,200	GE	SKLA	1,200	1,200	300-1200A	SKLA, Spectra RMS	MAX	
PDP1 PDP1 AHU-2	50	GE	FBN	50	50	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP1 PDP1 AHU-3	50	GE	FBN	50	50	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP1 PDP1 AHU-4	50	GE	FBN	50	50	15-100A	FB, 2 & 3-Pole 480V	Fixed	

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
PDP1 PDP1 AHU-5	50	GE	FBN	50 50	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP1 PDP1 AHU-6	50	GE	FBN	50 50	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 AUTOCLAVE	60	GE	FBN	60 60	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 GLYPUMP	20	GE	FBN	20 20	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 HOIST	60	GE	FBN	60 60	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 SHRED1	20	GE	FBN	20 20	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 SHRED2	20	GE	FBN	20 20	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP3 PDP3 ACCU1	30	SQUARE D	ED	30 30	15-125A	ED	Fixed	
PDP3 PDP3 ACCU2	30	SQUARE D	ED	30 30	15-125A	ED	Fixed	
PDP3 PDP3 MULT1	150	SQUARE D	HJ	150 150	15-150A	HJ	Fixed	
PDP3 PDP3 MULT2	150	SQUARE D	HJ	150 150	15-150A	HJ	Fixed	
PDP4 PDP4 ACCU3	35	SQUARE D	ED	35 35	15-125A	ED	Fixed	
PDP4 PDP4 ACCU4	30	SQUARE D	ED	30 30	15-125A	ED	Fixed	
PDP4 PDP4 MULT3	125	SQUARE D	ED	125 125	15-125A	ED	Fixed	
PDP4 PDP4 MULT4	110	SQUARE D	ED	110 110	15-125A	ED	Fixed	
PDP4 PDP4 XL2	250	SQUARE D	JJ	150 150	150-250A, UL	J-Frame, Powerpact	Thermal Curve	INST (5-10 x Trip) Low

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
TENANT TENANT RTU	50	GE	THQB	45 45	15-100A	THQB	Fixed	

APPENDIX G – SETTINGS REPORTS - RECOMMENDED

RECOMMENDED MSB MCB SETTINGS

Project: Commercial Example
RECOMMENDED SETTINGS

COMMERCIAL EXAMPLE
BR549

RECOMMENDED CHANGES ARE NOTED.

ADJUSTABLE LOW VOLTAGE CIRCUIT BREAKER SETTINGS

CHANGE SETTINGS FOR BETTER COORDINATION WITH FEEDER BREAKER MSB XL1

DESIGNATION		FRAME				TRIP UNIT									
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug		Description	TYPE/MODEL	SETTINGS					
										L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME	I^s T	INST P.U.
MSB MCB	Phase	3,000	100	GE	SS	3,000	3,000	LSI (CB), 2500 - 3000AF, UL 489	SS, SH PowerBreak II, EGTU	0.65X	C-13	7.5X	ST05-M	Out	13X
MSB MCB	GF	3,000	100	GE	SS	3,000	3,000	GF, 2500-3000AF	SS, SH PowerBreak I & II, EGTU	0.37	GFD05			Out	

RECOMMENDED BREAKER SETTINGS REPORT.

Project: Commercial Example
RECOMMENDED SETTINGS

COMMERCIAL EXAMPLE
BR549

RECOMMENDED CHANGES ARE NOTED

LOW VOLTAGE THERMAL MAGNETIC MOLDED CASE BREAKERS SETTINGS

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
EH1 EH1 DTELA	80	GE	TED	70 70	15-100A, 2-3 Pole	TED (E-100 Line)	Fixed	
EH1 EH1 MCB	250	GE	SFLA	125 125	70-250A	SFLA, Spectra RMS	MAX	
EH2 EH2 MCB	50	GE	SELA	50 50	15-150A	SELA, Spectra RMS	MIN	
EL1 EL1 MCB	225	GE	THQD	150 150	100-225A	THQD	Fixed	
GEN LINE SIDE GEN MCB	200	GENERAC	GBU	175 175	40-630A	GBU	Opening Clearing Curve	
L10 L10 RTU-1 NEW	50	GE	THQL	30 30	15-125A	THQL	Fixed	
L12 L12 MCB	225	GE	TQD	200 200	100-225A	TQD	Fixed	
L13A L13A MCB	600	GE	SGHA	600 600	125-600A	SGHA, Spectra RMS	MIN	
L4A LD EF-K1	20	GE	THQB	20 20	15-100A	THQB	Fixed	
L4A LD EF-K2	20	GE	THQB	20 20	15-100A	THQB	Fixed	
LDP LDP L1	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	

LOWER FROM MAX TO MIN FOR BETTER COORDINATION

LOWER FROM MAX TO MIN TO REDUCE DOWNSTREAM INCIDENT ENERGY

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
LDP LDP L10	100	GE	SELA	100 100	15-150A	SELA, Spectra RMS	MIN	
LDP LDP L11	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L12	250	GE	SFLA	200 200	70-250A	SFLA, Spectra RMS	MIN	
LDP LDP L2	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L3	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L4	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L5	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MIN	
LDP LDP L6	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L7	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP L8	150	GE	SEHA	150 150	15-150A	SEHA, Spectra RMS	MIN	
LDP LDP L9	250	GE	SFHA	225 225	70-250A	SFHA, Spectra RMS	MAX	
LDP LDP MCB	1,200	GE	SKHHA	1,200 1,200	300-1200A	SKHA, Spectra RMS	MAX	
LDP2 LDP2 MCB	400	SQUARE D	LA	250 250	125-400A	LA	Thermal Curve	INST LO
LDP2 LDP2 SIFTER	250	SQUARE D	JD	250 250	150-250A, UL	J-Frame, Powerpact	Thermal Curve	INST (5-10 x Trip) Low
MSB MSB AHU-1	250	GE	SFLA	200 200	70-250A	SFLA, Spectra RMS	MAX	
MSB MSB ATS1	50	GE	SELA	50 50	15-150A	SELA, Spectra RMS	MAX	

