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City of Oxnard

Public Works Integrated Master Plan

WATER

PROJECT MEMORANDUM 2.6
ARC FLASH ASSESSMENT

FINAL DRAFT
December 2015

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City of Oxnard

Public Works Integrated Master Plan

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ARC FLASH ASSESSMENT

1.0 INTRODUCTION

The short circuit, coordination, and arc flash hazard studies contained in this report provide information necessary for the safe and reliable operation and maintenance of the City of Oxnard (City) water treatment and conveyance facilities' electrical distribution system, and to help them meet the safety requirements of NFPA 70E and OSHA 1910.132(d).

The studies in this report were performed using ETAP power system analysis software. The data required to build the electrical system model was obtained from a combination of field investigation, and as-built project documentation.

1.1 Project Memorandums (PMs) Used for Reference

The recommendations outlined in this PM include background from the following other PMs:

- PM 2.1 - Water System - Background Summary.
- PM 3.6 - Wastewater System - Arc Flash Assessment.
- PM 4.4 - Recycled Water System - Arc Flash Assessment.

1.2 Other Reports Used for Reference

The following codes and standards are referenced in this PM:

- NFPA 70 National Electric Code (NEC).
- NFPA 70E Standard for Electrical Safety in the Workplace.
- IEEE Standard 242 (IEEE Buff Book) - Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.
- IEEE 1584 - Guide for Performing Arc Flash Hazard Calculations.

1.3 Short Circuit Study

The objective of the Short Circuit Study is to verify that the electrical distribution equipment at all the sites is rated to withstand and interrupt the short circuit currents that could result from a fault in the electrical distribution system.

Section 2.0 identifies equipment that is not properly rated for the available short circuit current. Protective Device Coordination Study.

The Protective Device Coordination Study has been performed to achieve four objectives – sensitivity, security, selectivity, and safety. Sensitivity refers to the degree of certainty that a device will operate correctly under a fault. Security is the degree of certainty that a device will not operate when there is no fault condition. Selectivity means that the protective device closest to a fault trips before any upstream devices to clear the fault, isolating the resulting outage to the smallest amount of equipment possible. Safety primarily applies to the arc flash hazard and requires that protective devices operate as quickly as possible to reduce incident energy.

The results of the study show that certain protective devices are not properly coordinated and require adjustment. Section 3.0 identifies the protective devices which are not properly coordinated.

1.4 Arc Flash Study

The objective of the Arc Flash Study is to provide information that allows plant staff to take appropriate precautions when working on energized electrical equipment to reduce the potential risk of injury from an arc flash event. The results of the Short Circuit and the Protective Device Coordination Studies are used to calculate the incident energy and hazard boundaries based upon NFPA 70E 2015 Edition and IEEE 1584 for equipment in the electrical distribution system. OSHA regulations require that employers perform an assessment of the workplace to identify arc flash hazards. Specifically,

Specifically, *"The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall: Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment; communicate selection decisions to each affected employee; and select PPE that properly fits each affected employee."* [OSHA 1910.132(d)(1)]. The arc-flash labels provided with this study will help the plant to comply with these regulations by identifying the PPE level and arc flash boundary at each piece of equipment.

2.0 SHORT CIRCUIT STUDY

The objective of the Short Circuit Study is to verify that the electrical distribution equipment in the facility is rated to withstand and interrupt the available short circuit currents that could result from a fault in the electrical distribution system in accordance with NFPA 70 National Electric Code (NEC), Article 110 Paragraph's 110.9 and 110.10. The study results show that the existing electrical distribution equipment is sufficiently rated for the worst-case short circuit current with the exceptions of the following below:

- Blending Station 1, North Power Building:
  - The feeder breaker in the Main SWBD 1 for the Meter Shop Disconnect is not properly rated for the available fault current.
- Blending Station 1, Desalter Building:
  - The short circuit current rating for the Solar Control Cabinet could not be determined and was assumed to be 5 kA. This assumed rating is not properly rated for the available fault current.
  - The Solar Inverter Disconnect is not properly rated for the available fault current.
- Blending Station 6:
  - The AH-101 disconnect switch is not properly rated for the available fault current.
  - The CU-101 disconnect switch is not properly rated for the available fault current.
  - The HP-101 disconnect switch is not properly rated for the available fault current.

2.1 Source Data

The results of the Short Circuit Study are completely dependent on the information in the electrical system model. As such, every effort has been made to obtain the most up-to-date information available for all equipment covered under the scope of the study. In the future, when changes are made to the electrical distribution system, the system model must be updated and a new short circuit study performed based on the updated model.

2.1.1 Utility Contribution

The following values are the available fault current at the utility service entrance, as provided by the utility in July 2015. Both the maximum and minimum fault current levels are incorporated into the electrical system model in order to capture the worst case arc flash event. It is important to note that utility fault current levels can change due to numerous variables in the utility distribution and transmission system. This is why it is undesirable to have equipment's short circuit rating too close to the calculated short circuit values.

Blending Station 1 (Main Water Campus), 250 S. Hayes Ave
Southern California Edison (SCE) Structure # P5600632
SCE Meter #V349N-008970

- Available 3-Phase Fault Current: 11,900 A, X/R Ratio: 3.14.
- Available Single Line-Ground Fault: 12,800 A, X/R Ratio: 3.51.
- Nominal Voltage: 480 V.

Blending Station 1 (Main Water Campus), 251 S. Hayes Ave
Southern California Edison (SCE) Structure # P5197918
SCE Meter #V349N-009102 and # V349N-012328

- Available 3-Phase Fault Current: 19,000 A, X/R Ratio: 4.88.
- Available Single Line-Ground Fault: 19,950 A, X/R Ratio: 5.34.
- Nominal Voltage: 480 V.

Blending Station 2, 1001 Richmond Ave
Southern California Edison (SCE) Structure # 1257095E
SCE Meter #259000-076122

- Available 3-Phase Fault Current: 14,020 A, X/R Ratio: 2.35.
- Available Single Line-Ground Fault: 14,940 A, X/R Ratio: 2.45.
- Nominal Voltage: 480 V.

Blending Station 3 (Main Water Campus), 1700 Solar Ave
Southern California Edison (SCE) Structure # P5554088
SCE Meter #259000-063295

- Available 3-Phase Fault Current: 24,293 A, X/R Ratio: 5.25.
- Available Single Line-Ground Fault: 26,093 A, X/R Ratio: 5.87.
- Nominal Voltage: 480 V.

Blending Station 4 3637 N. Rose Ave
Southern California Edison (SCE) Structure # P5438424
SCE Meter #259000-062333

- Available 3-Phase Fault Current: 10,400 A, X/R Ratio: 2.28.
- Available Single Line-Ground Fault: 11,010 A, X/R Ratio: 2.35.
- Nominal Voltage: 480 V.

Blending Station 5, 980 E. Pleasant Valley Rd
Southern California Edison (SCE) Structure # 2234284E
SCE Meter #222013-894190

- Available Single Phase Fault Current Phase-Phase: 1,400 A, X/R Ratio: 0.56.
- Available Single Line-Ground Fault: 1,450 A, X/R Ratio: 0.74.
- Nominal Voltage: 240 V.

Blending Station 6 (Main Water Campus), 242 3rd St
Southern California Edison (SCE) Structure # P5560870
SCE Meter # V349N-007682

- Available 3-Phase Fault Current: 42,230 A, X/R Ratio: 6.28.
- Available Single Line-Ground Fault: 45,475 A, X/R Ratio: 6.76.
- Nominal Voltage: 480 V.

2.2 Assumptions

The following assumptions were used in performing the study:

- All motors and other continuous or intermittent loads (actuators, heaters, etc.) are running.
- Purely electronic loads do not contribute to a fault. This includes variable frequency drives without bypass capability, uninterruptible power supplies, UV ballasts, and other rectified loads.
- Loads 240V and below were not included in the arc flash calculations for systems fed from a 112.5 kilovolt-ampere (kVA) transformer or smaller, in accordance with IEEE 1584.
- Multipliers are applied to the reactance values of rotating machinery based on the recommendations in IEEE 141 (Red Book), as identified in Table 1.

Table 1 Motor and Generator Reactance Multipliers Public Works Integrated Master Plan City of Oxnard		
Machine Type	**First Cycle Network**	**Interrupting Network**
Turbine generators; all hydrogenerators with amortissuer windings; all condensers	1.0 Xd"	1.0 Xd"
Synchronous Motors	1.0 Xd"	1.5 Xd"
Induction motors > 1,000 hp at ≤ 1,800 RPM	1.0 Xd"	1.5 Xd"
Induction Motors > 250 hp at 3,600 RPM	1.0 Xd"	1.5 Xd"
Induction motors ≥ 50 hp not covered above	1.2 Xd"	3.0 Xd"
Induction motors < 50 hp	1.67 Xd"	Neglect
Notes: Xd = direct axis sub-transient reactance.		

The direct axis sub-transient reactance value is inversely proportional to and has a significant impact on the sub-transient fault current magnitude, and, therefore affects the short circuit contribution from rotating machines operating in the system.

2.3 One-line Diagrams

One-line diagrams of the plant's electrical distribution system are shown in Appendix A. These diagrams are generated by ETAP as part of the model construction. Each element (breaker, cable, fuse, etc.) is uniquely named. Loads, busses, and transformers are named in accordance with the record drawings. Cables, fuses, equipment terminals are named after their associated equipment. (For example,
F-TRF-T2 is the fuse that protects the transformer TRF-T2.) Low voltage breakers in panelboards and switchboards are named according to what they feed (see Figure 1).

The following example one-line diagram (Figure 1) identifies the locations in this report where information corresponding to the equipment is located.

2.4 Short Circuit Reports

Appendix B presents a set of three reports used to verify that the ratings of the overcurrent protective devices, in the electrical distribution system, are sufficient to interrupt the available fault current. Three-phase bolted, line-to-ground, line-to-line-to-ground, and line-to-line faults are calculated and tabulated in the attached reports. Three-phase bolted faults are usually the highest magnitude type of fault. Line-to-ground faults can be larger than three-phase bolted fault values if they occur near generators. Line-to-line fault current magnitudes are important for low voltage power circuit breakers (30-cycle rated breakers) because they can also be worst-case after the first cycle. Line-line-ground fault data is provided only for completeness. Short circuit results are provided as symmetrical current.

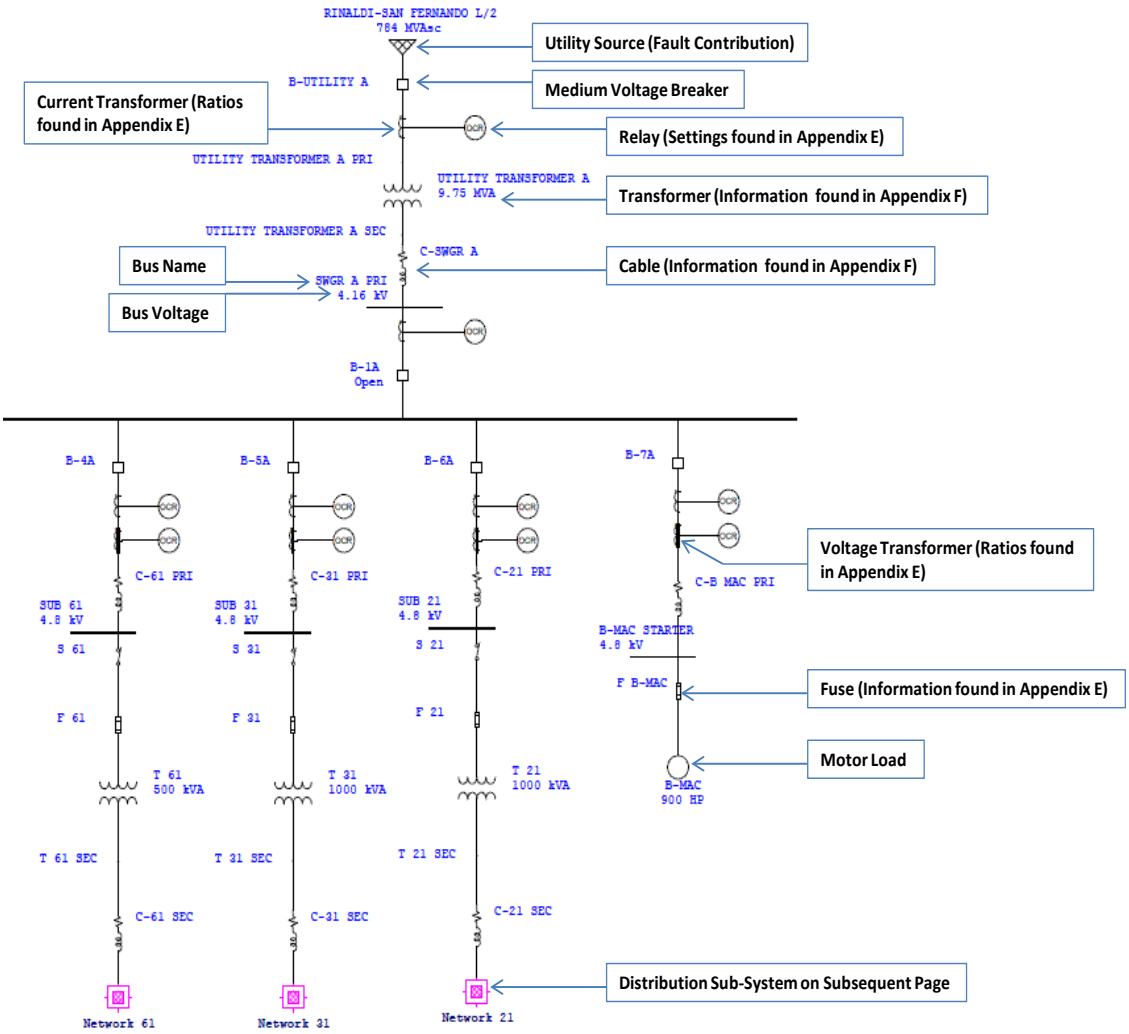


Figure 1 Example One-Line Diagrams

2.4.1 Momentary Duty Summary Report – Appendix B1

The momentary duty summary report evaluates the short circuit bracing of each bus by comparing it to the calculated 1/2-cycle (momentary) current.

- Low-voltage bus bracing is evaluated based on its rating in symmetrical root mean square (rms) fault current.

The calculated values shown in the report are based on the worst-case scenario with the highest available fault current. Any inadequately rated busses are flagged by an asterisk and are colored red. The report shows that some of the busses in the facilities are not adequately rated for the available fault current.

2.4.2 Interrupting Duty Summary Report – Appendix B2

The interrupting duty summary report evaluates whether each circuit breaker or fuse can safely interrupt the available fault current by comparing its interrupting capabilities to the calculated fault current. The calculated fault current is determined as follows:

- Low-voltage molded case or insulated case circuit breakers:
  - The 1/2 cycle (momentary) symmetrical rms current is used in accordance with UL 489 – Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit Breaker Enclosures.
  - Where the calculated X/R ratio at the breaker location exceeds the test X/R ratio specified in the standard, the program adjusts the required interrupting current proportionally.
- Low-voltage power circuit breakers (30-cycle rated breakers):
  - The 1/2 cycle (momentary) symmetrical rms current is used in accordance with ANSI C37.13 – Standard for Low-Voltage Power Circuit Breakers Used in Enclosures.
  - Where the calculated X/R ratio at the breaker location exceeds the test X/R ratio specified in the standard, the program adjusts the required interrupting current proportionally.
- Low-voltage fuses:
  - The procedures for calculating the low-voltage fuse interrupting short circuit current is the same as those for the low-voltage molded case or insulated case circuit breaker interrupting duty calculation.

The calculated values shown in the report are based on the worst-case scenario with the highest available fault current. Any inadequately rated protective devices are flagged with an asterisk and colored red. The report shows that some of the protective devices at the facilities are not adequately rated to interrupt the worst-case fault current.

2.4.3 1/2 Cycle Short-Circuit Current Summary Report– Appendix B3

The 1/2 Cycle Short-Circuit Current Summary Report shows the current at each bus during the first 1/2 cycle after a fault. These values are used to evaluate the bus bracing and interrupting ratings of equipment in the facilities as indicated above.

The report includes calculations for both three phase and unbalanced faults (line-to-ground, line-to-line, and line-to-line-to-ground). The calculated current for each type of fault is different because fault current passes through a different set of impedances depending on the fault type.

3.0 PROTECTIVE DEVICE COORDINATION STUDY

The protective device coordination study has four objectives – sensitivity, security, selectivity, and safety. Coordination between different types of protective devices is shown by plotting their individual time-current characteristics. A set of time-current curves (TCCs) showing the coordination between various protective devices in Blending Stations 1 through 4 and 6 has been produced as part of this report. Blending Station 5 is powered at 240V, single phase from a transformer that is less than 112.5 kVA in size. TCCs are not developed for single phase protective devices.

The coordination study has been performed using the guidelines in IEEE Standard 242 (IEEE Buff Book) - Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.

3.1 Source Data

3.1.1 Utility Protective Devices

The model did not include protective device settings from the utility. The utility does not provide protective device settings upstream of the utility meter.

3.1.2 Electrical Distribution System

The protective device settings used to develop the TCCs were obtained through field investigation at each of the facilities.

3.2 Time-Current Curves

Time-current curves are provided for the entire electrical distribution system, from the main breakers in switchboards through the largest feeder breaker of each 480V motor control center (MCC), switchboard, or panelboard. Time-current curves are a visual representation representing coordination of protective devices. Current (in Amperes based upon a reference Voltage) is plotted on the X axis and tripping time (in seconds) is plotted on the Y axis, both on a logarithmic scale. Protective devices each have their own time-current tripping characteristics, which are identified by colored bands on the plot. When analyzing the curves the devices are expected to trip at the top-most edge of their band for a given current.

To determine the tripping time of a given device the protective device curves are used by identifying a short circuit current and finding the curve (for a protective device through which the short circuit is travelling) with the lowest time to trip. If a protective device operates during this short circuit, the protective devices have adequate sensitivity. If the first protective device that operates is the one closest to the fault, the system is said to have selectivity. Identifying a normal operating current (with a given duration) on a TCC plot and showing that no protective device operates is security. Safety primarily applies to the arc

flash hazard and requires that protective devices operate as quickly as possible to reduce incident energy.

To ensure proper selectivity, the TCC for the protective devices closest to the fault should be located to the left of the TCC for the upstream protective devices as displayed on the TCC plot. This orientation is referred to as proper coordination. When portions of the TCC for the protective device closest to the fault overlap the TCC for the upstream devices, coordination is not achieved. From a coordination perspective, there are instances when the breaker closest to the fault does not need to clear the fault before the upstream protective device. Some of these possible scenarios occur when two devices are in series and no other branch circuits exist between the two devices, i.e. the same equipment will be affected by an outage no matter which series protective device trips first. Note that coordination cannot always be achieved between protective devices due to inherent limitations of each protective device, but it is important to coordinate as much as possible to deliver the highest level of security and selectivity for the electrical system. Additionally instantaneous regions of the TCCs cannot be coordinated due to inherent limitations of the protective devices.

The TCCs for the facilities not only include the protective device settings needed for coordination, but also equipment characteristics such as:

- Transformer damage curves – used to verify proper transformer protection. Curves are shifted to the conservative “frequent fault” curves per ANSI C57.
- Motor starting curves – used to ensure protective devices will not experience nuisance trips on motor inrush currents. Motors on full voltage starters are assumed to have 6 per-unit current for 5 seconds and motors on reduced voltage starters started in 10 seconds.
- Generator decrement curves-used to analyze short circuit contribution from the generator.
- Generator thermal damage curves-used to verify proper generator protection. Generator thermal capability curve $I^2{}^*t$ is calculated based on the negative sequence current, where the negative sequence current is expressed in multiples of machine rated stator current or FLA. For synchronous generators with a rotor type defined as round rotor, this factor is typically equal to 30, whereas for salient pole, this factor is typically equal to 40. For the engine-driven generators at the facilities an $I^2{}^*t$ value of 40 was used as recommended by ETAP.

3.3 Coordination Results

Refer to Appendix C for the results of the Protective Device Coordination Study for the “As-found” condition. The results of the Protective Device Coordination Study are described in the following bullets:

- TCC 01 - Coordination is achieved between the main breaker in Blending Station 1 (BS1) North Power Building service entrance switchboard (SWBD) down through the largest feeder breaker in the North Power Building (NPB) Main SWBD 1 except in the instantaneous region of the curves.
- TCC 02 - Coordination is not achieved between the circuit breaker and fuse feeding the BS1 Meter Shop transformer (XFMR). This is not a concern, as these devices are in series and the opening of either device will clear a fault at the transformer. However, the circuit breaker feeding the Meter Shop XFMR may trip due to XFMR inrush when being energized. This is considered nuisance tripping.
- TCC 03 - Coordination is not achieved between the circuit breaker in BS1 NPB SWBD 1 and the main breaker in the WELL 23 VFD. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the VFD.
- TCC 04 - Coordination is achieved between the BS1 NPB Main SWBD 1 feeder breaker and the Permeate PMP 1 VFD main breaker except in the instantaneous region of the curves.
- TCC 05 - Coordination is not achieved between the BS1 NPB Main SWBD 1 feeder breaker and the fuse at the Admin SWBD. Coordination is not achieved between the fuse at the Admin SWBD and the largest feeder breaker in the Admin SWBD.
- TCC 06 - Coordination is not achieved between the BS1 Admin SWBD feeder breaker and the Panel HB main breaker. Coordination is not achieved between the Panel HB main breaker and the largest feeder breaker in Panel HB.
- TCC 07 - Coordination is not achieved between the BS1 Admin SWBD feeder breaker and the largest feeder breaker in Panel L.
- TCC 08 - Coordination is not achieved between the BS1 Panel L feeder breaker and the MPC1 primary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the transformer. Coordination is achieved between the MPC1 primary side and secondary side breakers except in the instantaneous region of the curves.
- TCC 09 - Coordination is not achieved between the BS1 Panel L feeder breaker and the Panel P main breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault at Panel P.
- TCC 10 - Coordination is achieved from the BS1 NPB GEN 1 output breaker down through the largest feeder breaker of the NPB SWBD 1.

- TCC 11 - Coordination is not achieved between the main breaker in BS1 North Power Building service entrance switchboard (SWBD) down through the largest feeder breaker in the NPB Main SWBD 2.
- TCC 12 - Coordination is not achieved between the BS1 GEN 2 output breaker down through the largest feeder breaker in the NPB Main SWBD 2.
- TCC 13 - Coordination is not achieved between the feeder breaker in BS1 NPB SWBD 2 and the main breaker in the WELL 22 VFD. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the VFD.
- TCC 14 - Coordination is not achieved between the feeder breaker in BS1 NPB SWBD 2 and the main breaker in the WELL 20 VFD. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the VFD.
- TCC 15 - Coordination is not achieved between the BS1 XFMR P primary side fuse and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in PNL P.
- TCC 16 - Protection is achieved for BS1 XFMR EM by the primary side breaker in the NPB SWBD 2. The primary side breaker for BS1 XFMR EM protects the transformer damage curve and allows the XFMR inrush current.
- TCC 17 - Coordination is achieved between the BS1 XFMR LA primary and secondary side breakers. The XFMR damage curve is partially protected by the secondary side breaker, and the primary side breaker will allow the XFMR inrush current.
- TCC 18 - Coordination is not achieved between the BS1 Admin SWBD feeder breaker and the Panel HA main breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault at Panel HA.
- TCC 19 - Coordination is achieved between the BS1 SWBD-MSB main breaker and the Permeate PMP 1 VFD main breaker, except in the instantaneous region of the curves.
- TCC 19A - Coordination is not achieved between the BS1 SWBD-MSB main breaker and the CIP Heater Panel main breaker.
- TCC 19B - Coordination is not achieved between the BS1 SWBD-MSB main breaker and the CIP Pump VFD main breaker.
- TCC 19G - Ground fault coordination is not achieved between BS1 SWBD-MSB main breaker and Permeate PMP 1 VFD main breaker.

- TCC 20 - Coordination is not achieved between the BS1 Solar Inverter breaker and the feeder breakers in SWBD-MSB. This is not a concern, as the solar inverter is not the primary power source for SWBD-MSB and the opening of the Solar Inverter breaker will not interrupt power to the SWBD.

- TCC 21 - Coordination is not achieved between the BS1 SWBD-MSB feeder breaker and the Irrigation Pump Panel motor circuit protector. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the irrigation pump panel.

- TCC 22 - Coordination is not achieved between the BS1 XFMR A primary side breaker and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel A.

- TCC 23 - Coordination is not achieved between the feeder breaker in BS1 SWBD-MSB and the main breaker in the CIP Pump VFD. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the VFD.

- TCC 24 - Coordination is not achieved between the feeder breaker in BS1 SWBD-MSB and the main breaker in the Permeate Pump 1 VFD. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the VFD. This also applies to Permeate Pump 2 VFD and Permeate Pump 3 VFD.

- TCC 25 - Coordination is not achieved between the circuit breaker and fuse feeding the BS1 Multipurpose Room XFMR. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the transformer. The transformer damage curve is protected by both the primary side breaker and fuse. However, the breaker or fuse feeding the XFMR may trip due to XFMR inrush when being energized. This is considered nuisance tripping.

- TCC 26 - Coordination is achieved from SWBD-MSB down through the largest feeder breaker in Panel DP1. Note that there is some overlap between the SWBD-MSB feeder breaker and the Panel DP1 main breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault at Panel DP1.

- TCC 27 - Coordination is not achieved between the BS1 XFMR B primary side breaker and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel LPB. Protection for the XFMR damage curve is not achieved.

- TCC 28 - Coordination is not achieved between the BS1 SWBD-MSB feeder breaker and the SF-301 motor circuit protector. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the SF-301 panel.

- TCC 29 - Coordination is achieved between the Panel DP2 main breaker and its feeder breakers.
- TCC 30 - Coordination is not achieved between the breaker and fuse for the BS1 Desalter elevator.
- TCC 31 - Coordination is not achieved between the BS1 XFMR C primary side breaker and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel LPC. Protection for the XFMR damage curve is not achieved.
- TCC 32 - Coordination is achieved between the BS2 main fuse and the XFMR primary side breaker. Protection for the XFMR damage curve is not achieved.
- TCC 33 - Coordination is achieved between the BS3 main breaker and the largest feeder breaker in SWBD DB.
- TCC 33G - Ground fault coordination is achieved between the BS3 main breaker and the largest feeder breaker in SWBD DB.
- TCC 34 - Coordination is achieved from the BS3 generator output breaker down through the largest feeder breaker of the SWBD DB.
- TCC 35 - Coordination is not achieved between the feeder breaker in BS3 SWBD DB and the main breaker in VFD 300. This is not a concern, as these devices are in series and the opening of either device will clear a fault at the VFD.
- TCC 36 - Coordination is achieved between the BS3 SWBD DB feeder breaker to Panel H1 and the largest feeder breaker in Panel H1, except in the instantaneous region of the curves. Coordination is not achieved between the primary side breaker and secondary side breaker of XFMR L1A. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel L1A. Protection for the XFMR damage curve is not achieved.
- TCC 37 - Coordination is not achieved between the BS3 SWBD DB feeder breaker to Panel H2 and the main breaker in Panel H2. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel H2. Coordination is achieved between the Panel H2 main breaker and the largest feeder breaker in Panel H2, except in the instantaneous region of the curves.
- TCC 38 - Coordination is not achieved between the BS3 XFMR L2A primary side breaker and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel L2A. Protection for the XFMR damage curve is not achieved.

- TCC 39 - Coordination is not achieved between the BS3 XFMR L2B primary side breaker and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel L2B. Protection for the XFMR damage curve is not achieved.

- TCC 40 - Coordination is achieved between the main breaker in BS4 SWBD MS and the feeder breaker to Panel H1, except in the instantaneous region of the curves. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel H1.

- TCC 41 - Coordination is not achieved between the BS4 generator output breaker and the feeder breaker to Panel H1.

- TCC 42 - Coordination is not achieved between the BS4 breaker to Panel H1 and the largest feeder breaker in Panel H1.

- TCC 43 - Coordination is not achieved between the BS4 XFMR A primary side breaker and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel A.

- TCC 44 - Coordination is not achieved between the BS6 SWBD-SB1 main breaker and the feeder breaker to SWBD DSB-1. Coordination is not achieved between the feeder breaker to SWBD DSB-1 and the feeder breaker to AFD-32.

- TCC 44G - Ground fault coordination is achieved from the BS6 SWBD SB-1 main down through the largest breaker of SWBD DSB-1.

- TCC 45 - Coordination is achieved between the BS6 SWBD-SB1 main breaker and the feeder breaker to Panel PP-1, except in the instantaneous region of the curves. Coordination is not achieved between the feeder breaker to Panel PP-1 and the main breaker in Panel PP-1. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel PP-1

- TCC 45G - Ground fault coordination is achieved from the BS6 SWBD SB-1 main down through the largest breaker of Panel PP-1. Note that coordination is not achieved between the SWBD SB-1 feeder breaker and the Panel PP-1 main breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault at Panel PP-1.

- TCC 46 - Coordination is not achieved between the BS6 generator EG-1 output breaker and the SWBD DSB-1 feeder breakers. Note that there are two curves shown for the generator EG-1 output breaker. The “normal” curve shows the settings during normal operation and can be adjusted to allow complete coordination with downstream feeder breakers. The “maintenance” curve shows the settings activated by using the maintenance mode switch on the front of the breaker. These settings

provide faster protection, potentially reducing arc flash hazard during maintenance activities in exchange for a temporary lack of coordination with downstream protective devices.

- TCC 47 - Coordination is not achieved between the BS6 SWBD DSB-1 feeder breaker to the Panel PP-1 main breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel PP-1.
- TCC 48 - Coordination is not achieved between the BS6 Panel PP-1 main breaker and the feeder breaker to XFMR TLP-SHOP.
- TCC 49 - Coordination is not achieved between the BS6 XFMR TLP-1 primary side breaker and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel LP-1.
- TCC 50 - Coordination is not achieved between the BS6 XFMR TLP-SHOP primary side breaker and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel A.
- TCC 51 - Coordination is not achieved between the BS6 XFMR TLP-2 primary side breaker and the secondary side breaker. This is not a concern, as these devices are in series and the opening of either device will clear a fault in Panel LP-2. Protection for the XFMR damage curve is achieved.

4.0 ARC FLASH STUDY

The Arc Flash Study builds upon the results of the Short Circuit and Protective Device Coordination Studies to calculate the incident energy, PPE Level, and arc flash boundary for each piece of equipment in the electrical distribution system. Results of this study are printed on labels and attached to electrical equipment to inform plant staff of shock hazards and arc flash hazards associated with working on energized equipment. These calculations have been performed in accordance with IEEE 1584 - Guide for Performing Arc Flash Hazard Calculations.

The incident energy varies with changes in the arcing fault current and the resulting protective device clearing time that occurs during different operational conditions within the facilities. In order to determine the worst-case incident energy, a number of different operational scenarios have been evaluated. The operational scenarios evaluated for this report are identified in Table 2:

Table 2	Operational Scenarios Public Works Integrated Master Plan City of Oxnard	
Scenario	**Configuration**	**Description**
Utility Power	Utility	Normal Running Condition
Standby	Standby	Running on Generator Power With All Generators in Operation

The incident energy calculations allow electrical equipment to be flagged with a PPE level A through D. The personal protective equipment (PPE) recommended by NFPA 70E for each of the categories is shown in Table 3. Where the calculations determine that the incident energy is above a Level C, the equipment is identified as “DANGEROUS.” There is no PPE available that is suitable for use when working on energized equipment identified as “DANGEROUS.” “DANGEROUS” labels are printed with a red border.

Note that wearing the recommended PPE does not guarantee safety - it is intended to reduce risk to personnel and limit burns to second degree. Whenever possible, equipment should be de-energized before work is performed.

Table 3	Personal Protective Equipment (PPE) Public Works Integrated Master Plan City of Oxnard	
Level	**Clothing Description**	**Required Minimum Arc Rating of PPE (cal/cm^2)**
A	Non-melting, non-flammable materials (i.e., untreated cotton, wool, rayon, or silk, or blends of these materials), safety glasses or safety goggles, hearing protection, leather gloves, hard hat, face shield (as needed), hearing protection, leather work shoes.	<1.2
B	Arc-rated (AR) clothing system appropriately rated for the incident energy, arc rated or nonmelting untreated fibers for underlayers, face shield or arc flash suit hood, arc-rated jacket (as needed), hard hat, arc-rated hard hat liner, safety glasses or goggles, hearing protection, leather gloves, leather work shoes	≥1.2 and <12
C	Arc-rated (AR) clothing system appropriately rated for the incident energy, arc rated or nonmelting untreated fibers for underlayers, arc-rated arc flash suit hood, arc-rated jacket (as needed), hard hat, arc-rated hard hat liner, safety glasses or goggles, hearing protection, leather gloves, leather work shoes	≥12 and ≤40
D	PPE Not Available.	≥40
Note: Based on Annex H Table H.3(b) of NFPA 70E - 2015 Edition.		

4.1 Source Data

The Arc Flash Study builds upon the results of the Short Circuit Study and the Protective Device Coordination Study in order to calculate the incident energy. Consequently, the Arc Flash Study is completely dependent on the results of these two studies. When the Short Circuit Study or Protective Device Coordination Study is updated due to changes in the electrical distribution system, a revised Arc Flash Study must be performed to ensure that the incident energy, PPE level, and arc flash boundary at each piece of equipment are correctly calculated. The standard IEEE arcing current variation of 15% was incorporated to these scenarios representing utility fault current variation as well as other factors that affect arcing fault current. Reduced fault current levels result in long clearing times for protective devices. The arc flash incident energy is the result of both fault current and clearing time; therefore, reduced fault current can result in higher incident energy.

Note that the Arc Flash Study was performed without any information from the utility on the upstream overcurrent protective devices. Obtaining the primary overcurrent protective device information protecting the service transformer and conductor data from the protective device to the service transformer is also critical when performing an Arc Flash Hazard Analysis. The reason for obtaining this additional Utility information is to analyze the effects of the primary service transformer protection on the calculated arc flash incident energy at the service equipment. At low voltages, this incident energy normally exceeds 40 cal/cm^2 – rendering this panel unable to be maintained while energized. However, there exists a possibility of reducing this incident energy to a manageable level when including the effects of the primary protection.

4.2 Arc Flash Summary

The Arc Flash Summary Table, found in Appendix D, uses the Arc Flash Evaluation Module of ETAP. Appendix D contains the worst-case results from all of the operating scenarios as defined in Table 2. This summary shows both the inputs to and results of the incident energy calculations. The results found in Appendix D are based on the protective device settings and parameters of the electrical system. Refer to Appendix E for all the protective device settings and parameters for the “As-found” condition. Equipment data for transformers and cables used in modeling the electrical system can be found in Appendix F. Columns in the arc flash summary are as follows:

Bus - The location of the arcing fault.

kV - Bus voltage in kV.

Configuration - The name of the scenario which resulted in the worst case incident energy results.

Energy (cal/cm^2) - The energy produced by the arcing fault experienced at the working distance of 18 inches.

Arc Flash Boundary (ft) - The distance from the arcing fault that results in an incident energy of 1.2 cal/cm^2.

Hazard Category - The category of personal protective equipment (PPE) required based on the calculated incident energy.

Final FCT(sec) - The amount of time it takes for a breaker to open once the trip has been initiated. Note that protective devices with an opening time of zero are those devices whose opening time is included in their characteristic curves on the TCC (e.g. thermal-magnetic molded-case circuit breakers).

Ia at FCT (kA) - Total symmetrical arcing fault current at the fault location for an arcing fault.

Source Protective Device Name - The name of the first protective device to clear the arcing fault.

% Ia Variation - Whether or not the worst case was caused when 15% IEEE 1584 current variation was used.

4.3 Arc Flash Hazard Mitigation Techniques

There is a variety of methods available to reduce arc flash hazards at specific pieces of equipment. Some potential mitigation methods are outlined below.

4.3.1 Maintenance Mode

Some breakers and relays have the ability to store multiple settings for the same breaker. This functionality can be used for implementing a “maintenance mode” that can enable instantaneous and altering other settings to allow breakers to trip faster, reducing incident energy levels in equipment for personnel. Use of this “maintenance mode” may help to reduce Arc Flash hazards by up to 75 percent in some cases.

4.3.2 Arc Flash Rated Equipment

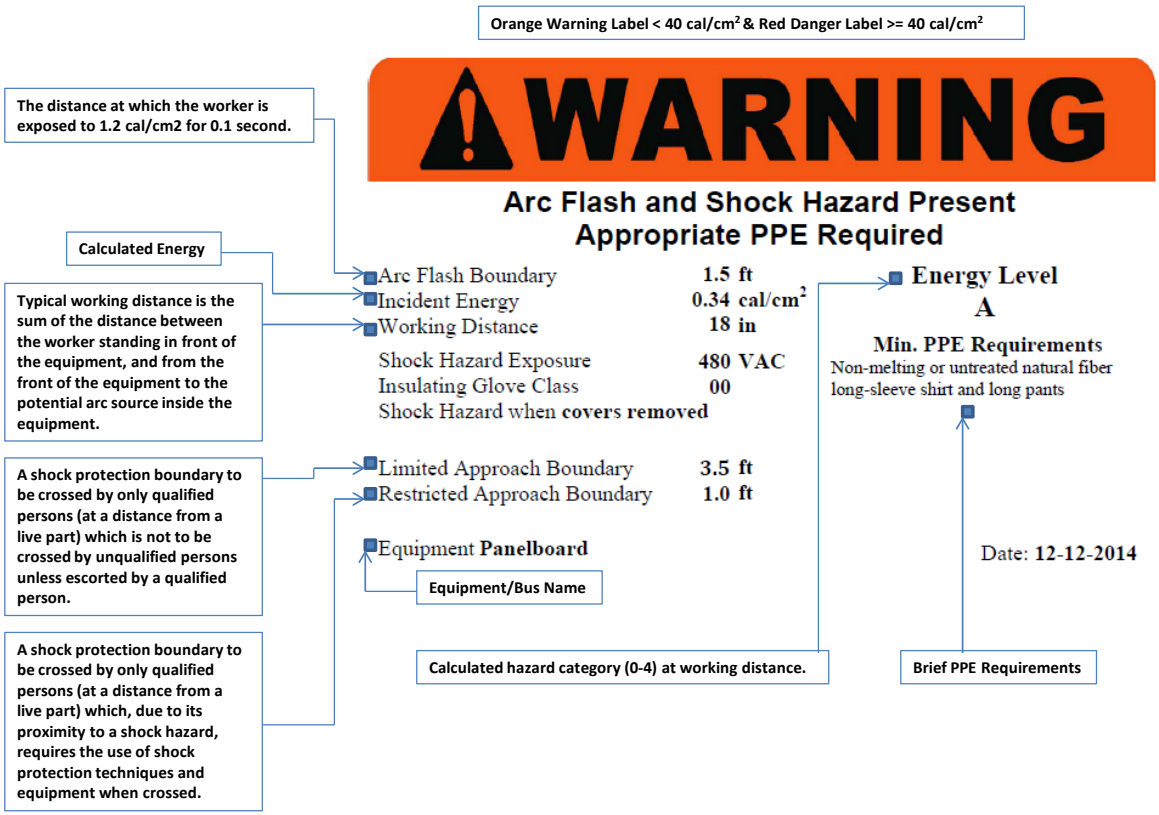
Arc flash rated equipment provides a more robust enclosure that is designed to withstand the forces of an arc flash event and divert the pressure and gasses of the explosion out the top of the equipment using ducts. While the equipment does provide protection in the normal operating state of the equipment, it does not provide this additional protection when circuit breaker covers are open or removed.

4.3.3 Arc Flash Detection Relays

A relatively new technology is available for retrofitting or equipping on new equipment that utilizes light and current sensors to detect an arc flash event. When the event is detected, the upstream protective device is actuated to interrupt and limit the incident energy at the associated equipment.

4.4 Arc Flash Hazard Labels

A sample arc flash label follows for review. A complete set of labels suitable for direct application to equipment is provided as part of the final study for installation on the appropriate electrical equipment.



5.0 MISCELLANEOUS FIELD INVESTIGATION FINDINGS

During the field investigation, each piece of equipment in the electrical distribution system was opened for data collection. In addition to the protective devices identified in Section 2.0 of the report, the following concerns and code violations are listed as follows.

5.1 General

Electrical equipment in the Blending Stations was found from a variety of installation years and manufacturers. Dates for some equipment could not be found. Blending Station 1 and 6 has GE, Square D, IEM, Merlin Gerin, Cutler-Hammer, Allen-Bradley, Siemens, and Caterpillar equipment from 2007 and unknown dates. Blending Station 2 has GE, Challenger, and Square D equipment from unknown dates. Blending Station 3 has Siemens, Cutler-Hammer, and Cummins equipment from 2005 and 2006. Blending Station 4 has GE, IEM, and Cummins equipment from approximately 1992. Blending Station 5 has GE and Kohler equipment from approximately 2007.