LOWER FROM MAX TO MIN TO REDUCE DOWNSTREAM INCIDENT ENERGY

LOWER FROM MAX TO MIN TO REDUCE DOWNSTREAM INCIDENT ENERGY

LOWER FROM MAX TO MIN TO REDUCE DOWNSTREAM INCIDENT ENERGY

LOWER FROM MAX TO MIN TO REDUCE DOWNSTREAM INCIDENT ENERGY

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug		Description	TYPE/MODEL	LT SETTING	INST SETTING
MSB MSB ATS2	125	GE	SELA	125	125	15-150A	SELA, Spectra RMS	MAX	
MSB MSB AUX BLDG	125	GE	SELA	125	125	15-150A	SELA, Spectra RMS	MAX	
MSB MSB ELEV	80	GE	SELA	80	80	15-150A	SELA, Spectra RMS	MAX	
MSB MSB H1	250	GE	SFLA	225	225	70-250A	SFLA, Spectra RMS	MAX	
MSB MSB H2	250	GE	SFLA	225	225	70-250A	SFLA, Spectra RMS	MAX	
MSB MSB H3	250	GE	SFLA	225	225	70-250A	SFLA, Spectra RMS	MAX	
MSB MSB H4	125	GE	SELA	125	125	15-150A	SELA, Spectra RMS	MAX	
MSB MSB PDP1	600	GE	SGLA	600	600	125-600A	SGLA, Spectra RMS	MAX	
MSB MSB PDP2	600	GE	SGLA	400	400	125-600A	SGLA, Spectra RMS	MAX	
MSB MSB PDP3	600	GE	SGLA	600	600	125-600A	SGLA, Spectra RMS	MAX	
MSB MSB PDP4	600	GE	SGLA	600	600	125-600A	SGLA, Spectra RMS	MAX	
MSB MSB TENANT	70	GE	SELA	70	70	15-150A	SELA, Spectra RMS	MIN	
MSB MSB XL1	1,200	GE	SKLA	1,200	1,200	300-1200A	SKLA, Spectra RMS	MAX	
PDP1 PDP1 AHU-2	50	GE	FBN	50	50	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP1 PDP1 AHU-3	50	GE	FBN	50	50	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP1 PDP1 AHU-4	50	GE	FBN	50	50	15-100A	FB, 2 & 3-Pole 480V	Fixed	

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
PDP1 PDP1 AHU-5	50	GE	FBN	50 50	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP1 PDP1 AHU-6	50	GE	FBN	50 50	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 AUTOCLAVE	60	GE	FBN	60 60	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 GLYPUMP	20	GE	FBN	20 20	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 HOIST	60	GE	FBN	60 60	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 SHRED1	20	GE	FBN	20 20	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP2 PDP2 SHRED2	20	GE	FBN	20 20	15-100A	FB, 2 & 3-Pole 480V	Fixed	
PDP3 PDP3 ACCU1	30	SQUARE D	ED	30 30	15-125A	ED	Fixed	
PDP3 PDP3 ACCU2	30	SQUARE D	ED	30 30	15-125A	ED	Fixed	
PDP3 PDP3 MULT1	150	SQUARE D	HJ	150 150	15-150A	HJ	Fixed	
PDP3 PDP3 MULT2	150	SQUARE D	HJ	150 150	15-150A	HJ	Fixed	
PDP4 PDP4 ACCU3	35	SQUARE D	ED	35 35	15-125A	ED	Fixed	
PDP4 PDP4 ACCU4	30	SQUARE D	ED	30 30	15-125A	ED	Fixed	
PDP4 PDP4 MULT3	125	SQUARE D	ED	125 125	15-125A	ED	Fixed	
PDP4 PDP4 MULT4	110	SQUARE D	ED	110 110	15-125A	ED	Fixed	
PDP4 PDP4 XL2	250	SQUARE D	JJ	150 150	150-250A, UL	J-Frame, Powerpact	Thermal Curve	INST (5-10 x Trip) Low

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
TENANT TENANT RTU	50	GE	THQB	45 45	15-100A	THQB	Fixed	

APPENDIX H - ARC FLASH REPORT – EXISTING CONDITIONS

REPORT BASED ON EXISTING BREAKER SETTINGS. SEE RECOMMENED SETTINGS REPORT FOR REVISED VALUES IF SETTINGS ARE ADJUSTED.

IEEE 1584 2018 Bus + Line Side - Comprehensive Fault Project: Commercial Example, Worst Case: Scenario - S0, S1

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
1	ACCU1	PDP3 ACCU1	0.48	2.47	1.76	2.47	1.76	0.017	0.0000	PNL		VCB	14	12	10	0	25	3	18	0.06	(*N21a) (*N21c - S1 S0) (*S0)	# 0010	90.00	
2	ACCU2	PDP3 ACCU2	0.48	2.14	1.51	2.14	1.51	0.017	0.0000	PNL		VCB	14	12	10	0	25	3	18	0.05	(*N21a) (*N21c - S1 S0) (*S0)	# 0014	105.00	
3	ACCU3	PDP4 ACCU3	0.48	2.57	1.84	2.57	1.84	0.017	0.0000	PNL		VCB	14	12	10	0	25	3	18	0.06	(*N21a) (*N21c - S1 S0) (*S0)	# 0016	125.00	
4	ACCU4	PDP4 ACCU4	0.48	1.66	1.16	1.66	1.16	0.017	0.0000	PNL		VCB	14	12	10	0	25	2	18	0.04	(*N21a) (*N21c - S1 S0) (*S0)	# 0013	137.00	
5	AHU-1 NFDS	MSB AHU-1	0.48	9.76	7.45	9.21	7.03	0.025	0.0000	PNL	NFDS	VCB	14	12	10	0	25	9	18	0.42	(*N20b) (*S0)	# 0045	166.00	
6	AHU-2 NFDS	PDP1 AHU-2	0.48	2.36	1.47	2.32	1.45	0.2401	0.0000	PNL	NFDS	VCB	14	12	10	0	25	13	18	0.72	(*N3) (*S0)	# 0050	220.00	
7	AHU-3 NFDS	PDP1 AHU-3	0.48	1.43	0.87	1.40	0.85	0.6943	0.0000	PNL	NFDS	VCB	14	12	10	0	25	18	18	1.19	(*N3) (*S0)	# 0051	374.00	
8	AHU-4 NFDS	PDP1 AHU-4	0.48	2.44	1.52	2.40	1.50	0.2218	0.0000	PNL	NFDS	VCB	14	12	10	0	25	13	18	0.69	(*N3) (*S0)	# 0052	212.00	
9	AHU-5 NFDS	PDP1 AHU-5	0.48	1.63	1.00	1.59	0.97	0.5351	0.0000	PNL	NFDS	VCB	14	12	10	0	25	17	18	1.06	(*N3) (*S0)	# 0053	327.00	
10	AHU-6 NFDS	PDP1 AHU-6	0.48	2.39	1.49	2.35	1.47	0.2331	0.0000	PNL	NFDS	VCB	14	12	10	0	25	13	18	0.71	(*N3) (*S0)	# 0054	217.00	
11	ATS1 LOAD SIDE	ATS1 FUSE	0.48	1.00	0.60	1.00	0.60	2	0.0000	PNL	ATS	VCB	14	12	10	0	25	27	18	2.36	(*N3) (*N9) (*S1)	# 0001	3.00	
12	ATS2 LOAD SIDE	ATS2 FUSE	0.48	1.00	0.68	1.00	0.68	2	0.0000	PNL	ATS	VCB	14	12	10	0	25	30	18	2.68	(*N9) (*S1)	# 0002	6.00	
13	AUTOCLAVE NFDS	PDP2 AUTOCLAV E	0.48	3.51	2.23	3.51	2.23	0.0429	0.0000	PNL		VCB	14	12	10	0	25	6	18	0.20	(*N3) (*S0)	# 0059	217.00	
14	AUX BLDG	MSB AUX BLDG	0.208	2.90	1.19	2.90	1.19	2	0.0000	PNL	FDS	VCB	14	12	10	0	25	44	18	5.04	(*N9) (*S0)	# 0033	813.00	
15	DATS1	GEN MCB	0.48	1.00	0.68	1.00	0.68	2	0.0000	PNL	FDS	VCB	14	12	10	0	25	30	18	2.68	(*N9) (*S0)	# 0016	21.00	
16	DATS2	GEN MCB	0.48	1.00	0.68	1.00	0.68	2	0.0000	PNL	FDS	VCB	14	12	10	0	25	30	18	2.68	(*N9) (*S0)	# 0017	23.00	
17	DL13	MSB XL1	0.208	14.28	6.63	14.28	6.63	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	133	18	29.4	(*N9) (*S0)	# 0056	37.00	
18	DXEL1 FDS	EH1 DTELA	0.48	2.42	1.73	2.42	1.73	2	0.0000	PNL	FDS	VCB	14	12	10	0	25	55	18	7.07	(*N9) (*S0)	# 0017	304.00	
19	EF-K1 NFDS	LD EF-K1	0.208	0.29	0.29	0.29	0.29	0.943	0.0000	PNL	NFDS	VCB	14	12	10	0	25	6	18	0.14	(*N_ka) (*N15c) (*S0)	# 0021	352.00	
20	EF-K2 NFDS	LD EF-K2	0.208	0.30	0.30	0.30	0.30	0.8538	0.0000	PNL		VCB	14	12	10	0	25	6	18	0.13	(*N_ka) (*N15c) (*S0)	# 0022	335.00	
21	EH1	EH1 MCB	0.48	1.00	0.68	1.00	0.68	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	30	18	2.68	(*N9) (*S1)	# 0023		
22	EH1 (EH1 MCB LineSide)	ATS2 FUSE	0.48	1.00	0.68	1.00	0.68	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	30	18	2.68	(*N9) (*S1)	# 0022-Line	6.00	
23	EH2	EH2 MCB	0.48	9.29	7.43	9.29	7.43	0.025	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.50	(*S0)	# 0008		
24	EH2 (EH2 MCB LineSide)	ATS1 FUSE	0.48	0.99	0.59	0.99	0.68	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	27	18	2.36	(*N3) (*N9) (*N25a) (*N25d) (*S1)	# 0023-Line	3.00	
25	EL1	EL1 MCB	0.208	1.56	0.73	1.56	0.73	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	29	18	2.77	(*N9) (*N15c) (*S0)	# 0010		
26	EL1 (EL1 MCB LineSide)	DXEL1	0.208	1.56	0.73	1.56	0.73	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	29	18	2.77	(*N9) (*N15c) (*S0)	# 0027-Line	8.00	
27	EL1A	EL1 MCB	0.208	1.55	0.60	1.55	0.60	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	28	18	2.48	(*N9) (*N15c) (*S0)	# 0011	5.00	
28	EL1B	EL1 MCB	0.208	1.54	0.60	1.54	0.60	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	28	18	2.46	(*N9) (*N15c) (*S0)	# 0012	10.00	
29	ELEV FDS	MSB ELEV	0.48	3.26	2.36	3.19	2.31	0.025	0.0000	PNL	FDS	VCB	14	12	10	0	25	4	18	0.12	(*S0)	# 0013	303.00	
30	GEN LINE SIDE	MaxTripTime @2.0s	0.48	1.00	0.78	1.00	0.78	2	0.0000	PNL		VCBB	14	12	10	0	25	30	18	3.08	(*N2) (*N9) (*S0)	# 0015		