5.2 Blending Station 1

- The North Power Building Main SWBD 1 and Main SWBD 2 are GE AV-line, which is outdated equipment. Replacement parts may be difficult to find. The equipment is scratched and rusty. Recommend replacement.
- Disconnect switches for AC-1, 2, 3, 4, and 5 and CU-1 all are beginning to rust. Recommend cleaning and repainting the enclosures.
- Disconnect switch on the outside of the Administration Building is beginning to rust. Recommend cleaning and repainting the enclosure.
- Disconnect switch outside the Multi-purpose Building is corroded at the bottom. Recommend replacing the disconnect switch.
- Panelboard A, manufactured by Square D, at the Shop Distribution Building is in poor condition and should be replaced.
- The panelboard in the Multi-purpose Building has a desk in front of it which is in the National Electrical Code (NEC) required working space.
- The incoming wires in the panelboard in the Multi-purpose Building were found to be undersized. Recommend replacing the wires with new wires in accordance with the NEC.
- The Admin Building SWBD is IEM equipment, which is obsolete. Replacement parts may be difficult to find. Recommend replacement.
- The Admin SWBD was found with missing and incorrect labels for the feeder breakers. Confirm all loads and install new labels for each feeder breaker. The following is our understanding of the labels:
  - The 225A breaker should be labeled for "PANEL HB."
  - The 100A breaker labeled "DISTRIBUTION BUILDING" should be labeled "SPARE."

  - Remove label "PANEL A." It is a blank space.
  - The 60A breaker labeled "AC-3" should be "PANEL HA."

- The incoming power cables from Southern California Edison (SCE) to the Desalter Building SWBD-MSB are incorrectly marked. One phase conductor is marked with white tape, which is a code violation. This is something the SCE will need to investigate and correct.

- The labels on SWBD-MSB fall off easily. Recommend new labels be secured to the switchboard.

- The power source for a 75 kVA transformer and Panel LA in the Admin Building could not be determined. It is assumed that the Admin SWBD feeds the 75 kVA transformer and the transformer feeds Panel LA. Recommend additional investigation to confirm this.

- The 480V disconnect switch in the Meter Shop has other equipment in front of it in the NEC required dedicated working space. Recommend relocating the equipment that is in front of the disconnect switch in accordance with the NEC.

5.3 Blending Station 2

- The lighting panelboard in the Blending Station has traffic cones stacked within the NEC required dedicated working space. Recommend relocating the traffic cones that are in front of the panelboard in accordance with the NEC.

5.4 Blending Station 3

- The main breaker in Panel L1A in the Generator Building is oversized. Recommend replacing with a main breaker sized in accordance with the NEC.

5.5 Blending Station 4

- Labels on the Main SWBD for "PUMP P1 VFD," "PUMP P2 VFD", AND "PUMP P3 VFD", should be changed to "SPARE."

5.6 Blending Station 6

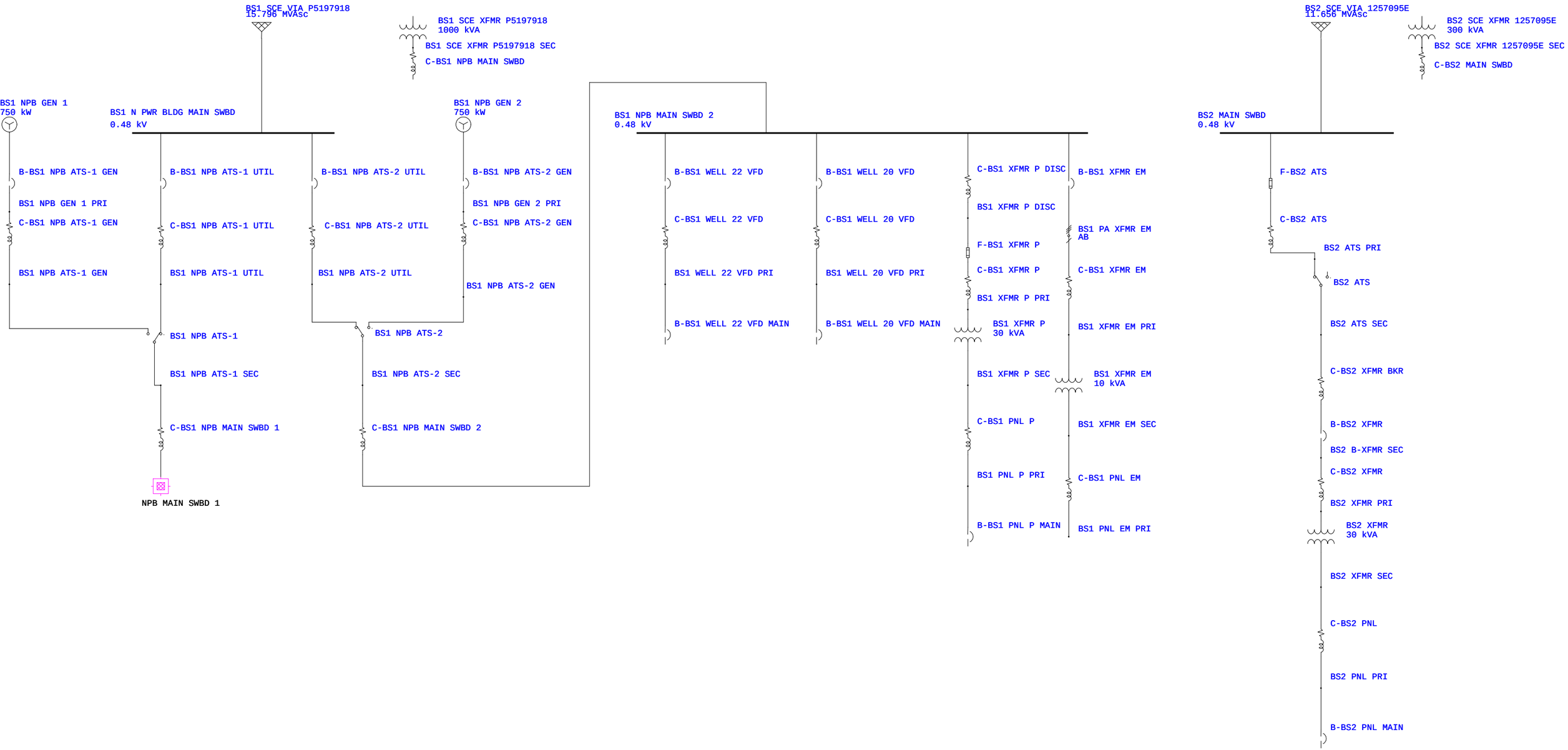
- Panel LP-2 in the Wellness/Dispatch Center was found to have a wire jumpered on the main circuit breaker. Recommend further investigation to determine if it is necessary.

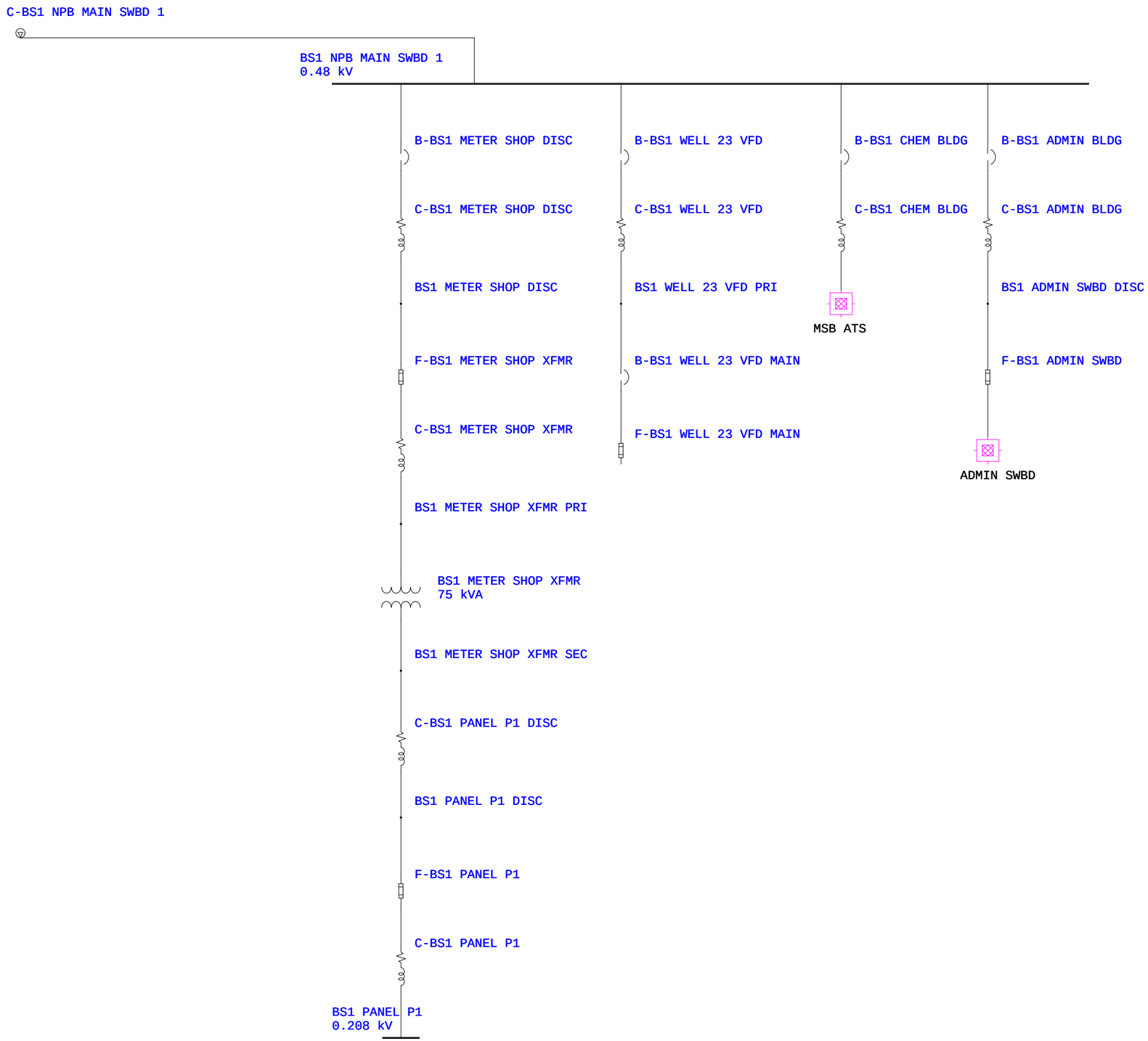
- SWBD DSB1 in the South Power Building is missing labels for two breakers. Add labels for feeder breakers to "AFD 401/402" and "ATS-2."

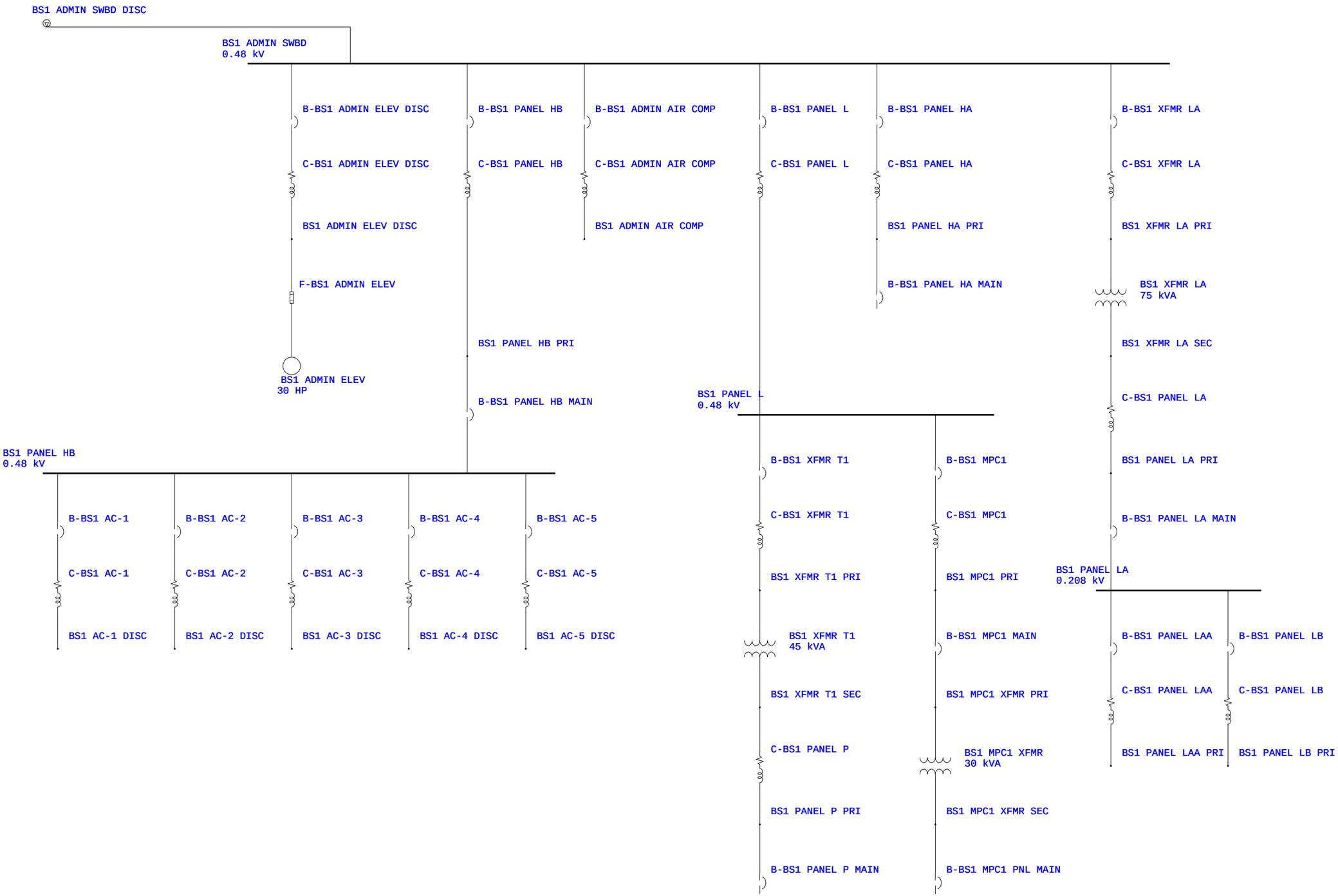
- A code violation was observed in the South Power Building SWBD DSB1. The feeder breaker to AFD 401/402 has two sets of wires on the load side of the breaker. The wires to AFD 402 are undersized for the breaker size. Recommend replacing the wires with new wires in accordance with the NEC.
- The incoming wires to the Well 34 VFD are exposed when the door is open, and present a shock hazard. Recommend covering the wires with a barrier.
- The nameplates on SWBD PP1 in the South Power Building are not all consistent with the labels on the associated circuit breakers. Recommend verifying and correcting all nameplates and labels, to be consistent.

APPENDIX A – ONE-LINES

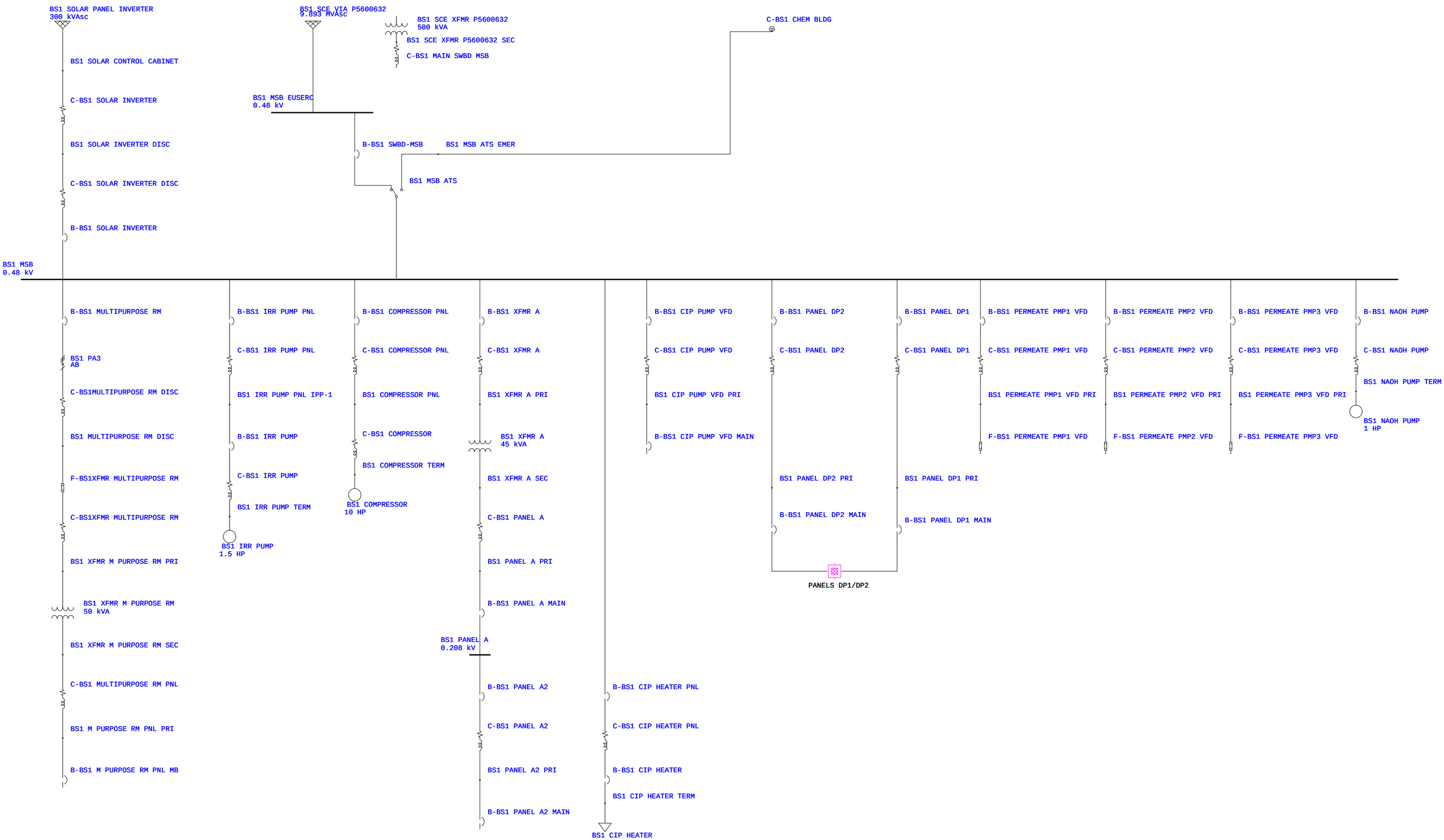
One-Line Diagram - OLV1 (Edit Mode)



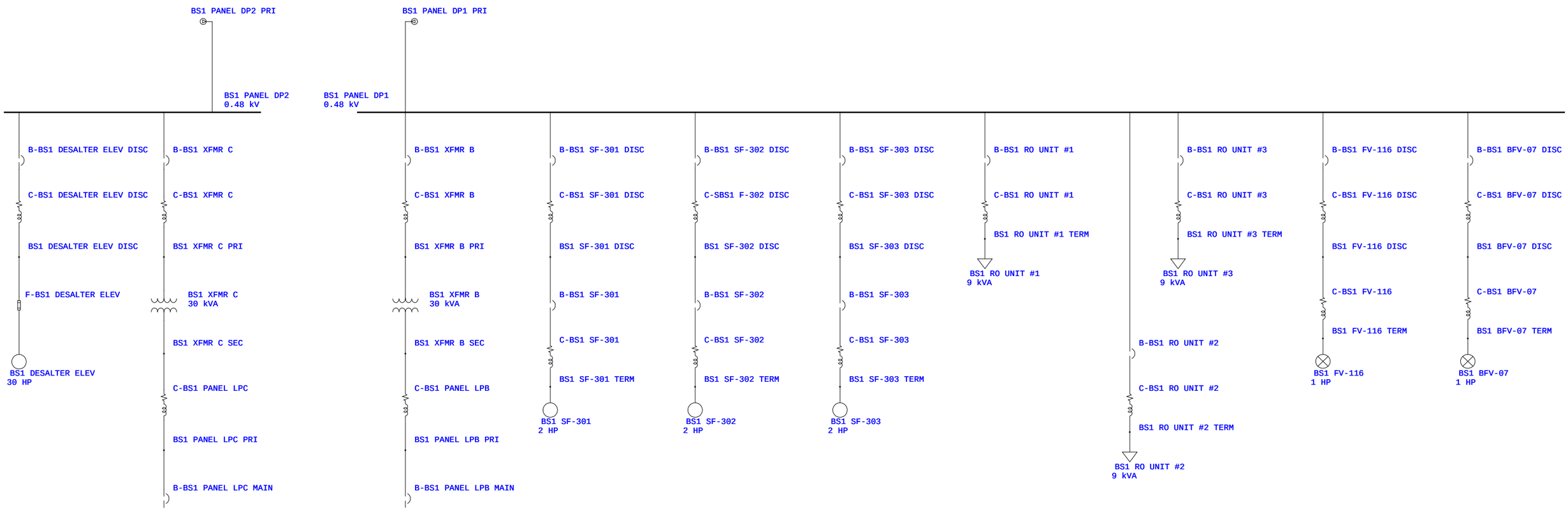

C-BS1 NPB MAIN SWBD 1
BS1 NPB MAIN SWBD 1
0.48 kV
B-BS1 METER SHOP DISC
C-BS1 METER SHOP DISC
BS1 METER SHOP DISC
F-BS1 METER SHOP XFMR
C-BS1 METER SHOP XFMR
BS1 METER SHOP XFMR PRI
BS1 METER SHOP XFMR
75 kVA
BS1 METER SHOP XFMR SEC
C-BS1 PANEL P1 DISC
BS1 PANEL P1 DISC
F-BS1 PANEL P1
C-BS1 PANEL P1
BS1 PANEL P1
0.208 kV
B-BS1 WELL 23 VFD
C-BS1 WELL 23 VFD
BS1 WELL 23 VFD PRI
B-BS1 WELL 23 VFD MAIN
F-BS1 WELL 23 VFD MAIN
B-BS1 CHEM BLDG
C-BS1 CHEM BLDG
MSB ATS
B-BS1 ADMIN BLDG
C-BS1 ADMIN BLDG
BS1 ADMIN SWBD DISC
F-BS1 ADMIN SWBD
ADMIN SWBD