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
31	GLYPUMP NFDS	PDP2 GLYPUMP	0.48	1.73	1.07	1.73	1.06	0.1129	0.0000	PNL	NFDS	VCB	14	12	10	0	25	7	18	0.25	(*N3) (*S0)	# 0091	83.00	
32	H1	MSB H1	0.48	15.87	12.23	15.87	12.23	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.71	(*S0)	# 0040	22.00	
33	H2	MSB H2	0.48	15.56	11.99	15.56	11.99	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.69	(*S0)	# 0041	25.00	
34	H3	MSB H3	0.48	15.27	11.77	15.27	11.77	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.68	(*S0)	# 0042	31.00	
35	H4	MSB H4	0.48	3.67	2.67	3.67	2.67	0.0257	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	5	18	0.15	(*S0)	# 0019	318.00	
36	HOIST NFDS	PDP2 HOIST	0.48	5.43	4.03	5.40	4.01	0.0128	0.0000	PNL	NFDS	VCB	14	12	10	0	25	4	18	0.11	(*S0)	# 0007	84.00	
37	L10	LDP L10	0.208	2.83	1.00	2.79	0.98	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	39	18	4.20	(*N3) (*N9) (*S0)	# 0094	334.00	
38	L11A	LDP L11	0.208	12.46	5.76	12.46	5.76	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.34	(*S0)	# 0018	23.00	
39	L11B	LDP L11	0.208	12.14	5.61	12.14	5.61	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.33	(*S0)	# 0047	27.00	
40	L12	LDP L12	0.208	3.00	1.40	3.00	1.40	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	45	18	5.79	(*N9) (*N25d) (*S0)	# 0062	352.00	
41	L12 (L12 MCB LineSide)	LDP L12	0.208	3.00	1.40	3.00	1.40	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	45	18	5.79	(*N9) (*N25d) (*S0)	# 0063-Line		
42	L13A	L13A MCB	0.208	9.15	4.15	9.15	4.56	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	99	18	18.3	(*N9) (*N20b) (*N25a) (*N25d) (*S0)	# 0042		
43	L13A (L13A MCB LineSide)	DL13 FUSE	0.208	9.15	4.56	9.15	4.56	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	99	18	21.5	(*N9) (*N20b) (*N25d) (*S0)	# 0051-Line		
44	L13B	L13A MCB	0.208	9.06	4.11	9.06	4.11	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	98	18	18.1	(*N9) (*N20b) (*S0)	# 0054	5.00	
45	L13C	L13A MCB	0.208	8.98	4.07	8.98	4.07	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	98	18	18.0	(*N9) (*S0)	# 0057	10.00	
46	L13D	L13A MCB	0.208	8.90	4.03	8.90	4.03	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	97	18	17.8	(*N9) (*S0)	# 0036	15.00	
47	L1A	LDP L1	0.208	12.38	5.72	12.38	5.72	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.33	(*S0)	# 0022	24.00	
48	L1B	LDP L1	0.208	12.07	5.57	12.07	5.57	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.32	(*S0)	# 0040	28.00	
49	L2A	LDP L2	0.208	12.79	5.92	12.79	5.92	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.35	(*S0)	# 0023	19.00	
50	L2B	LDP L2	0.208	12.46	5.76	12.46	5.76	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.34	(*S0)	# 0042	23.00	
51	L3	LDP L3	0.208	12.54	5.80	12.54	5.80	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.34	(*S0)	# 0046	22.00	
52	L4A	LDP L4	0.208	11.92	5.50	11.89	5.49	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.32	(*S0)	# 0025	30.00	
53	L4B	LDP L4	0.208	11.55	5.32	11.52	5.31	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.31	(*S0)	# 0047	35.00	
54	L5A	LDP L5	0.208	4.21	1.53	4.21	1.53	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	53	18	6.66	(*N3) (*N9) (*S0)	# 0028	269.00	
55	L5B	LDP L5	0.208	4.15	1.51	4.15	1.51	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	52	18	6.56	(*N3) (*N9) (*S0)	# 0029	274.00	