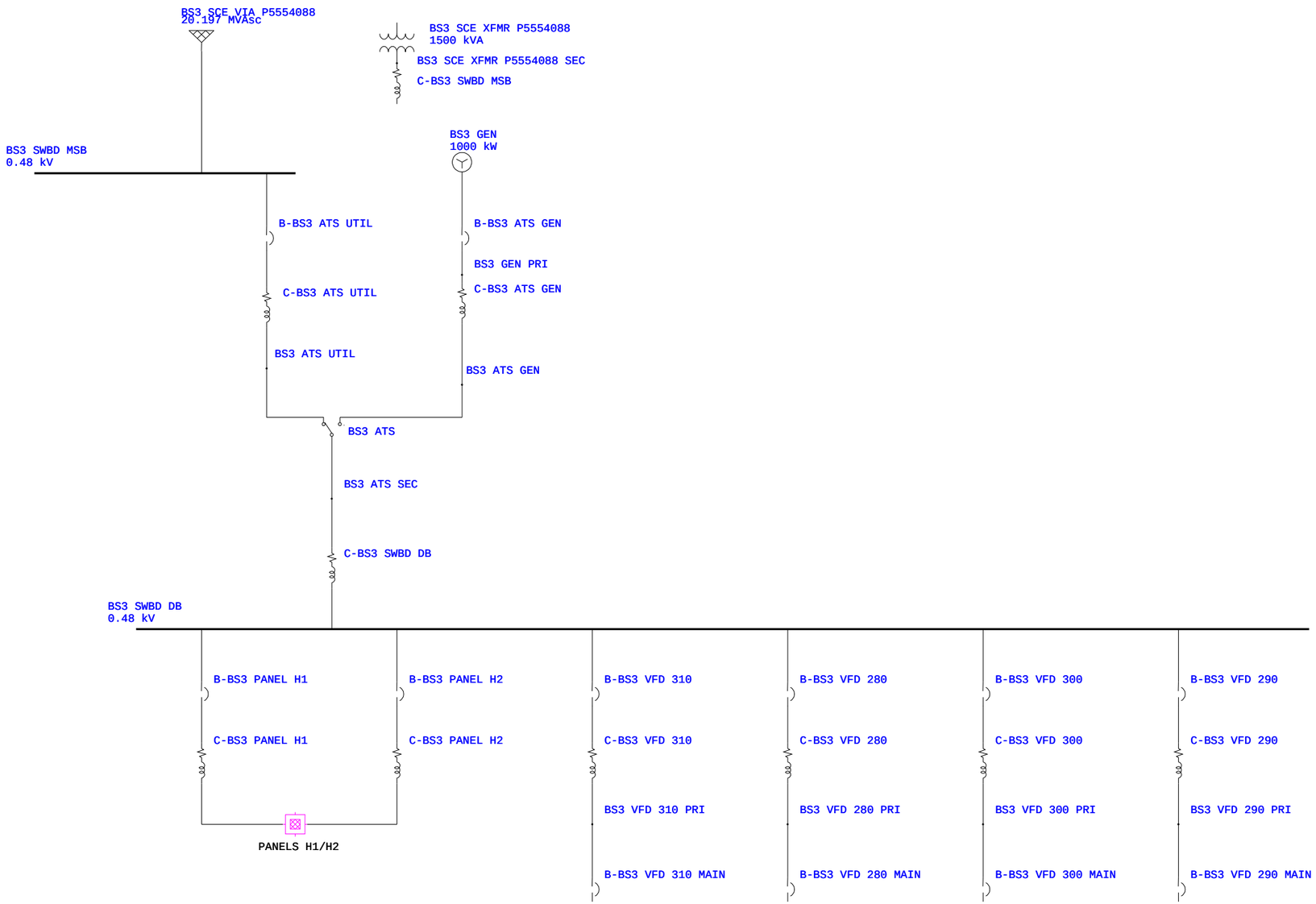

BS1 ADMIN SWBD DISC
BS1 ADMIN SWBD
0.48 kV
B-BS1 ADMIN ELEV DISC
C-BS1 ADMIN ELEV DISC
BS1 ADMIN ELEV DISC
F-BS1 ADMIN ELEV
BS1 ADMIN ELEV
30 HP
B-BS1 PANEL HB
C-BS1 PANEL HB
BS1 PANEL HB PRI
B-BS1 PANEL HB MAIN
B-BS1 ADMIN AIR COMP
C-BS1 ADMIN AIR COMP
BS1 ADMIN AIR COMP
B-BS1 PANEL L
C-BS1 PANEL L
BS1 PANEL L
0.48 kV
B-BS1 XFMR T1
C-BS1 XFMR T1
BS1 XFMR T1 PRI
BS1 XFMR T1
45 kVA
BS1 XFMR T1 SEC
C-BS1 PANEL P
BS1 PANEL P PRI
B-BS1 PANEL P MAIN
B-BS1 MPC1
C-BS1 MPC1
BS1 MPC1 PRI
B-BS1 MPC1 MAIN
BS1 MPC1 XFMR PRI
BS1 MPC1 XFMR
30 kVA
BS1 MPC1 XFMR SEC
B-BS1 MPC1 PNL MAIN
B-BS1 PANEL HA
C-BS1 PANEL HA
BS1 PANEL HA PRI
B-BS1 PANEL HA MAIN
B-BS1 XFMR LA
C-BS1 XFMR LA
BS1 XFMR LA PRI
BS1 XFMR LA
75 kVA
BS1 XFMR LA SEC
C-BS1 PANEL LA
BS1 PANEL LA PRI
B-BS1 PANEL LA MAIN
BS1 PANEL LA
0.208 kV
B-BS1 PANEL LAA
C-BS1 PANEL LAA
BS1 PANEL LAA PRI
B-BS1 PANEL LB
C-BS1 PANEL LB
BS1 PANEL LB PRI
BS1 PANEL HB
0.48 kV
B-BS1 AC-1
C-BS1 AC-1
BS1 AC-1 DISC
B-BS1 AC-2
C-BS1 AC-2
BS1 AC-2 DISC
B-BS1 AC-3
C-BS1 AC-3
BS1 AC-3 DISC
B-BS1 AC-4
C-BS1 AC-4
BS1 AC-4 DISC
B-BS1 AC-5
C-BS1 AC-5
BS1 AC-5 DISC

One-Line Diagram - OLV1=>...=>MSB ATS (Edit Mode)

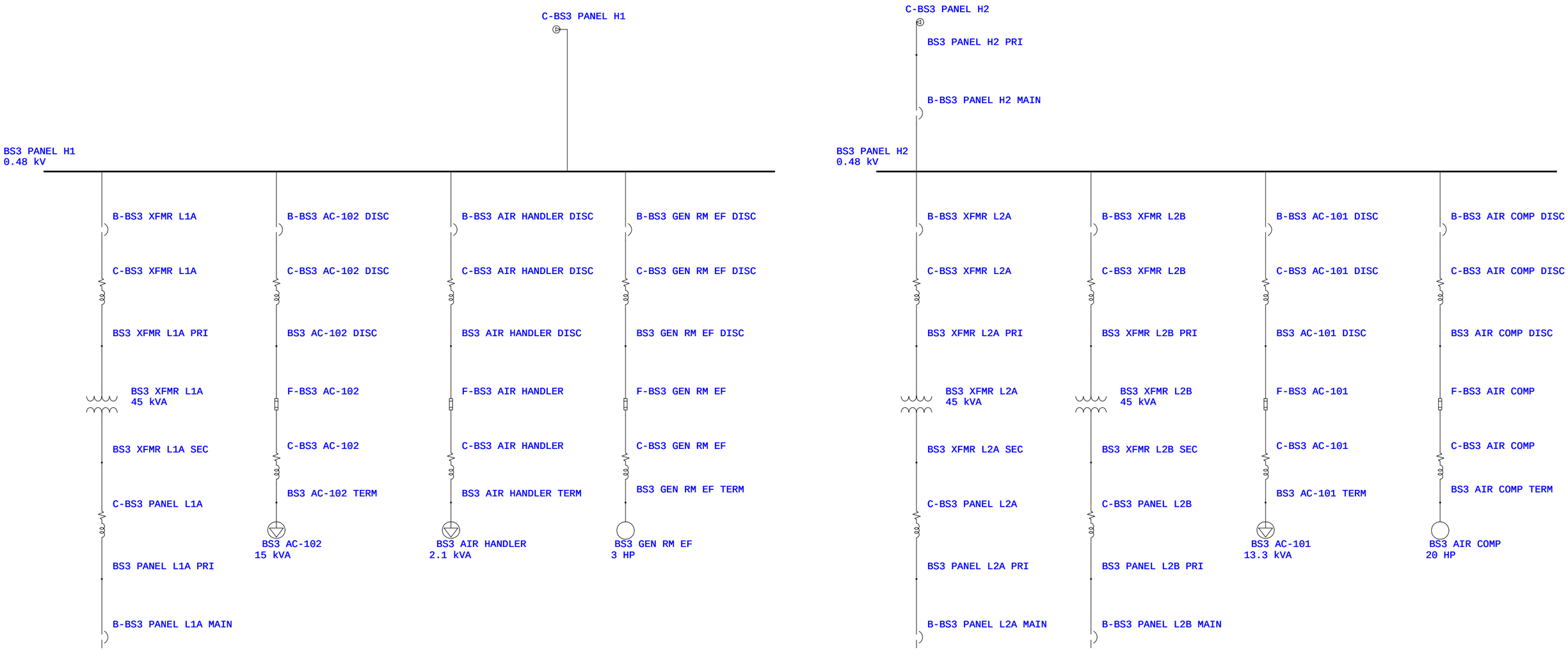


One-Line Diagram - OLV1=>...=>PANELS DP1/DP2 (Edit Mode)

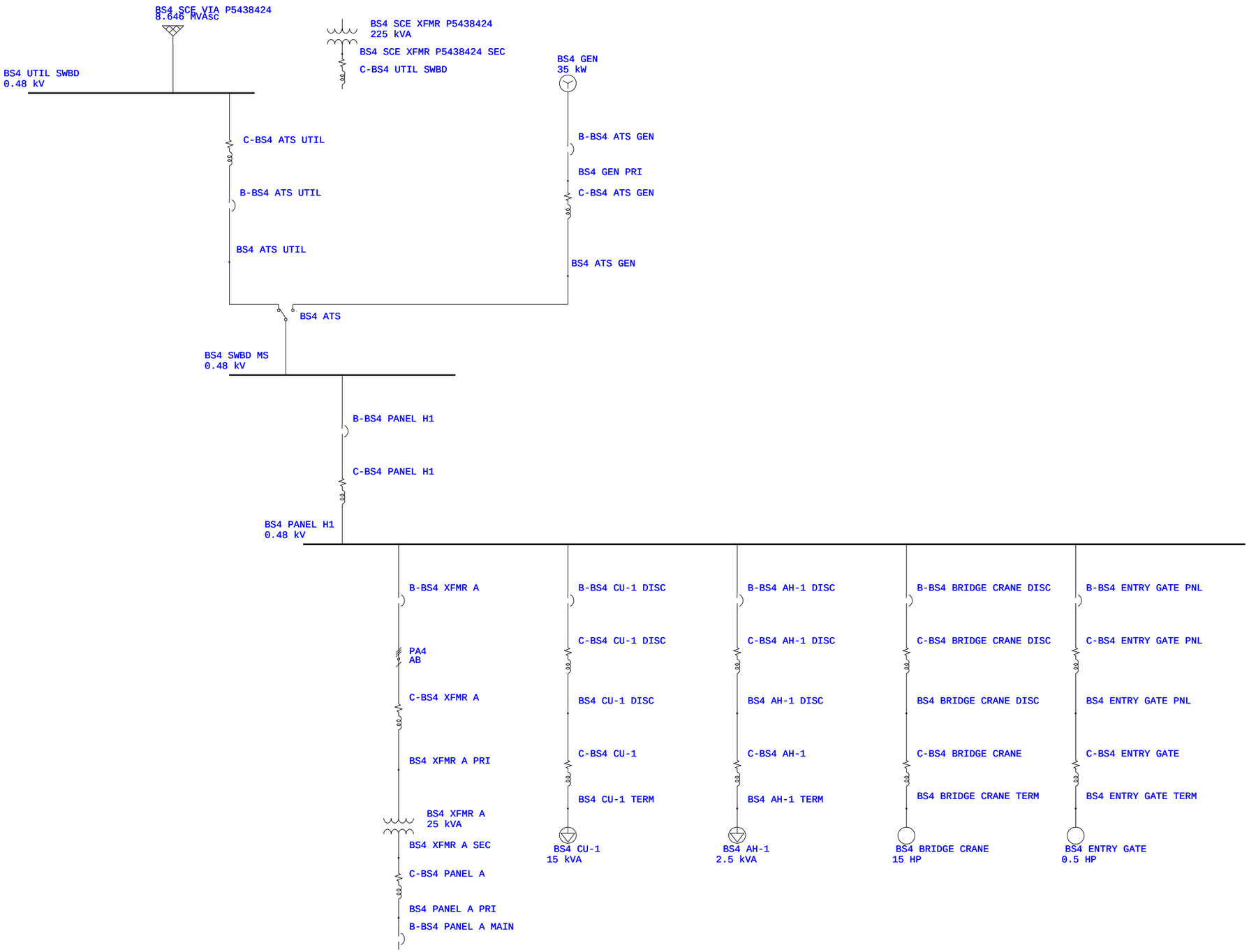


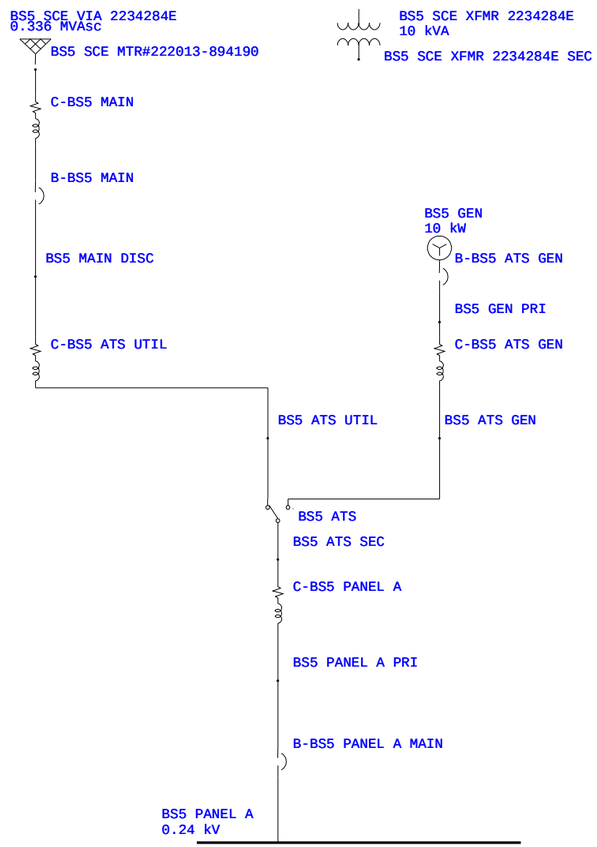

BS3 SCE VIA P5554088
20.197 MVAsc
BS3 SCE XFMR P5554088
1500 kVA
BS3 SCE XFMR P5554088 SEC
C-BS3 SWBD MSB
BS3 SWBD MSB
0.48 kV
BS3 GEN
1000 kW
B-BS3 ATS UTIL
B-BS3 ATS GEN
BS3 GEN PRI
C-BS3 ATS UTIL
C-BS3 ATS GEN
BS3 ATS UTIL
BS3 ATS GEN
BS3 ATS
BS3 ATS SEC
C-BS3 SWBD DB
BS3 SWBD DB
0.48 kV
B-BS3 PANEL H1
B-BS3 PANEL H2
B-BS3 VFD 310
B-BS3 VFD 280
B-BS3 VFD 300
B-BS3 VFD 290
C-BS3 PANEL H1
C-BS3 PANEL H2
C-BS3 VFD 310
C-BS3 VFD 280
C-BS3 VFD 300
C-BS3 VFD 290
BS3 VFD 310 PRI
BS3 VFD 280 PRI
BS3 VFD 300 PRI
BS3 VFD 290 PRI
PANELS H1/H2
B-BS3 VFD 310 MAIN
B-BS3 VFD 280 MAIN
B-BS3 VFD 300 MAIN
B-BS3 VFD 290 MAIN

One-Line Diagram - OLV1=>PANELS H1/H2 (Edit Mode)

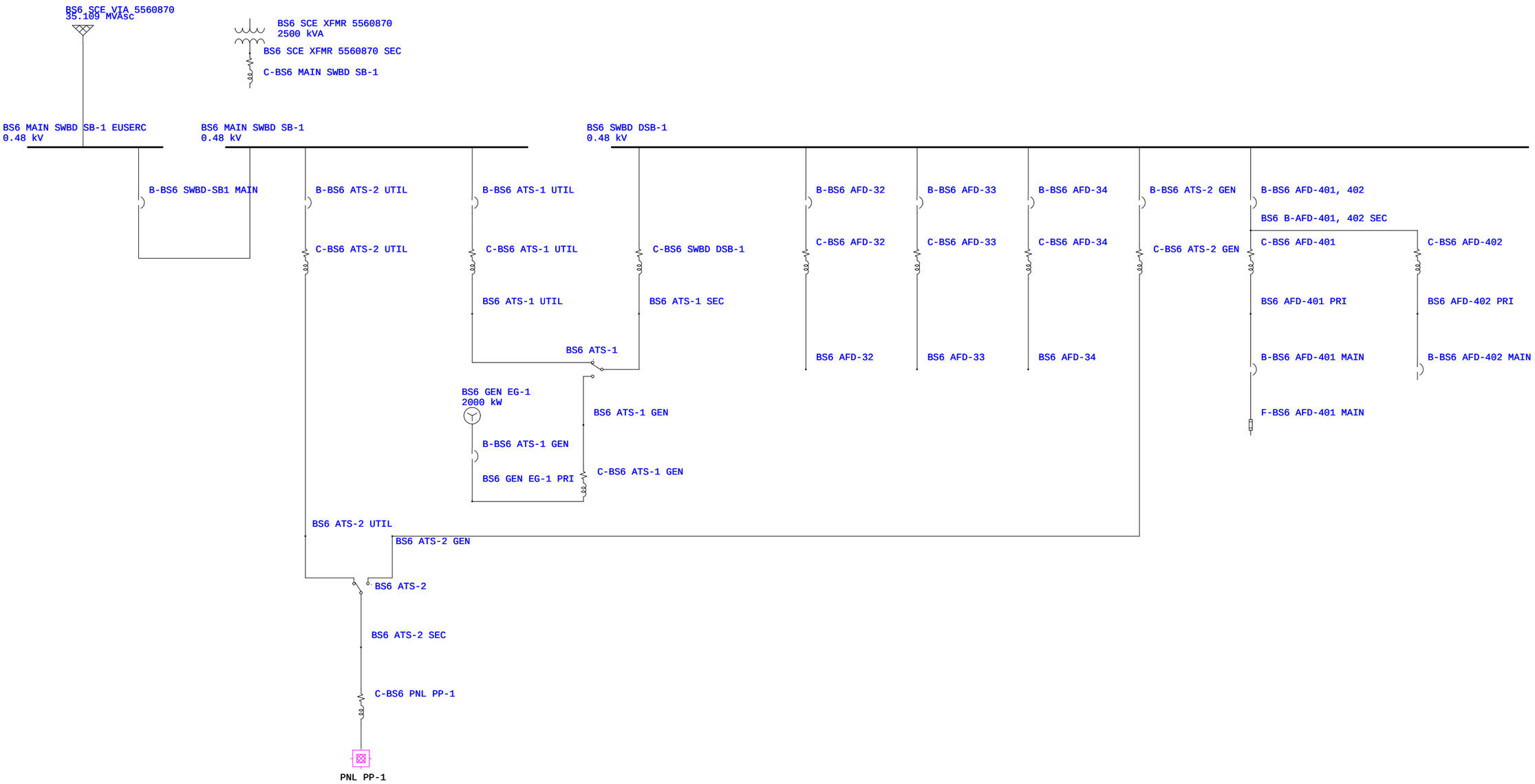


One-Line Diagram - OLV1 (Edit Mode)