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
56	L5C	LDP L5	0.208	4.09	1.49	4.09	1.49	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	52	18	6.45	(*N3) (*N9) (*S0)	# 0053	279.00	
57	L6A	LDP L6	0.208	11.46	5.28	11.46	5.28	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.31	(*S0)	# 0038	36.00	
58	L6B	LDP L6	0.208	11.11	5.11	11.11	5.11	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	7	18	0.30	(*S0)	# 0039	41.00	
59	L7A	LDP L7	0.208	13.93	6.46	13.93	6.46	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	9	18	0.38	(*S0)	# 0040	6.00	
60	L7B	LDP L7	0.208	13.57	6.29	13.57	6.29	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	9	18	0.37	(*S0)	# 0060	10.00	
61	L8	LDP L8	0.208	1.74	0.68	1.74	0.68	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	31	18	2.83	(*N9) (*N15c) (*S0)	# 0041	377.00	
62	L9	LDP L9	0.208	2.10	0.84	2.10	0.84	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	35	18	3.51	(*N9) (*S0)	# 0058	378.00	
63	LDP	LDP MCB	0.208	14.48	6.72	14.40	6.68	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	135	18	29.9	(*N9) (*S0)	# 0026		
64	LDP (LDP MCB LineSide)	MSB XL1	0.208	14.48	6.72	14.40	6.68	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	135	18	29.9	(*N9) (*S0)	# 0043-Line	19.00	
65	LDP2	LDP2 MCB	0.208	6.21	3.00	6.21	3.00	0.0168	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	5	18	0.12	(*S0)	# 0100		
66	LDP2 (LDP2 MCB LineSide)	PDP4 XL2	0.208	6.21	3.00	6.21	3.00	0.0161	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	5	18	0.11	(*S0)	# 0101-Line	18.00	
67	MSB	MSB MCB	0.48	16.78	12.93	14.73	11.35	0.147	0.0000	PNL	LV Switchboard	VCB	14	12	10	0	25	39	18	4.17	(*S0)	# 0043		
68	MSB (MSB MCB LineSide)	MaxTripTime @2.0s	0.48	16.78	12.93	14.73	11.35	2	0.0000	PNL	LV Switchboard	VCB	14	12	10	0	25	192	18	52.6	(*N2) (*N9) (*S0)	# 0070-Line		
69	MULT1 CTL	PDP3 MULT1	0.48	11.99	9.69	11.76	9.51	0.0175	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.47	(*S0)	# 0081	65.00	
70	MULT2 CTL	PDP3 MULT2	0.48	12.86	10.43	12.63	10.24	0.0175	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.51	(*S0)	# 0083	50.00	
71	MULT3 CTL	PDP4 MULT3	0.48	12.94	10.50	12.76	10.35	0.017	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.50	(*N21a) (*N21c - S1 S0) (*S0)	# 0084	41.00	
72	MULT4 CTL	PDP4 MULT4	0.48	13.23	10.74	13.04	10.59	0.017	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.51	(*N21a) (*N21c - S1 S0) (*S0)	# 0071	27.00	
73	PDP1	MSB PDP1	0.48	16.50	12.71	16.11	12.41	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.74	(*S0)	# 0044	17.00	
74	PDP2	MSB PDP2	0.48	16.36	12.61	16.28	12.54	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.73	(*S0)	# 0069	20.00	
75	PDP3	MSB PDP3	0.48	16.25	12.52	15.78	12.16	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.73	(*N21b) (*N21c - S1 S0) (*S0)	# 0020	32.00	
76	PDP4	MSB PDP4	0.48	16.20	12.48	15.80	12.18	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.72	(*N21a) (*N21b) (*N21c - S1 S0) (*S0)	# 0021	35.00	
77	RTU-1 NEW FDS	L10 RTU-1 NEW	0.208	1.18	0.38	1.15	0.38	1.232	0.0000	PNL	FDS	VCB	14	12	10	0	25	16	18	0.95	(*N3) (*N15c) (*S0)	# 0017	54.00	
78	SHRED1 NFDS	PDP2 SHRED1	0.48	3.60	2.29	3.59	2.29	0.028	0.0000	PNL	NFDS	VCB	14	12	10	0	25	5	18	0.14	(*N3) (*S0)	# 0003	60.00	
79	SHRED2 NFDS	PDP2 SHRED2	0.48	0.82	0.48	0.81	0.48	0.3234	0.0000	PNL	NFDS	VCB	14	12	10	0	25	8	18	0.31	(*N3) (*S0)	# 0004	284.00	

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
80	SIFTER CP	LDP2 SIFTER	0.208	5.90	2.84	5.90	2.84	0.0161	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	5	18	0.11	(*N21b) (*N21c - S1 S0) (*S0)	# 0018	16.00	
81	For additional information refer to NFPA 70 E, Standard for Electrical Safety in the Workplace.																			#Equip Eval Failed = 7	(*N_ka) - Out of IEEE 1584 kA Range. Lee Equation Used. Consider NESC/EPRI method to compare			
82																				#Bus Equip Eval Failed = 3	(*N2) < 80% Cleared Fault Threshold			
83																				#Equip Failed in Scenarios = 9	(*N3) - Arcing Current Low Tolerances Used			
84																					(*N9) - Max Arcing Duration Reached			
85																					(*N15c) - Sustainable arc in 240V or less and bolted fault current < 2000 A is less likely to occur (IEEE 1584-2018 Section 4.3)			
86																					(*N20b) - Equipment Evaluation Marginal for Bus			
87																					(*N21a) - Equipment Evaluation Failed, OVERDUTIED PROTECTIVE DEVICE EQUIPMENT FOUND - Inappropriate to provide arc-flash			
88																					(*N21b) - Equipment Evaluation Failed, OVERDUTIED BUS EQUIPMENT FOUND - Inappropriate to provide arc-flash			
89																					(*N21c) - WARNING! Equipment Evaluation Failed in the indicated Scenario(s).			
90																					(*N25a) - IE VCB > VCBB, (*N25d) - FB VCB > VCBB			

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
91																					IEEE 1584 2018 Bus + Line Side - Comprehensive Fault80% Cleared Fault Threshold, mis-coordination not checked			
92																					Worst Case:			
93																					(*S0) - BASE PROJECT			
94																					(*S1) - LOAD ON GENERATOR			

APPENDIX I - ARC FLASH REPORT – AFTER RECOMMENDED SETTINGS

*REPORT VALID IF NOTED SETTINGS ARE CHANGED ONLY.