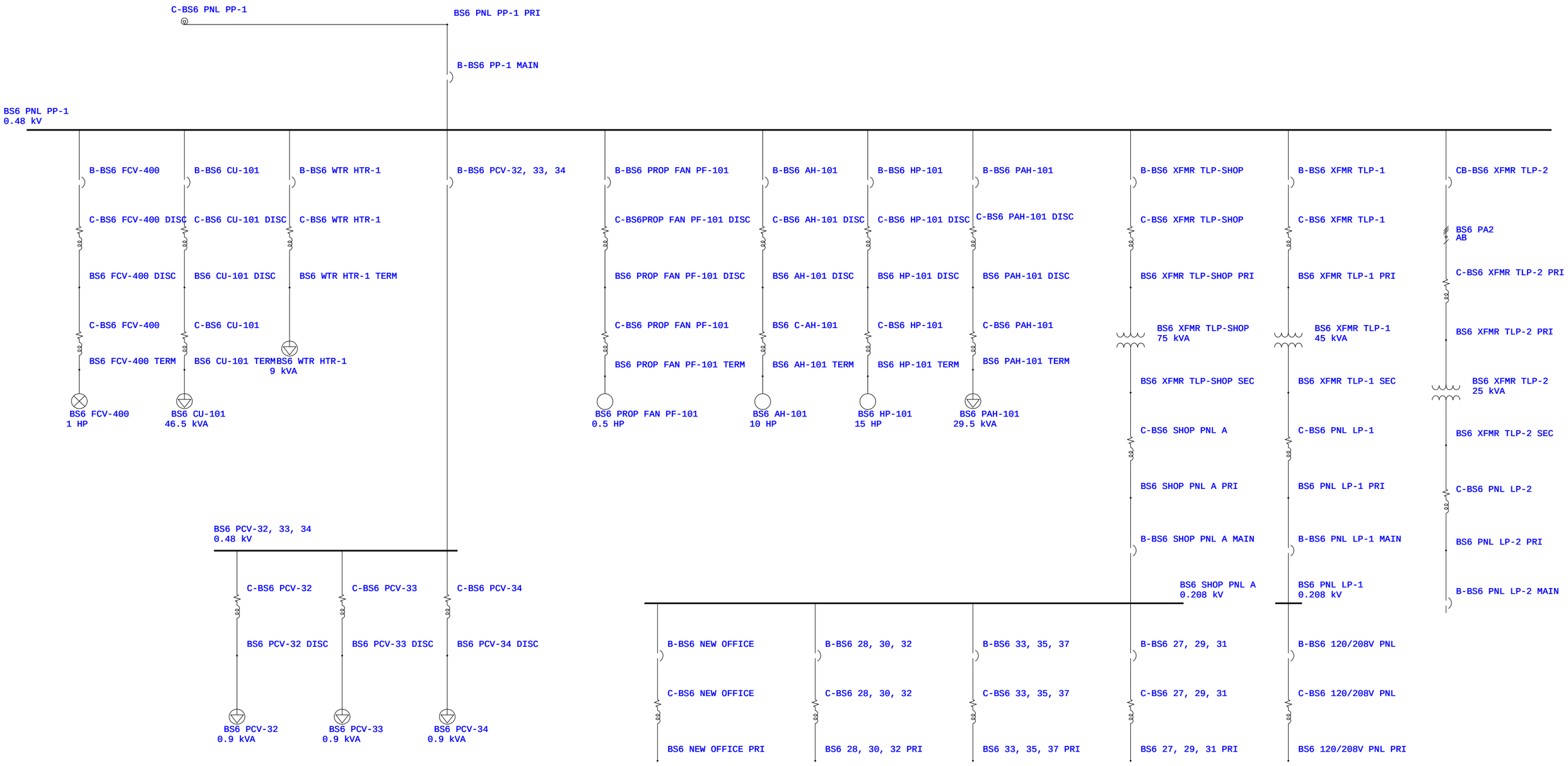



BS5 SCE VIA 2234284E
0.336 MVASC
BS5 SCE MTR#222013-894190
C-BS5 MAIN
B-BS5 MAIN
BS5 MAIN DISC
C-BS5 ATS UTIL
BS5 SCE XFMR 2234284E
10 kVA
BS5 SCE XFMR 2234284E SEC
BS5 GEN
10 kW
B-BS5 ATS GEN
BS5 GEN PRI
C-BS5 ATS GEN
BS5 ATS UTIL
BS5 ATS GEN
BS5 ATS
BS5 ATS SEC
C-BS5 PANEL A
BS5 PANEL A PRI
B-BS5 PANEL A MAIN
BS5 PANEL A
0.24 kV

One-Line Diagram - OLV1 (Edit Mode)



One-Line Diagram - OLV1=>PNL PP-1 (Edit Mode)



APPENDIX B1 – SHORT CIRCUIT STUDY (MOMENTARY DUTY SUMMARY REPORT)

Momentary Duty Summary Report

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Momentary Duty					Device Capability		
ID	kV	ID	Type	Symm. kA rms	X/R Ratio	M.F.	Asymm. kA rms	Asymm. kA Peak	Symm. kA rms	Asymm. kA rms	Asymm. kA Peak
BS1 AC-1 DISC	0.480	BS1 AC-1 DISC	Panelboard	2.645	0.3	1.000	2.645	3.741	200.000	249.000	
BS1 AC-2 DISC	0.480	BS1 AC-2 DISC	Panelboard	2.645	0.3	1.000	2.645	3.741	200.000	249.000	
BS1 AC-3 DISC	0.480	BS1 AC-3 DISC	Panelboard	2.645	0.3	1.000	2.645	3.741	200.000	249.000	
BS1 AC-4 DISC	0.480	BS1 AC-4 DISC	Panelboard	2.645	0.3	1.000	2.645	3.741	200.000	249.000	
BS1 AC-5 DISC	0.480	BS1 AC-5 DISC	Panelboard	2.645	0.3	1.000	2.645	3.741	200.000	249.000	
BS1 ADMIN AIR COMP	0.480	BS1 ADMIN AIR COMP	Bus	9.664	1.2	1.005	9.709	14.600			
BS1 ADMIN ELEV DISC	0.480	BS1 ADMIN ELEV DISC	Panelboard	9.728	1.2	1.006	9.782	14.784	200.000	249.000	
BS1 ADMIN SWBD	0.480	BS1 ADMIN SWBD	Panelboard	14.184	2.8	1.099	15.588	26.524	18.000	22.400	
BS1 ADMIN SWBD DISC	0.480	BS1 ADMIN SWBD DISC	Panelboard	14.184	2.8	1.099	15.588	26.524	200.000	249.000	
BS1 BFV-07 DISC	0.480	BS1 BFV-07 DISC	Panelboard	4.472	0.5	1.000	4.472	6.335	10.000	12.500	
BS1 BFV-07 TERM	0.480	BS1 BFV-07 TERM	Bus	3.892	0.4	1.000	3.892	5.507			
BS1 CIP HEATER TERM	0.480	BS1 CIP HEATER TERM	Panelboard	9.816	2.6	1.082	10.619	17.934	200.000	249.000	
BS1 CIP PUMP VFD PRI	0.480	BS1 CIP PUMP VFD PRI	Bus	8.063	1.5	1.013	8.169	12.720			
BS1 COMPRESSOR PNL	0.480	BS1 COMPRESSOR PNL	Bus	2.166	0.2	1.000	2.166	3.063			
BS1 COMPRESSOR TERM	0.480	BS1 COMPRESSOR TERM	Bus	2.072	0.2	1.000	2.072	2.930			
BS1 DESALTER ELEV DISC	0.480	BS1 DESALTER ELEV DISC	Panelboard	8.370	1.5	1.015	8.499	13.312	200.000	249.000	
BS1 FV-116 DISC	0.480	BS1 FV-116 DISC	Panelboard	4.472	0.5	1.000	4.472	6.335	10.000	12.500	
BS1 FV-116 TERM	0.480	BS1 FV-116 TERM	Bus	3.892	0.4	1.000	3.892	5.507			
BS1 IRR PUMP PNL IPP-1	0.480	BS1 IRR PUMP PNL IPP-1	Bus	5.722	0.5	1.000	5.722	8.118			
BS1 IRR PUMP TERM	0.480	BS1 IRR PUMP TERM	Bus	3.143	0.3	1.000	3.143	4.446			
BS1 METER SHOP DISC	0.480	BS1 METER SHOP DISC	Panelboard	7.356	0.7	1.000	7.357	10.560	200.000	249.000	
BS1 METER SHOP XFMR PRI	0.480	BS1 METER SHOP XFMR PRI	Bus	7.063	0.7	1.000	7.065	10.121			
BS1 METER SHOP XFMR SEC	0.208	BS1 METER SHOP XFMR SEC	Bus	3.170	1.6	1.018	3.227	5.089			
BS1 MPC1 PRI	0.480	BS1 MPC1 PRI	Bus	4.645	0.6	1.000	4.645	6.607			
BS1 MPC1 XFMR PRI	0.480	BS1 MPC1 XFMR PRI	Bus	4.645	0.6	1.000	4.645	6.607			
BS1 MPC1 XFMR SEC	0.208	BS1 MPC1 XFMR SEC	Bus	2.248	1.4	1.010	2.271	3.497			
BS1 MSB	0.480	BS1 MSB	Switchboard	12.479	3.3	1.142	14.246	24.521	65.000	81.100	
	0.480	BS1 MSB ATS	SPDT Switch	12.479	3.3	1.142	14.246	24.521	0.000	65.000	
BS1 MSB ATS EMER	0.480	BS1 MSB ATS EMER	Bus	13.410	2.6	1.087	14.579	24.684			
BS1 MSB EUSERC	0.480	BS1 MSB EUSERC	Switchboard	12.479	3.3	1.142	14.246	24.521	65.000	81.100	
	0.480	BS1 MSB ATS	SPDT Switch	12.479	3.3	1.142	14.246	24.521	0.000	65.000	
BS1 N PWR BLDG MAIN SWBD	0.480	BS1 N PWR BLDG MAIN SWBD	Switchboard	19.145	4.9	1.245	23.844	41.287	25.000	31.200	
BS1 NAOH PUMP TERM	0.480	BS1 NAOH PUMP TERM	Bus	1.865	0.2	1.000	1.865	2.637			
BS1 NPB ATS-1 SEC	0.480	BS1 NPB ATS-1 SEC	Bus	18.353	4.2	1.201	22.035	38.149			

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Momentary Duty					Device Capability		
ID	kV	ID	Type	Symm. kA rms	X/R Ratio	M.F.	Asymm. kA rms	Asymm. kA Peak	Symm. kA rms	Asymm. kA rms	Asymm. kA Peak
BS1 NPB ATS-1 UTIL	0.480	BS1 NPB ATS-1 UTIL	Bus	18.353	4.2	1.201	22.035	38.149			
BS1 NPB ATS-2 SEC	0.480	BS1 NPB ATS-2 SEC	Bus	18.243	4.1	1.195	21.804	37.741			
BS1 NPB ATS-2 UTIL	0.480	BS1 NPB ATS-2 UTIL	Bus	18.243	4.1	1.195	21.804	37.741			
BS1 NPB MAIN SWBD 1	0.480	BS1 NPB MAIN SWBD 1	Switchboard	17.606	3.7	1.166	20.526	35.451	25.000	31.200	
BS1 NPB MAIN SWBD 2	0.480	BS1 NPB MAIN SWBD 2	Switchboard	17.401	3.5	1.157	20.138	34.746	25.000	31.200	
BS1 PANEL A	0.208	BS1 PANEL A	Panelboard	2.090	1.7	1.023	2.139	3.411	10.000	12.500	
BS1 PANEL A PRI	0.208	BS1 PANEL A PRI	Panelboard	2.090	1.7	1.023	2.139	3.411	10.000	12.500	
BS1 PANEL A2 PRI	0.208	BS1 PANEL A2 PRI	Panelboard	1.595	1.0	1.002	1.597	2.345	10.000	12.500	
BS1 PANEL DP1	0.480	BS1 PANEL DP1	Panelboard	9.137	1.7	1.024	9.359	14.947	22.000	27.400	
BS1 PANEL DP1 PRI	0.480	BS1 PANEL DP1 PRI	Panelboard	9.137	1.7	1.024	9.359	14.947	25.000	31.200	
BS1 PANEL DP2	0.480	BS1 PANEL DP2	Panelboard	8.902	1.7	1.023	9.105	14.501	22.000	27.400	
BS1 PANEL DP2 PRI	0.480	BS1 PANEL DP2 PRI	Panelboard	8.902	1.7	1.023	9.105	14.501	22.000	27.400	
BS1 PANEL HA PRI	0.480	BS1 PANEL HA PRI	Panelboard	5.147	0.5	1.000	5.147	7.292	35.000	43.600	
BS1 PANEL HB	0.480	BS1 PANEL HB	Panelboard	8.487	1.2	1.005	8.530	12.855	35.000	43.600	
BS1 PANEL HB PRI	0.480	BS1 PANEL HB PRI	Panelboard	8.487	1.2	1.005	8.530	12.855	35.000	43.600	
BS1 PANEL L	0.480	BS1 PANEL L	Panelboard	9.705	1.6	1.018	9.882	15.588	14.000	17.500	
BS1 PANEL LA	0.208	BS1 PANEL LA	Panelboard	3.140	1.7	1.024	3.216	5.138	10.000	12.500	
BS1 PANEL LA PRI	0.208	BS1 PANEL LA PRI	Panelboard	3.140	1.7	1.024	3.216	5.138	10.000	12.500	
BS1 PANEL LAA PRI	0.208	BS1 PANEL LAA PRI	Panelboard	2.794	1.4	1.010	2.822	4.346	10.000	12.500	
BS1 PANEL LB PRI	0.208	BS1 PANEL LB PRI	Panelboard	2.794	1.4	1.010	2.822	4.346	10.000	12.500	
BS1 PANEL LPB PRI	0.208	BS1 PANEL LPB PRI	Panelboard	2.313	1.6	1.019	2.358	3.729	10.000	12.500	
BS1 PANEL LPC PRI	0.208	BS1 PANEL LPC PRI	Panelboard	2.303	1.6	1.019	2.346	3.707	22.000	27.400	
BS1 PANEL P PRI	0.208	BS1 PANEL P PRI	Panelboard	2.026	1.2	1.006	2.038	3.083	10.000	12.500	
BS1 PANEL P1	0.208	BS1 PANEL P1	Panelboard	3.066	1.5	1.016	3.117	4.894	10.000	12.500	
BS1 PANEL P1 DISC	0.208	BS1 PANEL P1 DISC	Panelboard	3.122	1.6	1.018	3.176	5.002	200.000	249.000	
BS1 PERMEATE PMP1 VFD PRI	0.480	BS1 PERMEATE PMP1 VFD PRI	Bus	11.843	3.1	1.125	13.319	22.843			
BS1 PERMEATE PMP2 VFD PRI	0.480	BS1 PERMEATE PMP2 VFD PRI	Bus	11.843	3.1	1.125	13.319	22.843			
BS1 PERMEATE PMP3 VFD PRI	0.480	BS1 PERMEATE PMP3 VFD PRI	Bus	11.843	3.1	1.125	13.319	22.843			
BS1 PNL P PRI	0.208	BS1 PNL P PRI	Panelboard	1.507	1.5	1.017	1.533	2.412	10.000	12.500	
BS1 RO UNIT #1 TERM	0.480	BS1 RO UNIT #1 TERM	Bus	1.398	0.2	1.000	1.398	1.977			
BS1 RO UNIT #2 TERM	0.480	BS1 RO UNIT #2 TERM	Bus	1.747	0.2	1.000	1.747	2.471			
BS1 RO UNIT #3 TERM	0.480	BS1 RO UNIT #3 TERM	Bus	2.147	0.2	1.000	2.147	3.036			
BS1 SF-301 DISC	0.480	BS1 SF-301 DISC	Panelboard	1.871	0.2	1.000	1.871	2.645	10.000	12.500	
BS1 SF-301 TERM	0.480	BS1 SF-301 TERM	Bus	1.561	0.2	1.000	1.561	2.207			
BS1 SF-302 DISC	0.480	BS1 SF-302 DISC	Panelboard	5.800	0.7	1.000	5.801	8.285	10.000	12.500	

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Momentary Duty					Device Capability		
ID	kV	ID	Type	Symm. kA rms	X/R Ratio	M.F.	Asymm. kA rms	Asymm. kA Peak	Symm. kA rms	Asymm. kA rms	Asymm. kA Peak
BS1 SF-302 TERM	0.480	BS1 SF-302 TERM	Bus	3.704	0.4	1.000	3.704	5.241			
BS1 SF-303 DISC	0.480	BS1 SF-303 DISC	Panelboard	2.538	0.3	1.000	2.538	3.589	10.000	12.500	
BS1 SF-303 TERM	0.480	BS1 SF-303 TERM	Bus	2.003	0.2	1.000	2.003	2.832			
BS1 SOLAR CONTROL CABINET	0.480	BS1 SOLAR CONTROL CABINET	Panelboard	9.107	1.6	1.021	9.301	14.770	5.000 *	6.230 *	
BS1 SOLAR INVERTER DISC	0.480	BS1 SOLAR INVERTER DISC	Panelboard	10.696	2.0	1.045	11.172	18.353	10.000 *	12.500	
BS1 WELL 20 VFD PRI	0.480	BS1 WELL 20 VFD PRI	Bus	16.365	3.1	1.120	18.336	31.414			
BS1 WELL 22 VFD PRI	0.480	BS1 WELL 22 VFD PRI	Bus	16.531	3.1	1.126	18.609	31.924			
BS1 WELL 23 VFD PRI	0.480	BS1 WELL 23 VFD PRI	Bus	15.474	3.2	1.133	17.538	30.137			
BS1 XFMR A PRI	0.480	BS1 XFMR A PRI	Bus	10.896	2.0	1.042	11.349	18.584			
BS1 XFMR A SEC	0.208	BS1 XFMR A SEC	Bus	2.119	1.7	1.025	2.172	3.474			
BS1 XFMR B PRI	0.480	BS1 XFMR B PRI	Bus	8.824	1.6	1.018	8.979	14.139			
BS1 XFMR B SEC	0.208	BS1 XFMR B SEC	Bus	2.373	1.7	1.023	2.428	3.870			
BS1 XFMR C PRI	0.480	BS1 XFMR C PRI	Bus	8.483	1.5	1.015	8.607	13.452			
BS1 XFMR C SEC	0.208	BS1 XFMR C SEC	Bus	2.363	1.7	1.023	2.416	3.847			
BS1 XFMR LA PRI	0.480	BS1 XFMR LA PRI	Bus	10.636	1.9	1.034	10.998	17.841			
BS1 XFMR LA SEC	0.208	BS1 XFMR LA SEC	Bus	3.560	1.9	1.037	3.691	6.008			
BS1 XFMR P DISC	0.480	BS1 XFMR P DISC	Bus	12.122	1.0	1.002	12.147	17.925			
BS1 XFMR P PRI	0.480	BS1 XFMR P PRI	Bus	9.930	0.8	1.000	9.933	14.263			
BS1 XFMR P SEC	0.208	BS1 XFMR P SEC	Bus	1.531	1.6	1.019	1.561	2.468			
BS1 XFMR T1 PRI	0.480	BS1 XFMR T1 PRI	Bus	5.255	0.6	1.000	5.256	7.481			
BS1 XFMR T1 SEC	0.208	BS1 XFMR T1 SEC	Bus	2.298	1.4	1.011	2.324	3.593			
BS2 ATS PRI	0.480	BS2 ATS PRI	Bus	13.848	2.3	1.065	14.751	24.667			
BS2 ATS SEC	0.480	BS2 ATS SEC	Bus	13.848	2.3	1.065	14.751	24.667			
BS2 B-XFMR SEC	0.480	BS2 B-XFMR SEC	Panelboard	13.235	2.0	1.041	13.776	22.541	18.000	22.400	
BS2 MAIN SWBD	0.480	BS2 MAIN SWBD	Switchboard	14.020	2.4	1.067	14.956	25.035	65.000	81.100	
BS2 PNL PRI	0.208	BS2 PNL PRI	Panelboard	1.001	1.6	1.018	1.019	1.607	10.000	12.500	
BS2 XFMR PRI	0.480	BS2 XFMR PRI	Panelboard	9.330	0.9	1.001	9.341	13.653	10.000	12.500	
BS2 XFMR SEC	0.208	BS2 XFMR SEC	Bus	1.019	1.6	1.021	1.041	1.653			
BS3 AC-101 DISC	0.480	BS3 AC-101 DISC	Panelboard	2.064	0.3	1.000	2.064	2.918	200.000	249.000	
BS3 AC-101 TERM	0.480	BS3 AC-101 TERM	Panelboard	2.008	0.3	1.000	2.008	2.839	10.000	12.500	
BS3 AC-102 DISC	0.480	BS3 AC-102 DISC	Panelboard	6.068	0.4	1.000	6.068	8.584	200.000	249.000	
BS3 AC-102 TERM	0.480	BS3 AC-102 TERM	Panelboard	5.610	0.4	1.000	5.610	7.936	10.000	12.500	
BS3 AIR COMP DISC	0.480	BS3 AIR COMP DISC	Panelboard	2.871	0.4	1.000	2.871	4.061	200.000	249.000	
BS3 AIR COMP TERM	0.480	BS3 AIR COMP TERM	Bus	2.766	0.4	1.000	2.766	3.912			
BS3 AIR HANDLER DISC	0.480	BS3 AIR HANDLER DISC	Panelboard	3.671	0.2	1.000	3.671	5.191	200.000	249.000	
BS3 AIR HANDLER TERM	0.480	BS3 AIR HANDLER TERM	Panelboard	3.247	0.2	1.000	3.247	4.592	10.000	12.500	

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Momentary Duty					Device Capability		
ID	kV	ID	Type	Symm. kA rms	X/R Ratio	M.F.	Asymm. kA rms	Asymm. kA Peak	Symm. kA rms	Asymm. kA rms	Asymm. kA Peak
BS3 ATS SEC	0.480	BS3 ATS SEC	Bus	23.983	5.0	1.252	30.035	51.998			
	0.480	BS3 ATS	SPDT Switch	23.983	5.0	1.252	30.035	51.998	0.000	65.000	
BS3 ATS UTIL	0.480	BS3 ATS UTIL	Bus	23.983	5.0	1.252	30.035	51.998			
	0.480	BS3 ATS	SPDT Switch	23.983	5.0	1.252	30.035	51.998	0.000	65.000	
BS3 GEN RM EF DISC	0.480	BS3 GEN RM EF DISC	Panelboard	10.029	0.6	1.000	10.029	14.242	200.000	249.000	
BS3 GEN RM EF TERM	0.480	BS3 GEN RM EF TERM	Bus	5.535	0.3	1.000	5.535	7.828			
BS3 PANEL H1	0.480	BS3 PANEL H1	Panelboard	20.274	3.3	1.137	23.047	39.633	35.000	43.600	
BS3 PANEL H2	0.480	BS3 PANEL H2	Panelboard	9.731	1.6	1.018	9.909	15.634	35.000	43.600	
BS3 PANEL H2 PRI	0.480	BS3 PANEL H2 PRI	Panelboard	9.731	1.6	1.018	9.909	15.634	35.000	43.600	
BS3 PANEL L1A PRI	0.208	BS3 PANEL L1A PRI	Panelboard	2.420	1.7	1.023	2.475	3.943	10.000	12.500	
BS3 PANEL L2A PRI	0.208	BS3 PANEL L2A PRI	Panelboard	3.563	1.5	1.015	3.617	5.659	10.000	12.500	
BS3 PANEL L2B PRI	0.208	BS3 PANEL L2B PRI	Panelboard	3.491	1.4	1.011	3.530	5.459	10.000	12.500	
BS3 SWBD DB	0.480	BS3 SWBD DB	Switchboard	23.544	4.8	1.243	29.256	50.662	65.000	81.100	
BS3 SWBD MSB	0.480	BS3 SWBD MSB	Switchboard	24.530	5.2	1.265	31.032	53.698	65.000	81.100	
BS3 VFD 280 PRI	0.480	BS3 VFD 280 PRI	Bus	22.354	4.1	1.198	26.771	46.344			
BS3 VFD 290 PRI	0.480	BS3 VFD 290 PRI	Bus	22.529	4.5	1.222	27.522	47.669			
BS3 VFD 300 PRI	0.480	BS3 VFD 300 PRI	Bus	22.072	4.0	1.188	26.224	45.375			
BS3 VFD 310 PRI	0.480	BS3 VFD 310 PRI	Bus	21.932	3.6	1.162	25.485	43.997			
BS3 XFMR L1A PRI	0.480	BS3 XFMR L1A PRI	Bus	18.448	2.1	1.048	19.340	31.896			
BS3 XFMR L1A SEC	0.208	BS3 XFMR L1A SEC	Bus	2.458	1.7	1.025	2.519	4.029			
BS3 XFMR L2A PRI	0.480	BS3 XFMR L2A PRI	Bus	8.362	1.2	1.005	8.401	12.642			
BS3 XFMR L2A SEC	0.208	BS3 XFMR L2A SEC	Bus	3.685	1.6	1.018	3.752	5.917			
BS3 XFMR L2B PRI	0.480	BS3 XFMR L2B PRI	Bus	9.016	1.3	1.009	9.099	13.976			
BS3 XFMR L2B SEC	0.208	BS3 XFMR L2B SEC	Bus	3.731	1.6	1.020	3.808	6.035			
BS4 AH-1 DISC	0.480	BS4 AH-1 DISC	Panelboard	3.177	0.3	1.000	3.177	4.494	10.000	12.500	
BS4 AH-1 TERM	0.480	BS4 AH-1 TERM	Panelboard	2.863	0.3	1.000	2.863	4.049	10.000	12.500	
BS4 ATS UTIL	0.480	BS4 ATS UTIL	Bus	10.356	2.3	1.060	10.976	18.282			
	0.480	BS4 ATS	SPDT Switch	10.356	2.3	1.060	10.976	18.282	0.000	65.000	
BS4 BRIDGE CRANE DISC	0.480	BS4 BRIDGE CRANE DISC	Panelboard	6.571	0.9	1.001	6.576	9.549	10.000	12.500	
BS4 BRIDGE CRANE TERM	0.480	BS4 BRIDGE CRANE TERM	Bus	3.989	0.5	1.000	3.989	5.652			
BS4 CU-1 DISC	0.480	BS4 CU-1 DISC	Panelboard	4.545	0.5	1.000	4.545	6.445	10.000	12.500	
BS4 CU-1 TERM	0.480	BS4 CU-1 TERM	Panelboard	3.856	0.4	1.000	3.856	5.458	10.000	12.500	
BS4 ENTRY GATE PNL	0.480	BS4 ENTRY GATE PNL	Panelboard	0.830	0.1	1.000	0.830	1.173	10.000	12.500	
BS4 ENTRY GATE TERM	0.480	BS4 ENTRY GATE TERM	Bus	0.806	0.1	1.000	0.806	1.139			
BS4 PANEL H1	0.480	BS4 PANEL H1	Panelboard	9.596	2.0	1.045	10.032	16.497	22.000	27.400	
BS4 SWBD MS	0.480	BS4 SWBD MS	Switchboard	10.356	2.3	1.060	10.976	18.282	30.000	37.400	

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Momentary Duty					Device Capability		
ID	kV	ID	Type	Symm. kA rms	X/R Ratio	M.F.	Asymm. kA rms	Asymm. kA Peak	Symm. kA rms	Asymm. kA rms	Asymm. kA Peak
BS4 SWBD MS	0.480	BS4 ATS	SPDT Switch	10.356	2.3	1.060	10.976	18.282	0.000	65.000	
BS4 UTIL SWBD	0.480	BS4 UTIL SWBD	Switchboard	10.553	2.3	1.062	11.206	18.694	30.000	37.400	
BS6 27, 29, 31 PRI	0.208	BS6 27, 29, 31 PRI	Panelboard	3.383	0.7	1.000	3.383	4.823			
BS6 28, 30, 32 PRI	0.208	BS6 28, 30, 32 PRI	Panelboard	2.087	0.4	1.000	2.087	2.952			
BS6 33, 35, 37 PRI	0.208	BS6 33, 35, 37 PRI	Panelboard	2.808	0.5	1.000	2.808	3.979			
BS6 120/208V PNL PRI	0.208	BS6 120/208V PNL PRI	Panelboard	3.538	1.2	1.006	3.559	5.387			
BS6 AFD-32	0.480	BS6 AFD-32	Bus	38.558	5.0	1.251	48.248	83.531			
BS6 AFD-33	0.480	BS6 AFD-33	Bus	38.091	4.9	1.245	47.421	82.115			
BS6 AFD-34	0.480	BS6 AFD-34	Bus	38.558	5.0	1.251	48.248	83.531			
BS6 AFD-401 PRI	0.480	BS6 AFD-401 PRI	Bus	28.709	2.0	1.043	29.954	49.149			
BS6 AFD-402 PRI	0.480	BS6 AFD-402 PRI	Bus	17.070	0.7	1.000	17.071	24.351			
BS6 AH-101 DISC	0.480	BS6 AH-101 DISC	Panelboard	13.011	0.4	1.000	13.011	18.413	10.000 *	12.500 *	
BS6 AH-101 TERM	0.480	BS6 AH-101 TERM	Bus	10.266	0.3	1.000	10.266	14.520			
BS6 ATS-1 SEC	0.480	BS6 ATS-1 SEC	Bus	42.218	6.0	1.307	55.163	95.210			
BS6 ATS-1 UTIL	0.480	BS6 ATS-1 UTIL	Bus	42.218	6.0	1.307	55.163	95.210			
BS6 ATS-2 GEN	0.480	BS6 ATS-2 GEN	Bus	35.514	4.0	1.188	42.181	72.983			
BS6 ATS-2 SEC	0.480	BS6 ATS-2 SEC	Bus	37.548	4.7	1.236	46.422	80.398			
BS6 ATS-2 UTIL	0.480	BS6 ATS-2 UTIL	Bus	37.548	4.7	1.236	46.422	80.398			
BS6 B-AFD-401, 402 SEC	0.480	BS6 B-AFD-401, 402 SEC	Bus	41.598	5.8	1.297	53.933	93.156			
BS6 CU-101 DISC	0.480	BS6 CU-101 DISC	Panelboard	26.584	1.7	1.027	27.290	43.763	10.000 *	12.500 *	
BS6 CU-101 TERM	0.480	BS6 CU-101 TERM	Bus	25.283	1.6	1.020	25.786	40.825			
BS6 FCV-400 DISC	0.480	BS6 FCV-400 DISC	Panelboard	0.502	0.0	1.000	0.502	0.710	10.000	12.500	
BS6 FCV-400 TERM	0.480	BS6 FCV-400 TERM	Bus	0.493	0.0	1.000	0.493	0.697			
BS6 HP-101 DISC	0.480	BS6 HP-101 DISC	Panelboard	11.855	0.5	1.000	11.855	16.788	10.000 *	12.500	
BS6 HP-101 TERM	0.480	BS6 HP-101 TERM	Bus	10.773	0.4	1.000	10.773	15.248			
BS6 MAIN SWBD SB-1	0.480	BS6 MAIN SWBD SB-1	Switchboard	42.726	6.2	1.315	56.190	96.918	100.000	125.000	
BS6 MAIN SWBD SB-1 EUSERC	0.480	BS6 MAIN SWBD SB-1 EUSERC	Switchboard	42.726	6.2	1.315	56.190	96.918	100.000	125.000	
BS6 NEW OFFICE PRI	0.208	BS6 NEW OFFICE PRI	Panelboard	4.545	1.1	1.003	4.557	6.757			
BS6 PAH-101 DISC	0.480	BS6 PAH-101 DISC	Panelboard	6.962	0.3	1.000	6.962	9.846	10.000	12.500	
BS6 PAH-101 TERM	0.480	BS6 PAH-101 TERM	Bus	6.569	0.3	1.000	6.569	9.291			
BS6 PCV-32 DISC	0.480	BS6 PCV-32 DISC	Panelboard	0.461	0.1	1.000	0.461	0.653	10.000	12.500	
BS6 PCV-32, 33, 34	0.480	BS6 PCV-32, 33, 34	Bus	36.527	4.5	1.223	44.678	77.384			
BS6 PCV-33 DISC	0.480	BS6 PCV-33 DISC	Panelboard	0.677	0.1	1.000	0.677	0.957	10.000	12.500	
BS6 PCV-34 DISC	0.480	BS6 PCV-34 DISC	Panelboard	0.956	0.1	1.000	0.956	1.352	10.000	12.500	
BS6 PNL LP-1	0.208	BS6 PNL LP-1	Panelboard	4.089	1.6	1.022	4.177	6.635	22.000	27.400	
BS6 PNL LP-1 PRI	0.208	BS6 PNL LP-1 PRI	Bus	4.089	1.6	1.022	4.177	6.635			

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Momentary Duty					Device Capability		
ID	kV	ID	Type	Symm. kA rms	X/R Ratio	M.F.	Asymm. kA rms	Asymm. kA Peak	Symm. kA rms	Asymm. kA rms	Asymm. kA Peak
BS6 PNL PP-1	0.480	BS6 PNL PP-1	Panelboard	36.527	4.5	1.223	44.678	77.384	65.000	81.100	
BS6 PNL PP-1 PRI	0.480	BS6 PNL PP-1 PRI	Panelboard	36.527	4.5	1.223	44.678	77.384	65.000	81.100	
BS6 PROP FAN PF-101 DISC	0.480	BS6 PROP FAN PF-101 DISC	Panelboard	2.999	0.1	1.000	2.999	4.242	10.000	12.500	
BS6 PROP FAN PF-101 TERM	0.480	BS6 PROP FAN PF-101 TERM	Bus	2.708	0.1	1.000	2.708	3.829			
BS6 SHOP PNL A	0.208	BS6 SHOP PNL A	Panelboard	5.234	1.3	1.007	5.272	8.033	22.000	27.400	
BS6 SHOP PNL A PRI	0.208	BS6 SHOP PNL A PRI	Bus	5.234	1.3	1.007	5.272	8.033			
BS6 SWBD DSB-1	0.480	BS6 SWBD DSB-1	Switchboard	41.598	5.8	1.297	53.933	93.156	100.000	125.000	
BS6 WTR HTR-1 TERM	0.480	BS6 WTR HTR-1 TERM	Bus	3.018	0.1	1.000	3.018	4.268			
BS6 XFMR TLP-1 PRI	0.480	BS6 XFMR TLP-1 PRI	Bus	31.132	1.9	1.037	32.275	52.540			
BS6 XFMR TLP-1 SEC	0.208	BS6 XFMR TLP-1 SEC	Bus	4.200	1.7	1.025	4.304	6.878			
BS6 XFMR TLP-SHOP PRI	0.480	BS6 XFMR TLP-SHOP PRI	Bus	6.924	0.7	1.000	6.924	9.874			
BS6 XFMR TLP-SHOP SEC	0.208	BS6 XFMR TLP-SHOP SEC	Bus	5.491	1.3	1.009	5.538	8.484			

Method: IEEE - X/R is calculated from separate R & X networks.
Protective device duty is calculated based on total fault current.
The multiplication factors for high voltage circuit-breaker and high voltage bus momentary duty (asymmetrical and crest values) are calculated based on system X/R.

* Indicates a device with momentary duty exceeding the device capability

APPENDIX B2 – SHORT CIRCUIT STUDY (INTERRUPTING DUTY SUMMARY REPORT)

Interrupting Duty Summary Report

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
BS1 AC-1 DISC	0.480				2.645	0.3						
BS1 AC-2 DISC	0.480				2.645	0.3						
BS1 AC-3 DISC	0.480				2.645	0.3						
BS1 AC-4 DISC	0.480				2.645	0.3						
BS1 AC-5 DISC	0.480				2.645	0.3						
BS1 ADMIN AIR COMP	0.480				9.664	1.2						
BS1 ADMIN ELEV DISC	0.480	F-BS1 ADMIN ELEV	Fuse		9.728	1.2	1.000	9.728	0.600	20.00	200.000	200.000
BS1 ADMIN SWBD	0.480	B-BS1 ADMIN ELEV DISC	Molded Case		14.184	2.8	1.000	14.184	0.480	20.00	25.000	25.000
		B-BS1 PANEL HB	Molded Case		14.184	2.8	1.000	14.184	0.480	20.00	22.000	22.000
		B-BS1 ADMIN AIR COMP	Molded Case		14.184	2.8	1.000	14.184	0.480	20.00	25.000	25.000
		B-BS1 PANEL L	Molded Case		14.184	2.8	1.000	14.184	0.480	20.00	22.000	22.000
		B-BS1 PANEL HA	Molded Case		14.184	2.8	1.000	14.184	0.480	30.00	18.000	18.000
		B-BS1 XFMR LA	Molded Case		14.184	2.8	1.000	14.184	0.480	20.00	22.000	22.000
		F-BS1 ADMIN SWBD	Fuse		14.184	2.8	1.000	14.184	0.600	15.00	200.000	200.000
BS1 ADMIN SWBD DISC	0.480	F-BS1 ADMIN SWBD	Fuse		14.184	2.8	1.000	14.184	0.600	15.00	200.000	200.000
BS1 BFV-07 DISC	0.480				4.472	0.5						
BS1 BFV-07 TERM	0.480				3.892	0.4						
BS1 CIP HEATER TERM	0.480	B-BS1 CIP HEATER	Molded Case		9.816	2.6	1.000	9.816	0.480	20.00	35.000	35.000
BS1 CIP PUMP VFD PRI	0.480	B-BS1 CIP PUMP VFD MAIN	Molded Case		8.063	1.5	1.000	8.063	0.480	20.00	100.000	100.000
BS1 COMPRESSOR PNL	0.480				2.166	0.2						
BS1 COMPRESSOR TERM	0.480				2.072	0.2						
BS1 DESALTER ELEV DISC	0.480	F-BS1 DESALTER ELEV	Fuse		8.370	1.5	1.000	8.370	0.600	20.00	200.000	200.000
BS1 FV-116 DISC	0.480				4.472	0.5						
BS1 FV-116 TERM	0.480				3.892	0.4						
BS1 IRR PUMP PNL IPP-1	0.480	B-BS1 IRR PUMP	Molded Case		5.722	0.5	1.000	5.722	0.480	20.00	100.000	100.000
BS1 IRR PUMP TERM	0.480				3.143	0.3						
BS1 METER SHOP DISC	0.480	F-BS1 METER SHOP XFMR	Fuse		7.356	0.7	1.000	7.356	0.600	15.00	200.000	200.000
BS1 METER SHOP XFMR PRI	0.480				7.063	0.7						
BS1 METER SHOP XFMR SEC	0.208				3.170	1.6						
BS1 MPC1 PRI	0.480	B-BS1 MPC1 MAIN	Molded Case		4.645	0.6	1.000	4.645	0.480	30.00	18.000	18.000
BS1 MPC1 XFMR PRI	0.480	B-BS1 MPC1 MAIN	Molded Case		4.645	0.6	1.000	4.645	0.480	30.00	18.000	18.000

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
BS1 MPC1 XFMR SEC	0.208	B-BS1 MPC1 PNL MAIN	Molded Case		2.248	1.4	1.000	2.248	0.240	50.00	10.000	10.000
BS1 MSB	0.480	B-BS1 IRR PUMP PNL	Molded Case		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 COMPRESSOR PNL	Molded Case		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 XFMR A	MoldedFused		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 CIP HEATER PNL	MoldedFused		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 SOLAR INVERTER	MoldedFused		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 MULTIPURPOSE RM	MoldedFused		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 NAOH PUMP	Molded Case		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 PERMEATE PMP3 VFD	Molded Case		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 PERMEATE PMP2 VFD	Molded Case		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 PERMEATE PMP1 VFD	Molded Case		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 PANEL DP1	MoldedFused		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 PANEL DP2	MoldedFused		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
		B-BS1 CIP PUMP VFD	MoldedFused		12.479	3.3	1.000	12.479	0.480	20.00	65.000	65.000
BS1 MSB ATS EMER	0.480				13.410	2.6						
BS1 MSB EUSERC	0.480	B-BS1 SWBD-MSB	PowerUnfuse		12.479	3.3	1.000	12.479	0.508	15.00	65.000	65.000
BS1 N PWR BLDG MAIN SWBD	0.480	B-BS1 NPB ATS-1 UTIL	Molded Case		19.145	4.9	1.000	19.145	0.480	20.00	35.000	35.000
		B-BS1 NPB ATS-2 UTIL	Molded Case		19.145	4.9	1.000	19.145	0.480	20.00	30.000	30.000
BS1 NAOH PUMP TERM	0.480				1.865	0.2						
BS1 NPB ATS-1 SEC	0.480				18.353	4.2						
BS1 NPB ATS-1 UTIL	0.480				18.353	4.2						
BS1 NPB ATS-2 SEC	0.480				18.243	4.1						
BS1 NPB ATS-2 UTIL	0.480				18.243	4.1						
BS1 NPB MAIN SWBD 1	0.480	B-BS1 WELL 23 VFD	Molded Case		17.606	3.7	1.000	17.606	0.480	20.00	30.000	30.000
		B-BS1 CHEM BLDG	Molded Case		17.606	3.7	1.000	17.606	0.480	20.00	30.000	30.000
		B-BS1 ADMIN BLDG	Molded Case		17.606	3.7	1.000	17.606	0.480	20.00	30.000	30.000
		B-BS1 METER SHOP DISC	Molded Case		17.606	3.7	1.032	18.162	0.480	30.00	18.000	18.000 *
BS1 NPB MAIN SWBD 2	0.480	B-BS1 WELL 22 VFD	Molded Case		17.401	3.5	1.000	17.401	0.480	20.00	30.000	30.000
		B-BS1 WELL 20 VFD	Molded Case		17.401	3.5	1.000	17.401	0.480	20.00	30.000	30.000
		B-BS1 XFMR EM	Molded Case		17.401	3.5	1.000	17.401	0.480	20.00	25.000	25.000
BS1 PANEL A	0.208	B-BS1 PANEL A MAIN	Molded Case		2.090	1.7	1.000	2.090	0.240	50.00	10.000	10.000
		B-BS1 PANEL A2	Molded Case		2.090	1.7	1.000	2.090	0.240	50.00	10.000	10.000
BS1 PANEL A PRI	0.208	B-BS1 PANEL A MAIN	Molded Case		2.090	1.7	1.000	2.090	0.240	50.00	10.000	10.000