NOTED VALUES BELOW ARE VALID IF UPSTREAM BREAKER SETTINGS ARE LOWERED PER PROPOSED SETTINGS REPORT

IEEE 1584 2018 Bus + Line Side - Comprehensive Fault Project: Commercial Example, RECOMMENDED SETTINGS

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
1	ACCU1	PDP3	0.48	2.47	1.76	2.47	1.76	0.017	0.0000	PNL		VCB	14	12	10	0	25	3	18	0.06	(*N21a)	# 0010	90.00	
2	ACCU2	PDP3	0.48	2.14	1.51	2.14	1.51	0.017	0.0000	PNL		VCB	14	12	10	0	25	3	18	0.05	(*N21a)	# 0014	105.00	
3	ACCU3	PDP4	0.48	2.57	1.84	2.57	1.84	0.017	0.0000	PNL		VCB	14	12	10	0	25	3	18	0.06	(*N21a)	# 0016	125.00	
4	ACCU4	PDP4	0.48	1.66	1.16	1.66	1.16	0.017	0.0000	PNL		VCB	14	12	10	0	25	2	18	0.04	(*N21a)	# 0013	137.00	
5	AHU-1 NFDS	MSB AHU-1	0.48	9.76	7.45	9.21	7.03	0.025	0.0000	PNL	NFDS	VCB	14	12	10	0	25	9	18	0.42	(*N20b)	# 0045	166.00	
6	AHU-2 NFDS	PDP1 AHU-2	0.48	2.36	1.47	2.32	1.45	0.2401	0.0000	PNL	NFDS	VCB	14	12	10	0	25	13	18	0.72	(*N3)	# 0050	220.00	
7	AHU-3 NFDS	PDP1 AHU-3	0.48	1.43	0.87	1.40	0.85	0.6943	0.0000	PNL	NFDS	VCB	14	12	10	0	25	18	18	1.19	(*N3)	# 0051	374.00	
8	AHU-4 NFDS	PDP1 AHU-4	0.48	2.44	1.52	2.40	1.50	0.2218	0.0000	PNL	NFDS	VCB	14	12	10	0	25	13	18	0.69	(*N3)	# 0052	212.00	
9	AHU-5 NFDS	PDP1 AHU-5	0.48	1.63	1.00	1.59	0.97	0.5351	0.0000	PNL	NFDS	VCB	14	12	10	0	25	17	18	1.06	(*N3)	# 0053	327.00	
10	AHU-6 NFDS	PDP1 AHU-6	0.48	2.39	1.49	2.35	1.47	0.2331	0.0000	PNL	NFDS	VCB	14	12	10	0	25	13	18	0.71	(*N3)	# 0054	217.00	
11	ATS1 LOAD SIDE	MSB ATS1	0.48	9.86	7.53	9.86	7.53	0.025	0.0000	PNL	ATS	VCB	14	12	10	0	25	9	18	0.42		# 0001	36.00	
12	ATS2 LOAD SIDE	MSB ATS2	0.48	13.57	10.45	13.57	10.45	0.025	0.0000	PNL	ATS	VCB	14	12	10	0	25	12	18	0.60		# 0002	42.00	
13	AUTOCLAVE NFDS	PDP2 AUTOCLAV	0.48	3.51	2.23	3.51	2.23	0.0429	0.0000	PNL		VCB	14	12	10	0	25	6	18	0.20	(*N3)	# 0059	217.00	
14	AUX BLDG	MSB AUX BLDG	0.208	2.90	1.19	2.90	1.19	2	0.0000	PNL	FDS	VCB	14	12	10	0	25	44	18	5.04	(*N9)	# 0033	813.00	
15	DATS1	GEN MCB	0.48	1.00	0.68	1.00	0.68	2	0.0000	PNL	FDS	VCB	14	12	10	0	25	30	18	2.68	(*N9)	# 0016	21.00	
16	DATS2	GEN MCB	0.48	1.00	0.68	1.00	0.68	2	0.0000	PNL	FDS	VCB	14	12	10	0	25	30	18	2.68	(*N9)	# 0017	23.00	
17	DL13	MSB XL1	0.208	14.28	6.63	14.28	6.63	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	133	18	29.4	(*N9)	# 0056	37.00	
18	DXEL1 FDS	EH1 DTELA	0.48	2.42	1.73	2.42	1.73	2	0.0000	PNL	FDS	VCB	14	12	10	0	25	55	18	7.07	(*N9)	# 0017	304.00	
19	EF-K1 NFDS	LD EF-K1	0.208	0.29	0.29	0.29	0.29	0.943	0.0000	PNL	NFDS	VCB	14	12	10	0	25	6	18	0.14	(*N_ka) (*N15c)	# 0021	352.00	
20	EF-K2 NFDS	LD EF-K2	0.208	0.30	0.30	0.30	0.30	0.8538	0.0000	PNL		VCB	14	12	10	0	25	6	18	0.13	(*N_ka) (*N15c)	# 0022	335.00	
21	EH1	EH1 MCB	0.48	13.12	10.10	13.12	10.10	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	11	18	0.58		# 0023		
22	EH1 (EH1 MCB LineSide)	MSB ATS2	0.48	13.12	10.10	13.12	10.10	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	11	18	0.58		# 0022-Line	42.00	
23	EH2	EH2 MCB	0.48	9.29	7.43	9.29	7.43	0.025	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.50		# 0008		
24	EH2 (EH2 MCB LineSide)	MSB ATS1	0.48	9.29	7.43	9.29	7.43	0.025	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.50		# 0023-Line	36.00	
25	EL1	EL1 MCB	0.208	1.56	0.73	1.56	0.73	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	29	18	2.77	(*N9) (*N15c)	# 0010		
26	EL1 (EL1 MCB LineSide)	DXEL1	0.208	1.56	0.73	1.56	0.73	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	29	18	2.77	(*N9) (*N15c)	# 0027-Line	8.00	
27	EL1A	EL1 MCB	0.208	1.55	0.60	1.55	0.60	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	28	18	2.48	(*N9) (*N15c)	# 0011	5.00	
28	EL1B	EL1 MCB	0.208	1.54	0.60	1.54	0.60	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	28	18	2.46	(*N9) (*N15c)	# 0012	10.00	
29	ELEV FDS	MSB ELEV	0.48	3.26	2.36	3.19	2.31	0.025	0.0000	PNL	FDS	VCB	14	12	10	0	25	4	18	0.12		# 0013	303.00	
30	GEN LINE SIDE	MaxTripTime @2.0s	0.48	1.00	0.78	1.00	0.78	2	0.0000	PNL		VCBB	14	12	10	0	25	30	18	3.08	(*N2) (*N9)	# 0015		
31	GLYPUMP NFDS	PDP2 GLYPUMP	0.48	1.73	1.07	1.73	1.06	0.1129	0.0000	PNL	NFDS	VCB	14	12	10	0	25	7	18	0.25	(*N3)	# 0091	83.00	
32	H1	MSB H1	0.48	15.87	12.23	15.87	12.23	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.71		# 0040	22.00	