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
BS1 PANEL A2 PRI	0.208	B-BS1 PANEL A2 MAIN	Molded Case		1.595	1.0	1.000	1.595	0.240	50.00	10.000	10.000
BS1 PANEL DP1	0.480	B-BS1 XFMR B	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	25.000	25.000
		B-BS1 SF-301 DISC	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	25.000	25.000
		B-BS1 SF-302 DISC	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	25.000	25.000
		B-BS1 SF-303 DISC	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	25.000	25.000
		B-BS1 RO UNIT #1	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	25.000	25.000
		B-BS1 RO UNIT #2	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	25.000	25.000
		B-BS1 PANEL DP1 MAIN	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	35.000	35.000
		B-BS1 RO UNIT #3	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	25.000	25.000
		B-BS1 FV-116 DISC	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	25.000	25.000
		B-BS1 BFV-07 DISC	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	25.000	25.000
BS1 PANEL DP1 PRI	0.480	B-BS1 PANEL DP1 MAIN	Molded Case		9.137	1.7	1.000	9.137	0.480	20.00	35.000	35.000
BS1 PANEL DP2	0.480	B-BS1 DESALTER ELEV DISC	Molded Case		8.902	1.7	1.000	8.902	0.480	20.00	25.000	25.000
		B-BS1 XFMR C	Molded Case		8.902	1.7	1.000	8.902	0.480	20.00	25.000	25.000
		B-BS1 PANEL DP2 MAIN	Molded Case		8.902	1.7	1.000	8.902	0.480	20.00	35.000	35.000
BS1 PANEL DP2 PRI	0.480	B-BS1 PANEL DP2 MAIN	Molded Case		8.902	1.7	1.000	8.902	0.480	20.00	35.000	35.000
BS1 PANEL HA PRI	0.480	B-BS1 PANEL HA MAIN	Molded Case		5.147	0.5	1.000	5.147	0.480	20.00	35.000	35.000
BS1 PANEL HB	0.480	B-BS1 AC-1	Molded Case		8.487	1.2	1.000	8.487	0.480	20.00	35.000	35.000
		B-BS1 AC-2	Molded Case		8.487	1.2	1.000	8.487	0.480	20.00	35.000	35.000
		B-BS1 AC-3	Molded Case		8.487	1.2	1.000	8.487	0.480	20.00	35.000	35.000
		B-BS1 AC-4	Molded Case		8.487	1.2	1.000	8.487	0.480	20.00	35.000	35.000
		B-BS1 AC-5	Molded Case		8.487	1.2	1.000	8.487	0.480	20.00	35.000	35.000
		B-BS1 PANEL HB MAIN	Molded Case		8.487	1.2	1.000	8.487	0.480	20.00	35.000	35.000
BS1 PANEL HB PRI	0.480	B-BS1 PANEL HB MAIN	Molded Case		8.487	1.2	1.000	8.487	0.480	20.00	35.000	35.000
BS1 PANEL L	0.480	B-BS1 XFMR T1	Molded Case		9.705	1.6	1.000	9.705	0.480	30.00	18.000	18.000
		B-BS1 MPC1	Molded Case		9.705	1.6	1.000	9.705	0.480	30.00	18.000	18.000
BS1 PANEL LA	0.208	B-BS1 PANEL LA MAIN	Molded Case		3.140	1.7	1.000	3.140	0.240	50.00	10.000	10.000
		B-BS1 PANEL LAA	Molded Case		3.140	1.7	1.000	3.140	0.240	50.00	10.000	10.000
		B-BS1 PANEL LB	Molded Case		3.140	1.7	1.000	3.140	0.240	50.00	10.000	10.000
BS1 PANEL LA PRI	0.208	B-BS1 PANEL LA MAIN	Molded Case		3.140	1.7	1.000	3.140	0.240	50.00	10.000	10.000
BS1 PANEL LAA PRI	0.208				2.794	1.4						
BS1 PANEL LB PRI	0.208				2.794	1.4						
BS1 PANEL LPB PRI	0.208	B-BS1 PANEL LPB MAIN	Molded Case		2.313	1.6	1.000	2.313	0.240	50.00	10.000	10.000
BS1 PANEL LPC PRI	0.208	B-BS1 PANEL LPC MAIN	Molded Case		2.303	1.6	1.000	2.303	0.240	50.00	10.000	10.000

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
BS1 PANEL P PRI	0.208	B-BS1 PANEL P MAIN	Molded Case		2.026	1.2	1.000	2.026	0.240	50.00	10.000	10.000
BS1 PANEL P1	0.208				3.066	1.5						
BS1 PANEL P1 DISC	0.208	F-BS1 PANEL P1	Fuse		3.122	1.6	1.000	3.122	0.250	15.00	200.000	200.000
BS1 PERMEATE PMP1 VFD PRI	0.480	F-BS1 PERMEATE PMP1 VFD	Fuse		11.843	3.1	1.000	11.843	0.600	20.00	300.000	300.000
BS1 PERMEATE PMP2 VFD PRI	0.480	F-BS1 PERMEATE PMP2 VFD	Fuse		11.843	3.1	1.000	11.843	0.600	20.00	300.000	300.000
BS1 PERMEATE PMP3 VFD PRI	0.480	F-BS1 PERMEATE PMP3 VFD	Fuse		11.843	3.1	1.000	11.843	0.600	20.00	300.000	300.000
BS1 PNL P PRI	0.208	B-BS1 PNL P MAIN	Molded Case		1.507	1.5	1.000	1.507	0.240	50.00	10.000	10.000
BS1 RO UNIT #1 TERM	0.480				1.398	0.2						
BS1 RO UNIT #2 TERM	0.480				1.747	0.2						
BS1 RO UNIT #3 TERM	0.480				2.147	0.2						
BS1 SF-301 DISC	0.480	B-BS1 SF-301	Molded Case		1.871	0.2	1.000	1.871	0.480	20.00	100.000	100.000
BS1 SF-301 TERM	0.480				1.561	0.2						
BS1 SF-302 DISC	0.480	B-BS1 SF-302	Molded Case		5.800	0.7	1.000	5.800	0.480	20.00	100.000	100.000
BS1 SF-302 TERM	0.480				3.704	0.4						
BS1 SF-303 DISC	0.480	B-BS1 SF-303	Molded Case		2.538	0.3	1.000	2.538	0.480	20.00	100.000	100.000
BS1 SF-303 TERM	0.480				2.003	0.2						
BS1 SOLAR CONTROL CABINET	0.480				9.107	1.6						
BS1 SOLAR INVERTER DISC	0.480				10.696	2.0						
BS1 WELL 20 VFD PRI	0.480	B-BS1 WELL 20 VFD MAIN	Molded Case		16.365	3.1	1.000	16.365	0.480	20.00	100.000	100.000
BS1 WELL 22 VFD PRI	0.480	B-BS1 WELL 22 VFD MAIN	Molded Case		16.531	3.1	1.000	16.531	0.480	20.00	100.000	100.000
BS1 WELL 23 VFD PRI	0.480				15.474	3.2						
BS1 XFMR A PRI	0.480				10.896	2.0						
BS1 XFMR A SEC	0.208				2.119	1.7						
BS1 XFMR B PRI	0.480				8.824	1.6						
BS1 XFMR B SEC	0.208				2.373	1.7						
BS1 XFMR C PRI	0.480				8.483	1.5						
BS1 XFMR C SEC	0.208				2.363	1.7						
BS1 XFMR LA PRI	0.480				10.636	1.9						
BS1 XFMR LA SEC	0.208				3.560	1.9						
BS1 XFMR P DISC	0.480	F-BS1 XFMR P	Fuse		12.122	1.0	1.000	12.122	0.600	20.00	200.000	200.000
BS1 XFMR P PRI	0.480				9.930	0.8						
BS1 XFMR P SEC	0.208				1.531	1.6						
BS1 XFMR T1 PRI	0.480				5.255	0.6						

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
BS1 XFMR T1 SEC	0.208				2.298	1.4						
BS2 ATS PRI	0.480				13.848	2.3						
BS2 ATS SEC	0.480				13.848	2.3						
BS2 B-XFMR SEC	0.480	B-BS2 XFMR	Molded Case		13.235	2.0	1.000	13.235	0.480	30.00	18.000	18.000
BS2 MAIN SWBD	0.480	F-BS2 ATS	Fuse		14.020	2.4	1.000	14.020	0.600	15.00	200.000	200.000
BS2 PNL PRI	0.208	B-BS2 PNL MAIN	Molded Case		1.001	1.6	1.000	1.001	0.240	50.00	10.000	10.000
BS2 XFMR PRI	0.480				9.330	0.9						
BS2 XFMR SEC	0.208				1.019	1.6						
BS3 AC-101 DISC	0.480	F-BS3 AC-101	Fuse		2.064	0.3	1.000	2.064	0.600	20.00	200.000	200.000
BS3 AC-101 TERM	0.480				2.008	0.3						
BS3 AC-102 DISC	0.480	F-BS3 AC-102	Fuse		6.068	0.4	1.000	6.068	0.600	20.00	200.000	200.000
BS3 AC-102 TERM	0.480				5.610	0.4						
BS3 AIR COMP DISC	0.480	F-BS3 AIR COMP	Fuse		2.871	0.4	1.000	2.871	0.600	20.00	200.000	200.000
BS3 AIR COMP TERM	0.480				2.766	0.4						
BS3 AIR HANDLER DISC	0.480	F-BS3 AIR HANDLER	Fuse		3.671	0.2	1.000	3.671	0.600	20.00	200.000	200.000
BS3 AIR HANDLER TERM	0.480				3.247	0.2						
BS3 GEN RM EF DISC	0.480	F-BS3 GEN RM EF	Fuse		10.029	0.6	1.000	10.029	0.600	20.00	200.000	200.000
BS3 GEN RM EF TERM	0.480				5.535	0.3						
BS3 PANEL H1	0.480	B-BS3 XFMR L1A	Molded Case		20.274	3.3	1.000	20.274	0.480	20.00	35.000	35.000
		B-BS3 AC-102 DISC	Molded Case		20.274	3.3	1.000	20.274	0.480	20.00	35.000	35.000
		B-BS3 AIR HANDLER DISC	Molded Case		20.274	3.3	1.000	20.274	0.480	20.00	35.000	35.000
		B-BS3 GEN RM EF DISC	Molded Case		20.274	3.3	1.000	20.274	0.480	20.00	35.000	35.000
BS3 PANEL H2	0.480	B-BS3 XFMR L2A	Molded Case		9.731	1.6	1.000	9.731	0.480	20.00	35.000	35.000
		B-BS3 PANEL H2 MAIN	Molded Case		9.731	1.6	1.000	9.731	0.480	20.00	35.000	35.000
		B-BS3 XFMR L2B	Molded Case		9.731	1.6	1.000	9.731	0.480	20.00	35.000	35.000
		B-BS3 AC-101 DISC	Molded Case		9.731	1.6	1.000	9.731	0.480	20.00	35.000	35.000
		B-BS3 AIR COMP DISC	Molded Case		9.731	1.6	1.000	9.731	0.480	20.00	35.000	35.000
BS3 PANEL H2 PRI	0.480	B-BS3 PANEL H2 MAIN	Molded Case		9.731	1.6	1.000	9.731	0.480	20.00	35.000	35.000
BS3 PANEL L1A PRI	0.208	B-BS3 PANEL L1A MAIN	Molded Case		2.420	1.7	1.000	2.420	0.240	20.00	65.000	65.000
BS3 PANEL L2A PRI	0.208	B-BS3 PANEL L2A MAIN	Molded Case		3.563	1.5	1.000	3.563	0.240	20.00	65.000	65.000
BS3 PANEL L2B PRI	0.208	B-BS3 PANEL L2B MAIN	Molded Case		3.491	1.4	1.000	3.491	0.240	20.00	65.000	65.000
BS3 SWBD DB	0.480	B-BS3 PANEL H2	Molded Case		23.544	4.8	1.000	23.544	0.480	20.00	65.000	65.000
		B-BS3 PANEL H1	Molded Case		23.544	4.8	1.000	23.544	0.480	20.00	65.000	65.000
		B-BS3 VFD 290	Molded Case		23.544	4.8	1.000	23.544	0.480	20.00	65.000	65.000

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
BS3 SWBD DB		B-BS3 VFD 300	Molded Case		23.544	4.8	1.000	23.544	0.480	20.00	65.000	65.000
		B-BS3 VFD 280	Molded Case		23.544	4.8	1.000	23.544	0.480	20.00	65.000	65.000
		B-BS3 VFD 310	Molded Case		23.544	4.8	1.000	23.544	0.480	20.00	65.000	65.000
BS3 SWBD MSB	0.480	B-BS3 ATS UTIL	PowerUnfuse		24.530	5.2	1.000	24.530	0.480	15.00	50.000	50.000
BS3 VFD 280 PRI	0.480	B-BS3 VFD 280 MAIN	Molded Case		22.354	4.1	1.000	22.354	0.480	20.00	100.000	100.000
BS3 VFD 290 PRI	0.480	B-BS3 VFD 290 MAIN	Molded Case		22.529	4.5	1.000	22.529	0.480	20.00	50.000	50.000
BS3 VFD 300 PRI	0.480	B-BS3 VFD 300 MAIN	Molded Case		22.072	4.0	1.000	22.072	0.480	20.00	100.000	100.000
BS3 VFD 310 PRI	0.480	B-BS3 VFD 310 MAIN	Molded Case		21.932	3.6	1.000	21.932	0.480	20.00	100.000	100.000
BS3 XFMR L1A PRI	0.480				18.448	2.1						
BS3 XFMR L1A SEC	0.208				2.458	1.7						
BS3 XFMR L2A PRI	0.480				8.362	1.2						
BS3 XFMR L2A SEC	0.208				3.685	1.6						
BS3 XFMR L2B PRI	0.480				9.016	1.3						
BS3 XFMR L2B SEC	0.208				3.731	1.6						
BS4 AH-1 DISC	0.480				3.177	0.3						
BS4 AH-1 TERM	0.480				2.863	0.3						
BS4 ATS UTIL	0.480	B-BS4 ATS UTIL	Molded Case		10.356	2.3	1.000	10.356	0.480	20.00	100.000	100.000
BS4 BRIDGE CRANE DISC	0.480				6.571	0.9						
BS4 BRIDGE CRANE TERM	0.480				3.989	0.5						
BS4 CU-1 DISC	0.480				4.545	0.5						
BS4 CU-1 TERM	0.480				3.856	0.4						
BS4 ENTRY GATE PNL	0.480				0.830	0.1						
BS4 ENTRY GATE TERM	0.480				0.806	0.1						
BS4 PANEL H1	0.480	B-BS4 XFMR A	Molded Case		9.596	2.0	1.000	9.596	0.480	30.00	18.000	18.000
		B-BS4 CU-1 DISC	Molded Case		9.596	2.0	1.000	9.596	0.480	30.00	18.000	18.000
		B-BS4 AH-1 DISC	Molded Case		9.596	2.0	1.000	9.596	0.480	30.00	18.000	18.000
		B-BS4 BRIDGE CRANE DISC	Molded Case		9.596	2.0	1.000	9.596	0.480	30.00	18.000	18.000
		B-BS4 ENTRY GATE PNL	Molded Case		9.596	2.0	1.000	9.596	0.480	30.00	18.000	18.000
BS4 SWBD MS	0.480	B-BS4 PANEL H1	Molded Case		10.356	2.3	1.000	10.356	0.480	20.00	65.000	65.000
BS4 UTIL SWBD	0.480				10.553	2.3						
BS6 27, 29, 31 PRI	0.208				3.383	0.7						
BS6 28, 30, 32 PRI	0.208				2.087	0.4						
BS6 33, 35, 37 PRI	0.208				2.808	0.5						
BS6 120/208V PNL PRI	0.208				3.538	1.2						

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
BS6 AFD-32	0.480				38.558	5.0						
BS6 AFD-33	0.480				38.091	4.9						
BS6 AFD-34	0.480				38.558	5.0						
BS6 AFD-401 PRI	0.480				28.709	2.0						
BS6 AFD-402 PRI	0.480	B-BS6 AFD-402 MAIN	Molded Case		17.070	0.7	1.000	17.070	0.480	20.00	65.000	65.000
BS6 AH-101 DISC	0.480				13.011	0.4						
BS6 AH-101 TERM	0.480				10.266	0.3						
BS6 ATS-1 SEC	0.480				42.218	6.0						
BS6 ATS-1 UTIL	0.480				42.218	6.0						
BS6 ATS-2 GEN	0.480				35.514	4.0						
BS6 ATS-2 SEC	0.480				37.548	4.7						
BS6 ATS-2 UTIL	0.480				37.548	4.7						
BS6 B-AFD-401, 402 SEC	0.480	B-BS6 AFD-401, 402	MoldedFused		41.598	5.8	1.040	43.255	0.480	20.00	100.000	100.000
BS6 CU-101 DISC	0.480				26.584	1.7						
BS6 CU-101 TERM	0.480				25.283	1.6						
BS6 FCV-400 DISC	0.480				0.502	0.0						
BS6 FCV-400 TERM	0.480				0.493	0.0						
BS6 HP-101 DISC	0.480				11.855	0.5						
BS6 HP-101 TERM	0.480				10.773	0.4						
BS6 MAIN SWBD SB-1	0.480	B-BS6 ATS-2 UTIL	MoldedFused		42.726	6.2	1.055	45.066	0.480	20.00	100.000	100.000
		B-BS6 ATS-1 UTIL	PowerUnfuse		42.726	6.2	1.000	42.726	0.508	15.00	100.000	100.000
		B-BS6 SWBD-SB1 MAIN	PowerUnfuse		42.726	6.2	1.000	42.726	0.508	15.00	100.000	100.000
BS6 MAIN SWBD SB-1	0.480	B-BS6 SWBD-SB1 MAIN	PowerUnfuse		42.726	6.2	1.000	42.726	0.508	15.00	100.000	100.000
EUSERC												
BS6 NEW OFFICE PRI	0.208				4.545	1.1						
BS6 PAH-101 DISC	0.480				6.962	0.3						
BS6 PAH-101 TERM	0.480				6.569	0.3						
BS6 PCV-32 DISC	0.480				0.461	0.1						
BS6 PCV-32, 33, 34	0.480	B-BS6 PCV-32, 33, 34	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
BS6 PCV-33 DISC	0.480				0.677	0.1						
BS6 PCV-34 DISC	0.480				0.956	0.1						
BS6 PNL LP-1	0.208	B-BS6 PNL LP-1 MAIN	Molded Case		4.089	1.6	1.000	4.089	0.240	50.00	22.000	22.000
		B-BS6 120/208V PNL	Molded Case		4.089	1.6	1.000	4.089	0.240	50.00	10.000	10.000
BS6 PNL LP-1 PRI	0.208	B-BS6 PNL LP-1 MAIN	Molded Case		4.089	1.6	1.000	4.089	0.240	50.00	22.000	22.000
BS6 PNL PP-1	0.480	B-BS6 PP-1 MAIN	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
BS6 PNL PP-1		B-BS6 FCV-400	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		B-BS6 CU-101	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		B-BS6 WTR HTR-1	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		B-BS6 PCV-32, 33, 34	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		B-BS6 PROP FAN PF-101	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		B-BS6 AH-101	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		B-BS6 HP-101	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		B-BS6 PAH-101	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		B-BS6 XFMR TLP-SHOP	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		B-BS6 XFMR TLP-1	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
		CB-BS6 XFMR TLP-2	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
BS6 PNL PP-1 PRI	0.480	B-BS6 PP-1 MAIN	Molded Case		36.527	4.5	1.000	36.527	0.480	20.00	65.000	65.000
BS6 PROP FAN PF-101 DISC	0.480				2.999	0.1						
BS6 PROP FAN PF-101 TERM	0.480				2.708	0.1						
BS6 SHOP PNL A	0.208	B-BS6 NEW OFFICE	Molded Case		5.234	1.3	1.000	5.234	0.240	50.00	10.000	10.000
		B-BS6 27, 29, 31	Molded Case		5.234	1.3	1.000	5.234	0.240	50.00	10.000	10.000
		B-BS6 33, 35, 37	Molded Case		5.234	1.3	1.000	5.234	0.240	50.00	10.000	10.000
		B-BS6 28, 30, 32	Molded Case		5.234	1.3	1.000	5.234	0.240	50.00	10.000	10.000
		B-BS6 SHOP PNL A MAIN	Molded Case		5.234	1.3	1.000	5.234	0.240	50.00	10.000	10.000
BS6 SHOP PNL A PRI	0.208	B-BS6 SHOP PNL A MAIN	Molded Case		5.234	1.3	1.000	5.234	0.240	50.00	10.000	10.000
BS6 SWBD DSB-1	0.480	B-BS6 AFD-32	MoldedFused		41.598	5.8	1.040	43.255	0.480	20.00	100.000	100.000
		B-BS6 AFD-33	MoldedFused		41.598	5.8	1.040	43.255	0.480	20.00	100.000	100.000
		B-BS6 AFD-34	MoldedFused		41.598	5.8	1.040	43.255	0.480	20.00	100.000	100.000
		B-BS6 ATS-2 GEN	MoldedFused		41.598	5.8	1.040	43.255	0.480	20.00	100.000	100.000
		B-BS6 AFD-401, 402	MoldedFused		41.598	5.8	1.040	43.255	0.480	20.00	100.000	100.000
BS6 WTR HTR-1 TERM	0.480				3.018	0.1						
BS6 XFMR TLP-1 PRI	0.480				31.132	1.9						
BS6 XFMR TLP-1 SEC	0.208				4.200	1.7						
BS6 XFMR TLP-SHOP PRI	0.480				6.924	0.7						

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
BS6 XFMR TLP-SHOP SEC	0.208				5.491	1.3						

Method: IEEE - X/R is calculated from separate R & X networks.
HV CB interrupting capability is adjusted based on bus nominal voltage
Short-circuit multiplying factor for LV Molded Case and Insulated Case Circuit Breakers is calculated based on asymmetrical current.
Generator protective device duty is calculated based on maximum through fault current. Other protective device duty is calculated based on total fault current.