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
33	H2	MSB H2	0.48	15.56	11.99	15.56	11.99	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.69				
34	H3	MSB H3	0.48	15.27	11.77	15.27	11.77	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.68				
35	H4	MSB H4	0.48	3.67	2.67	3.67	2.67	0.0257	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	5	18	0.15				
36	HOIST NFDS	PDP2 HOIST	0.48	5.43	4.03	5.40	4.01	0.0128	0.0000	PNL	NFDS	VCB	14	12	10	0	25	4	18	0.11				
37	L10	LDP L10	0.208	2.83	1.16	2.79	1.14	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	3	18	0.06				
38	L11A	LDP L11	0.208	12.46	5.76	12.46	5.76	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.34		# 0018	23.00	
39	L11B	LDP L11	0.208	12.14	5.61	12.14	5.61	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.33				
40	L12	LDP L12	0.208	3.00	1.40	3.00	1.40	0.025	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	4	18	0.07				
41	L12 (L12 MCB LineSide)	LDP L12	0.208	3.00	1.40	3.00	1.40	0.025	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	4	18	0.07				
42	L13A	L13A MCB	0.208	9.15	4.56	9.15	4.56	0.025	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	8	18	0.28	(*N20b)			
43	L13A (L13A MCB LineSide)	DL13 FUSE	0.208	9.15	4.56	9.15	4.56	2	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	99	18	21.5	(*N9) (*N20b) (*N25d)	# 0051-Line		
44	L13B	L13A MCB	0.208	9.06	4.11	9.06	4.11	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	6	18	0.23	(*N20b)	# 0054	5.00	
45	L13C	L13A MCB	0.208	8.98	4.07	8.98	4.07	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	6	18	0.23		# 0057	10.00	
46	L13D	L13A MCB	0.208	8.90	4.03	8.90	4.03	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	6	18	0.23		# 0036	15.00	
47	L1A	LDP L1	0.208	12.38	5.72	12.38	5.72	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.33				
48	L1B	LDP L1	0.208	12.07	5.57	12.07	5.57	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.32				
49	L2A	LDP L2	0.208	12.79	5.92	12.79	5.92	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.35				
50	L2B	LDP L2	0.208	12.46	5.76	12.46	5.76	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.34				
51	L3	LDP L3	0.208	12.54	5.80	12.54	5.80	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.34		# 0046	22.00	
52	L4A	LDP L4	0.208	11.92	5.50	11.89	5.49	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.32		# 0025	30.00	
53	L4B	LDP L4	0.208	11.55	5.32	11.52	5.31	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.31		# 0047	35.00	
54	L5A	LDP L5	0.208	4.21	1.78	4.21	1.78	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	4	18	0.10		# 0028	269.00	
55	L5B	LDP L5	0.208	4.15	1.75	4.15	1.75	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	4	18	0.10		# 0029	274.00	
56	L5C	LDP L5	0.208	4.09	1.73	4.09	1.73	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	4	18	0.09		# 0053	279.00	
57	L6A	LDP L6	0.208	11.46	5.28	11.46	5.28	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	8	18	0.31		# 0038	36.00	

L10 AND L12 IE IS LOWERED WHEN UPSTREAM CBS LDP L10 AND L12 ARE CHANGED FROM MAX TO MIN

L13B, L13C AND L13D IE IS LOWERED WHEN UPSTREAM MCB L13A IS CHANGED FROM MAX TO MIN

L5A, L5B AND L5C IE IS LOWERED WHEN UPSTREAM CB LDP L5 IS CHANGED FROM MAX TO MIN

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
58	L6B	LDP L6	0.208	11.11	5.11	11.11	5.11	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	7	18	0.30		#		
59	L7A	LDP L7	0.208	13.93	6.46	13.93	6.46	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	9	18	0.38		#		
60	L7B	LDP L7	0.208	13.57	6.29	13.57	6.29	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	9	18	0.37		#		
61	L8	LDP L8	0.208	1.74	0.68	1.74	0.68	0.0262	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	2	18	0.04	(*N15c)	# 0041	377.00	
62	L9	LDP L9	0.208	2.10	0.84	2.10	0.84	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	35	18	3.51	(*N9)	# 0058	378.00	
63	LDP	LDP MCB	0.208	14.48	6.72	14.40	6.68	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	135	18	29.9	(*N9)	# 0026		
64	LDP (LDP MCB LineSide)	MSB XL1	0.208	14.48	6.72	14.40	6.68	2	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	135	18	29.9	(*N9)	# 0043-Line	19.00	
65	LDP2	LDP2 MCB	0.208	6.21	3.00	6.21	3.00	0.0168	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	5	18	0.12		# 0100		
66	LDP2 (LDP2 MCB LineSide)	PDP4 XL2	0.208	6.21	3.00	6.21	3.00	0.0161	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	5	18	0.11		# 0101-Line	18.00	
67	MSB	MSB MCB	0.48	16.78	12.93	14.73	11.35	2	0.0000	PNL	LV Switchboard	VCB	14	12	10	0	25	192	18	52.6	(*N9)	# 0043		
68	MSB (MSB MCB LineSide)	MaxTripTime @2.0s	0.48	16.78	12.93	14.73	11.35	2	0.0000	PNL	LV Switchboard	VCB	14	12	10	0	25	192	18	52.6	(*N2) (*N9)	# 0070-Line		
69	MULT1 CTL	PDP3 MULT1	0.48	11.99	9.69	11.76	9.51	0.0175	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.47		# 0081	65.00	
70	MULT2 CTL	PDP3 MULT2	0.48	12.86	10.43	12.63	10.24	0.0175	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.51		# 0083	50.00	
71	MULT3 CTL	PDP4 MULT3	0.48	12.94	10.50	12.76	10.35	0.017	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.50	(*N21a)	# 0084	41.00	
72	MULT4 CTL	PDP4 MULT4	0.48	13.23	10.74	13.04	10.59	0.017	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	11	18	0.51	(*N21a)	# 0071	27.00	
73	PDP1	MSB PDP1	0.48	16.50	12.71	16.11	12.41	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.74		# 0044	17.00	
74	PDP2	MSB PDP2	0.48	16.36	12.61	16.28	12.54	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.73		# 0069	20.00	
75	PDP3	MSB PDP3	0.48	16.25	12.52	15.78	12.16	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.73	(*N21b)	# 0020	32.00	
76	PDP4	MSB PDP4	0.48	16.20	12.48	15.80	12.18	0.025	0.0000	PNL	LV Panelboard	VCB	14	12	10	0	25	13	18	0.72	(*N21a) (*N21b)	# 0021	35.00	
77	RTU-1 NEW FDS	L10 RTU-1 NEW	0.208	1.18	0.38	1.15	0.38	1.232	0.0000	PNL	FDS	VCB	14	12	10	0	25	16	18	0.95	(*N3) (*N15c)	# 0017	54.00	
78	SHRED1 NFDS	PDP2 SHRED1	0.48	3.60	2.29	3.59	2.29	0.028	0.0000	PNL	NFDS	VCB	14	12	10	0	25	5	18	0.14	(*N3)	# 0003	60.00	
79	SHRED2 NFDS	PDP2 SHRED2	0.48	0.82	0.48	0.81	0.48	0.3234	0.0000	PNL	NFDS	VCB	14	12	10	0	25	8	18	0.31	(*N3)	# 0004	284.00	
80	SIFTER CP	LDP2 SIFTER	0.208	5.90	2.84	5.90	2.84	0.0161	0.0000	PNL	LV Panelboard	VCBB	14	12	10	0	25	5	18	0.11	(*N21b)	# 0018	16.00	

L8 IE IS LOWERED WHEN UPSTREAM CB LDP L8 IS CHANGED FROM MAX TO MIN

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
81	For additional information refer to NFPA 70 E, Standard for Electrical Safety in the Workplace.																			#Equip Eval Failed = 7	(*N_ka) - Out of IEEE 1584 kA Range. Lee Equation Used. Consider NESC/EPRI method to compare			
82																				#Bus Equip Eval Failed = 3	(*N2) < 80% Cleared Fault Threshold			
83																					(*N3) - Arcing Current Low Tolerances Used			
84																					(*N9) - Max Arcing Duration Reached			
85																					(*N15c) - Sustainable arc in 240V or less and bolted fault current < 2000 A is less likely to occur (IEEE 1584-2018 Section 4.3)			
86																					(*N20b) - Equipment Evaluation Marginal for Bus			
87																					(*N21a) - Equipment Evaluation Failed, OVERDUTIED PROTECTIVE DEVICE EQUIPMENT FOUND - Inappropriate to provide arc-flash			
88																					(*N21b) - Equipment Evaluation Failed, OVERDUTIED BUS EQUIPMENT FOUND - Inappropriate to provide arc-flash			
89																					(*N25d) - FB VCB > VCBB			

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Equip Category	Electrode Config	Box Height (in)	Box Width (in)	Box Depth (in)	Altitude (feet)	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal
90																					IEEE 1584 2018 Bus + Line Side - Comprehensive Fault Report (Include Line Side + Load Side Contributions), 80% Cleared Fault Threshold, include Ind. Motors for 5.0 Cycles, mis-coordination not checked			

APPENDIX J – ARC FLASH LABELS – EXISTING CONDITIONS PLUS EXTRA LABELS IF RECOMMENDED SETTINGS ARE IMPLEMENTED

LABELS PROVIDED UNDER SEPARATE COVER

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: ACCU1	Prot By: PDP3 ACCU1

Arc Incident Energy: 0.06 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 3 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.47 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: ACCU2	Prot By: PDP3 ACCU2

Arc Incident Energy: 0.05 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 3 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.14 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: ACCU3	Prot By: PDP4 ACCU3

Arc Incident Energy: 0.06 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 3 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.57 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: ACCU4	Prot By: PDP4 ACCU4

Arc Incident Energy: 0.04 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 2 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.66 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: AHU-1 NFDS	Prot By: MSB AHU-1

Arc Incident Energy: 0.42 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 9 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 9.76 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: AHU-2 NFDS	Prot By: PDP1 AHU-2

Arc Incident Energy: 0.72 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.36 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: AHU-3 NFDS	Prot By: PDP1 AHU-3

Arc Incident Energy: 1.19 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 18 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.43 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: AHU-4 NFDS	Prot By: PDP1 AHU-4

Arc Incident Energy: 0.69 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.44 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: AHU-5 NFDS	Prot By: PDP1 AHU-5

Arc Incident Energy: 1.06 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 17 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.63 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: AHU-6 NFDS	Prot By: PDP1 AHU-6

Arc Incident Energy: 0.71 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.39 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: ATS1 LOAD SIDE	Prot By: ATS1 FUSE

Arc Incident Energy: 2.36 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 27 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.00 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: ATS2 LOAD SIDE	Prot By: ATS2 FUSE

Arc Incident Energy: 2.68 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 30 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.00 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: AUTOCLAVE NFDS	Prot By: PDP2 AUTOCLAVE

Arc Incident Energy: 0.20 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 6 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 3.51 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: AUX BLDG	Prot By: MSB AUX BLDG

Arc Incident Energy: 5.04 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 44 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.90 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: DATS1	Prot By: GEN MCB

Arc Incident Energy: 2.68 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 30 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.00 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: DATS2	Prot By: GEN MCB

Arc Incident Energy: 2.68 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 30 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.00 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: DL13	**Prot By: MSB XL1**

Arc Incident Energy: 29.4 cal/cm^2 at 18 in

Shock Hazard Exposure:	208 VAC
Limited (Shock) Approach Boundary:	42 in
Restricted (Shock) Approach Boundary:	12 in

Arc Flash Boundary 133 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated arc flash suit hood Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Arc-rated gloves or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 14.28 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: DXEL1 FDS	**Prot By: EH1 DTELA**

Arc Incident Energy: 7.07 cal/cm^2 at 18 in

Shock Hazard Exposure:	480 VAC
Limited (Shock) Approach Boundary:	42 in
Restricted (Shock) Approach Boundary:	12 in

Arc Flash Boundary 55 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.42 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: EF-K1 NFDS	Prot By: LD EF-K1

Arc Incident Energy: 0.14 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 6 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 0.29 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: EF-K2 NFDS	Prot By: LD EF-K2

Arc Incident Energy: 0.13 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 6 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 0.30 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: EH1	Prot By: ATS2 FUSE

Arc Incident Energy: 2.68 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 30 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.00 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: EH2	Prot By: ATS1 FUSE

Arc Incident Energy: 2.36 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 27 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 0.99 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: EL1	Prot By: DXEL1

Arc Incident Energy: 2.77 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 29 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.56 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: EL1A	Prot By: EL1 MCB

Arc Incident Energy: 2.48 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 28 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.55 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: EL1B	Prot By: EL1 MCB

Arc Incident Energy: 2.46 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 28 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.54 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: ELEV FDS	Prot By: MSB ELEV

Arc Incident Energy: 0.12 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 4 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 3.26 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: GEN LINE SIDE	Prot By: MaxTripTime @2.0s

Arc Incident Energy: 3.08 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 30 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.00 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: GLYPUMP NFDS	Prot By: PDP2 GLYPUMP

Arc Incident Energy: 0.25 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 7 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.73 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: H1	Prot By: MSB H1

Arc Incident Energy: 0.71 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 15.87 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: H2	Prot By: MSB H2

Arc Incident Energy: 0.69 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 15.56 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: H3	Prot By: MSB H3

Arc Incident Energy: 0.68 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 15.27 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: H4	Prot By: MSB H4

Arc Incident Energy: 0.15 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 5 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 3.67 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: HOIST NFDS	Prot By: PDP2 HOIST

Arc Incident Energy: 0.11 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 4 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 5.43 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L10	Prot By: LDP L10

Arc Incident Energy: 4.20 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 39 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.83 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L11A	**Prot By: LDP L11**

Arc Incident Energy: 0.34 cal/cm^2 at 18 in

Shock Hazard Exposure:	**208 VAC**
Limited (Shock) Approach Boundary:	**42 in**
Restricted (Shock) Approach Boundary:	**12 in**

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 12.46 kA Date: 06/07/24

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L11B	**Prot By: LDP L11**

Arc Incident Energy: 0.33 cal/cm^2 at 18 in

Shock Hazard Exposure:	**208 VAC**
Limited (Shock) Approach Boundary:	**42 in**
Restricted (Shock) Approach Boundary:	**12 in**

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 12.14 kA Date: 06/07/24

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L12	Prot By: LDP L12

Arc Incident Energy: 5.79 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 45 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 3.00 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L13A	Prot By: DL13 FUSE

Arc Incident Energy: 21.5 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 99 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated arc flash suit hood Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Arc-rated gloves or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 9.15 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L13B	Prot By: L13A MCB

Arc Incident Energy: 18.1 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 98 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated arc flash suit hood Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Arc-rated gloves or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 9.06 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L13C	Prot By: L13A MCB

Arc Incident Energy: 18.0 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 98 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated arc flash suit hood Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Arc-rated gloves or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 8.98 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L13D	Prot By: L13A MCB

Arc Incident Energy: 17.8 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 97 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated arc flash suit hood Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Arc-rated gloves or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 8.90 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L1A	Prot By: LDP L1

Arc Incident Energy: 0.33 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 12.38 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L1B	**Prot By: LDP L1**

Arc Incident Energy: 0.32 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 12.07 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L2A	**Prot By: LDP L2**

Arc Incident Energy: 0.35 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 12.79 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L2B	Prot By: LDP L2

Arc Incident Energy: 0.34 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 12.46 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L3	Prot By: LDP L3

Arc Incident Energy: 0.34 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 12.54 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L4A	**Prot By: LDP L4**

Arc Incident Energy: 0.32 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 11.92 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L4B	**Prot By: LDP L4**

Arc Incident Energy: 0.31 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 11.55 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L5A	Prot By: LDP L5

Arc Incident Energy: 6.66 cal/cm^2 at 18 in

Shock Hazard Exposure:	208 VAC
Limited (Shock) Approach Boundary:	42 in
Restricted (Shock) Approach Boundary:	12 in

Arc Flash Boundary 53 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 4.21 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L5B	Prot By: LDP L5

Arc Incident Energy: 6.56 cal/cm^2 at 18 in

Shock Hazard Exposure:	208 VAC
Limited (Shock) Approach Boundary:	42 in
Restricted (Shock) Approach Boundary:	12 in

Arc Flash Boundary 52 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 4.15 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L5C	Prot By: LDP L5

Arc Incident Energy: 6.45 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 52 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 4.09 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L6A	Prot By: LDP L6

Arc Incident Energy: 0.31 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 11.46 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L6B	**Prot By: LDP L6**

Arc Incident Energy: 0.30 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 7 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 11.11 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L7A	**Prot By: LDP L7**

Arc Incident Energy: 0.38 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 9 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 13.93 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L7B	**Prot By: LDP L7**

Arc Incident Energy: 0.37 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 9 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 13.57 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L8	**Prot By: LDP L8**

Arc Incident Energy: 2.83 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 31 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.74 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: L9	**Prot By: LDP L9**

Arc Incident Energy: 3.51 cal/cm^2 at 18 in

Shock Hazard Exposure:	**208 VAC**
Limited (Shock) Approach Boundary:	**42 in**
Restricted (Shock) Approach Boundary:	**12 in**

Arc Flash Boundary 35 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated face shield and arc-rated balaclava or arc flash suit hood. Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 2.10 kA Date: 06/07/24

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: LDP	**Prot By: MSB XL1**

Arc Incident Energy: 29.9 cal/cm^2 at 18 in

Shock Hazard Exposure:	**208 VAC**
Limited (Shock) Approach Boundary:	**42 in**
Restricted (Shock) Approach Boundary:	**12 in**

Arc Flash Boundary 135 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated arc flash suit hood Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Arc-rated gloves or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 14.48 kA Date: 06/07/24

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: LDP2	Prot By: PDP4 XL2

Arc Incident Energy: 0.11 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 5 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 6.21 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: MSB	Prot By: MaxTripTime @2.0s

Arc Incident Energy: 52.6 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 192 in

Minimum PPE Required:

Arc-rated clothing with an arc rating equal to or greater than the estimated incident energy required. Long-sleeve shirt and pants or coverall or arc flash suit. Arc-rated arc flash suit hood Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner). Arc-rated gloves or rubber insulating gloves with leather protectors. Hard hat Safety glasses or safety goggles. Hearing protection Leather footwear.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 16.78 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: MULT1 CTL	Prot By: PDP3 MULT1

Arc Incident Energy: 0.47 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 11 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 11.99 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: MULT2 CTL	Prot By: PDP3 MULT2

Arc Incident Energy: 0.51 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 11 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 12.86 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: MULT3 CTL	Prot By: PDP4 MULT3

Arc Incident Energy: 0.50 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 11 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 12.94 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: MULT4 CTL	Prot By: PDP4 MULT4

Arc Incident Energy: 0.51 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 11 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 13.23 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: PDP1	Prot By: MSB PDP1

Arc Incident Energy: 0.74 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 16.50 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: PDP2	Prot By: MSB PDP2

Arc Incident Energy: 0.73 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 16.36 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: PDP3	Prot By: MSB PDP3

Arc Incident Energy: 0.73 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 16.25 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: PDP4	Prot By: MSB PDP4

Arc Incident Energy: 0.72 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 13 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 16.20 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: RTU-1 NEW FDS	Prot By: L10 RTU-1 NEW

Arc Incident Energy: 0.95 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 16 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 1.18 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: SHRED1 NFDS	Prot By: PDP2 SHRED1

Arc Incident Energy: 0.14 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 5 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 3.60 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: SHRED2 NFDS	Prot By: PDP2 SHRED2

Arc Incident Energy: 0.31 cal/cm^2 at 18 in

Shock Hazard Exposure: 480 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 8 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 0.82 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

WARNING

Arc Flash and Electric Shock Risk

Appropriate PPE Required

Equip ID: SIFTER CP	Prot By: LDP2 SIFTER

Arc Incident Energy: 0.11 cal/cm^2 at 18 in

Shock Hazard Exposure: 208 VAC

Limited (Shock) Approach Boundary: 42 in

Restricted (Shock) Approach Boundary: 12 in

Arc Flash Boundary 5 in

Minimum PPE Required:

No arc flash specific PPE required at the working distance. Shock hazard protection PPE still required. Rubber insulating gloves with leather protectors, EH rated footware, hard hat and safety glasses.

WARNING: Changes in settings or system configuration may invalidate results

Bus Bolted Fault Current: 5.90 kA **Date: 06/07/24**

Incident Energy Analysis by COMPANY
123 Easy Street Nowhere, FL 99999 555-555-1212

APPENDIX K – ONE-LINE DIAGRAM

COMMERCIAL EXAMPLE
One Line Diagram 1Line001
COMPANY Project # BR549
Print Date: June 7, 2024