* Indicates a device with interrupting duty exceeding the device capability

** Indicates that the circuit breaker has been flagged as a generator circuit breaker. However, ETAP could not detect a single path, without a transformer, to the specified generator. Therefore, this circuit breaker is treated as a regular circuit breaker in short-circuit calculations.

\+ The prefault voltage exceeds the rated maximum kV limit of the circuit breaker - The rated interrupting kA must be derated.

APPENDIX B3 – SHORT CIRCUIT STUDY (1/2 CYCLE SHORT-CIRCUIT SUMMARY REPORT)

Short-Circuit Summary Report

1/2 Cycle - 3-Phase, LG, LL, & LLG Fault Currents

Prefault Voltage = 100 % of the Bus Nominal Voltage

Bus		3-Phase Fault			Line-to-Ground Fault			Line-to-Line Fault			*Line-to-Line-to-Ground		
ID	kV	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.
BS1 AC-1 DISC	0.48	2.551	-0.699	2.645	1.558	-0.307	1.588	0.606	2.209	2.291	-1.165	-2.117	2.417
BS1 AC-2 DISC	0.48	2.551	-0.699	2.645	1.558	-0.307	1.588	0.606	2.209	2.291	-1.165	-2.117	2.417
BS1 AC-3 DISC	0.48	2.551	-0.699	2.645	1.558	-0.307	1.588	0.606	2.209	2.291	-1.165	-2.117	2.417
BS1 AC-4 DISC	0.48	2.551	-0.699	2.645	1.558	-0.307	1.588	0.606	2.209	2.291	-1.165	-2.117	2.417
BS1 AC-5 DISC	0.48	2.551	-0.699	2.645	1.558	-0.307	1.588	0.606	2.209	2.291	-1.165	-2.117	2.417
BS1 ADMIN AIR COMP	0.48	6.280	-7.346	9.664	5.471	-4.582	7.136	6.362	5.438	8.369	-8.664	-3.858	9.485
BS1 ADMIN ELEV DISC	0.48	6.258	-7.449	9.728	5.476	-4.619	7.164	6.451	5.419	8.425	-8.755	-3.834	9.558
BS1 ADMIN SWBD	0.48	4.816	-13.342	14.184	5.317	-11.504	12.673	11.554	4.171	12.284	-14.297	0.821	14.321
BS1 ADMIN SWBD DISC	0.48	4.816	-13.342	14.184	5.317	-11.504	12.673	11.554	4.171	12.284	-14.297	0.821	14.321
BS1 BFV-07 DISC	0.48	4.012	-1.976	4.472	2.784	-0.899	2.926	1.711	3.475	3.873	-2.758	-3.215	4.236
BS1 BFV-07 TERM	0.48	3.585	-1.515	3.892	2.400	-0.662	2.490	1.312	3.105	3.370	-2.202	-2.916	3.654
BS1 CIP HEATER TERM	0.48	3.662	-9.107	9.816	3.883	-8.331	9.192	7.887	3.171	8.501	-9.891	0.645	9.912
BS1 CIP PUMP VFD PRI	0.48	4.605	-6.618	8.063	4.558	-4.875	6.674	5.731	3.988	6.982	-7.848	-2.136	8.133
BS1 COMPRESSOR PNL	0.48	2.107	-0.500	2.166	1.289	-0.187	1.302	0.433	1.825	1.876	-0.895	-1.776	1.988
BS1 COMPRESSOR TERM	0.48	2.019	-0.466	2.072	1.230	-0.174	1.243	0.403	1.749	1.794	-0.844	-1.703	1.900
BS1 DESALTER ELEV DISC	0.48	4.713	-6.917	8.370	4.743	-5.105	6.968	5.991	4.081	7.249	-8.211	-2.148	8.487
BS1 FV-116 DISC	0.48	4.012	-1.976	4.472	2.784	-0.899	2.926	1.711	3.475	3.873	-2.758	-3.215	4.236
BS1 FV-116 TERM	0.48	3.585	-1.515	3.892	2.400	-0.662	2.490	1.312	3.105	3.370	-2.202	-2.916	3.654
BS1 IRR PUMP PNL IPP-1	0.48	5.031	-2.728	5.722	3.675	-1.231	3.876	2.362	4.357	4.956	-3.770	-4.019	5.511
BS1 IRR PUMP TERM	0.48	3.011	-0.903	3.143	1.916	-0.356	1.949	0.782	2.607	2.722	-1.479	-2.512	2.915
BS1 METER SHOP DISC	0.48	5.886	-4.411	7.356	4.383	-2.309	4.954	3.820	5.098	6.370	-5.520	-4.368	7.039
BS1 METER SHOP XFMR PRI	0.48	5.716	-4.150	7.063	4.203	-2.152	4.722	3.594	4.950	6.117	-5.215	-4.271	6.741
BS1 METER SHOP XFMR SEC	0.21	1.703	-2.674	3.170	1.739	-2.889	3.372	2.315	1.475	2.745	1.432	3.042	3.363
BS1 MPC1 PRI	0.48	3.969	-2.414	4.645	2.697	-1.221	2.960	2.090	3.437	4.023	-3.098	-3.048	4.346
BS1 MPC1 XFMR PRI	0.48	3.969	-2.414	4.645	2.697	-1.221	2.960	2.090	3.437	4.023	-3.098	-3.048	4.346
BS1 MPC1 XFMR SEC	0.21	1.331	-1.813	2.248	1.366	-1.977	2.403	1.570	1.152	1.947	0.872	2.236	2.400
BS1 MSB	0.48	3.726	-11.909	12.479	3.874	-12.754	13.329	10.314	3.227	10.807	8.301	10.089	13.066
BS1 MSB ATS EMER	0.48	4.780	-12.529	13.410	5.168	-10.548	11.746	10.850	4.140	11.613	-13.459	0.353	13.463
BS1 MSB EUSERC	0.48	3.726	-11.909	12.479	3.874	-12.754	13.329	10.314	3.227	10.807	8.301	10.089	13.066
BS1 N PWR BLDG MAIN SWBD	0.48	3.848	-18.754	19.145	3.929	-19.668	20.056	16.242	3.333	16.580	14.238	13.669	19.738
BS1 NAOH PUMP TERM	0.48	1.836	-0.327	1.865	1.112	-0.122	1.119	0.283	1.590	1.615	-0.681	-1.558	1.700

1/2 Cycle - 3-Phase, LG, LL, & LLG Fault Currents

Prefault Voltage = 100 % of the Bus Nominal Voltage

Bus		3-Phase Fault			Line-to-Ground Fault			Line-to-Line Fault			*Line-to-Line-to-Ground		
ID	kV	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.
BS1 NPB ATS-1 SEC	0.48	4.290	-17.844	18.353	4.789	-18.110	18.732	15.454	3.716	15.894	-18.114	5.466	18.920
BS1 NPB ATS-1 UTIL	0.48	4.290	-17.844	18.353	4.789	-18.110	18.732	15.454	3.716	15.894	-18.114	5.466	18.920
BS1 NPB ATS-2 SEC	0.48	4.345	-17.718	18.243	4.880	-17.912	18.565	15.344	3.763	15.799	-18.065	5.279	18.821
BS1 NPB ATS-2 UTIL	0.48	4.345	-17.718	18.243	4.880	-17.912	18.565	15.344	3.763	15.799	-18.065	5.279	18.821
BS1 NPB MAIN SWBD 1	0.48	4.642	-16.983	17.606	5.378	-16.672	17.518	14.708	4.020	15.247	-17.746	4.131	18.220
BS1 NPB MAIN SWBD 2	0.48	4.728	-16.746	17.401	5.497	-16.314	17.215	14.503	4.094	15.069	-17.604	3.815	18.012
BS1 PANEL A	0.21	1.070	-1.795	2.090	1.107	-1.821	2.131	1.555	0.927	1.810	-2.127	-0.003	2.127
BS1 PANEL A PRI	0.21	1.070	-1.795	2.090	1.107	-1.821	2.131	1.555	0.927	1.810	-2.127	-0.003	2.127
BS1 PANEL A2 PRI	0.21	1.142	-1.113	1.595	1.086	-0.806	1.352	0.964	0.989	1.381	-1.461	-0.690	1.616
BS1 PANEL DP1	0.48	4.697	-7.837	9.137	4.979	-6.284	8.017	6.787	4.068	7.913	-9.245	-1.535	9.372
BS1 PANEL DP1 PRI	0.48	4.697	-7.837	9.137	4.979	-6.284	8.017	6.787	4.068	7.913	-9.245	-1.535	9.372
BS1 PANEL DP2	0.48	4.669	-7.579	8.902	4.883	-5.914	7.669	6.564	4.043	7.709	-8.934	-1.709	9.097
BS1 PANEL DP2 PRI	0.48	4.669	-7.579	8.902	4.883	-5.914	7.669	6.564	4.043	7.709	-8.934	-1.709	9.097
BS1 PANEL HA PRI	0.48	4.616	-2.277	5.147	3.067	-1.062	3.246	1.972	3.998	4.458	-3.106	-3.676	4.813
BS1 PANEL HB	0.48	5.467	-6.492	8.487	4.630	-4.052	6.153	5.622	4.734	7.350	-7.547	-3.320	8.245
BS1 PANEL HB PRI	0.48	5.467	-6.492	8.487	4.630	-4.052	6.153	5.622	4.734	7.350	-7.547	-3.320	8.245
BS1 PANEL L	0.48	5.207	-8.189	9.705	4.823	-5.676	7.448	7.092	4.510	8.404	-9.216	-2.401	9.524
BS1 PANEL LA	0.21	1.594	-2.705	3.140	1.659	-2.565	3.055	2.343	1.380	2.719	-3.198	-0.166	3.202
BS1 PANEL LA PRI	0.21	1.594	-2.705	3.140	1.659	-2.565	3.055	2.343	1.380	2.719	-3.198	-0.166	3.202
BS1 PANEL LAA PRI	0.21	1.652	-2.253	2.794	1.678	-1.884	2.523	1.951	1.431	2.420	-2.775	-0.639	2.847
BS1 PANEL LB PRI	0.21	1.652	-2.253	2.794	1.678	-1.884	2.523	1.951	1.431	2.420	-2.775	-0.639	2.847
BS1 PANEL LPB PRI	0.21	1.229	-1.959	2.313	1.287	-1.983	2.364	1.697	1.064	2.003	-2.371	-0.062	2.372
BS1 PANEL LPC PRI	0.21	1.229	-1.947	2.303	1.287	-1.974	2.356	1.686	1.064	1.994	-2.360	-0.064	2.361
BS1 PANEL P PRI	0.21	1.287	-1.565	2.026	1.304	-1.488	1.979	1.356	1.114	1.755	-2.014	-0.407	2.055
BS1 PANEL P1	0.21	1.677	-2.567	3.066	1.713	-2.693	3.192	2.223	1.452	2.656	1.349	2.868	3.169
BS1 PANEL P1 DISC	0.21	1.687	-2.627	3.122	1.720	-2.802	3.288	2.275	1.461	2.703	1.401	2.960	3.275
BS1 PERMEATE PMP1 VFD PRI	0.48	3.751	-11.234	11.843	3.998	-11.581	12.252	9.729	3.249	10.257	-11.864	2.725	12.173
BS1 PERMEATE PMP2 VFD PRI	0.48	3.751	-11.234	11.843	3.998	-11.581	12.252	9.729	3.249	10.257	-11.864	2.725	12.173
BS1 PERMEATE PMP3 VFD PRI	0.48	3.751	-11.234	11.843	3.998	-11.581	12.252	9.729	3.249	10.257	-11.864	2.725	12.173
BS1 PNL P PRI	0.21	0.818	-1.266	1.507	0.831	-1.277	1.523	1.096	0.708	1.305	-1.518	-0.065	1.520
BS1 RO UNIT #1 TERM	0.48	1.380	-0.227	1.398	0.829	-0.091	0.834	0.196	1.195	1.211	-0.492	-1.169	1.268
BS1 RO UNIT #2 TERM	0.48	1.714	-0.339	1.747	1.041	-0.136	1.050	0.294	1.484	1.513	-0.666	-1.446	1.592
BS1 RO UNIT #3 TERM	0.48	2.089	-0.495	2.147	1.287	-0.200	1.302	0.429	1.809	1.859	-0.892	-1.754	1.967

1/2 Cycle - 3-Phase, LG, LL, & LLG Fault Currents

Prefault Voltage = 100 % of the Bus Nominal Voltage

Bus		3-Phase Fault			Line-to-Ground Fault			Line-to-Line Fault			*Line-to-Line-to-Ground		
ID	kV	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.
BS1 SF-301 DISC	0.48	1.830	-0.388	1.871	1.113	-0.155	1.124	0.336	1.585	1.620	-0.735	-1.542	1.708
BS1 SF-301 TERM	0.48	1.535	-0.281	1.561	0.924	-0.111	0.931	0.243	1.330	1.352	-0.573	-1.299	1.420
BS1 SF-302 DISC	0.48	4.799	-3.258	5.800	3.674	-1.661	4.032	2.821	4.156	5.023	-4.264	-3.655	5.616
BS1 SF-302 TERM	0.48	3.437	-1.381	3.704	2.274	-0.595	2.351	1.196	2.977	3.208	-2.036	-2.809	3.469
BS1 SF-303 DISC	0.48	2.445	-0.679	2.538	1.527	-0.276	1.552	0.588	2.118	2.198	-1.140	-2.041	2.338
BS1 SF-303 TERM	0.48	1.954	-0.440	2.003	1.195	-0.175	1.207	0.381	1.692	1.734	-0.809	-1.643	1.832
BS1 SOLAR CONTROL CABINET	0.48	5.398	-7.334	9.107	5.490	-5.417	7.713	6.352	4.675	7.887	-8.943	-2.643	9.325
BS1 SOLAR INVERTER DISC	0.48	5.154	-9.372	10.696	5.920	-8.169	10.088	8.117	4.463	9.263	-11.282	-0.973	11.324
BS1 WELL 20 VFD PRI	0.48	5.095	-15.552	16.365	5.960	-14.447	15.628	13.468	4.413	14.173	-16.766	2.258	16.917
BS1 WELL 22 VFD PRI	0.48	5.044	-15.743	16.531	5.905	-14.737	15.876	13.634	4.368	14.316	-16.916	2.489	17.098
BS1 WELL 23 VFD PRI	0.48	4.588	-14.779	15.474	5.162	-13.500	14.453	12.799	3.973	13.401	-15.561	2.192	15.715
BS1 XFMR A PRI	0.48	4.983	-9.689	10.896	5.803	-8.734	10.486	8.391	4.315	9.436	-11.568	-0.456	11.577
BS1 XFMR A SEC	0.21	1.070	-1.829	2.119	1.104	-1.880	2.180	1.584	0.926	1.835	-2.153	0.040	2.154
BS1 XFMR B PRI	0.48	4.816	-7.393	8.824	4.988	-5.693	7.569	6.403	4.171	7.641	-8.804	-1.951	9.018
BS1 XFMR B SEC	0.21	1.219	-2.036	2.373	1.265	-2.121	2.469	1.764	1.056	2.055	1.106	2.162	2.428
BS1 XFMR C PRI	0.48	4.803	-6.992	8.483	4.854	-5.173	7.094	6.055	4.160	7.346	-8.335	-2.201	8.620
BS1 XFMR C SEC	0.21	1.220	-2.023	2.363	1.265	-2.111	2.461	1.752	1.056	2.046	1.095	2.160	2.422
BS1 XFMR LA PRI	0.48	5.023	-9.376	10.636	4.902	-6.915	8.476	8.120	4.350	9.211	-10.366	-1.675	10.500
BS1 XFMR LA SEC	0.21	1.650	-3.154	3.560	1.732	-3.316	3.741	2.732	1.429	3.083	1.821	3.176	3.661
BS1 XFMR P DISC	0.48	8.498	-8.644	12.122	7.637	-5.057	9.160	7.486	7.360	10.498	-10.714	-5.756	12.162
BS1 XFMR P PRI	0.48	7.923	-5.986	9.930	6.236	-3.033	6.935	5.184	6.862	8.600	-7.648	-5.961	9.697
BS1 XFMR P SEC	0.21	0.813	-1.298	1.531	0.819	-1.332	1.564	1.124	0.704	1.326	0.711	1.388	1.559
BS1 XFMR T1 PRI	0.48	4.457	-2.784	5.255	3.075	-1.405	3.381	2.411	3.860	4.551	-3.567	-3.415	4.938
BS1 XFMR T1 SEC	0.21	1.338	-1.868	2.298	1.370	-2.019	2.440	1.618	1.159	1.990	0.920	2.255	2.435
BS2 ATS PRI	0.48	5.464	-12.725	13.848	5.769	-13.457	14.641	11.020	4.732	11.993	7.965	11.871	14.296
BS2 ATS SEC	0.48	5.464	-12.725	13.848	5.769	-13.457	14.641	11.020	4.732	11.993	7.965	11.871	14.296
BS2 B-XFMR SEC	0.48	5.970	-11.812	13.235	6.665	-11.752	13.510	10.229	5.170	11.461	-13.918	0.640	13.933
BS2 MAIN SWBD	0.48	5.490	-12.901	14.020	5.791	-13.772	14.940	11.172	4.754	12.142	8.110	12.139	14.598
BS2 PNL PRI	0.21	0.538	-0.844	1.001	0.548	-0.841	1.004	0.731	0.466	0.867	-1.010	-0.047	1.011
BS2 XFMR PRI	0.48	6.814	-6.372	9.330	6.259	-4.063	7.463	5.519	5.901	8.080	-8.257	-4.542	9.424
BS2 XFMR SEC	0.21	0.531	-0.870	1.019	0.535	-0.886	1.035	0.753	0.459	0.882	0.484	0.910	1.031
BS3 AC-101 DISC	0.48	1.987	-0.557	2.064	1.189	-0.244	1.213	0.482	1.721	1.787	-0.905	-1.647	1.879
BS3 AC-101 TERM	0.48	1.935	-0.534	2.008	1.156	-0.234	1.179	0.463	1.676	1.739	-0.874	-1.605	1.828

1/2 Cycle - 3-Phase, LG, LL, & LLG Fault Currents

Prefault Voltage = 100 % of the Bus Nominal Voltage

Bus		3-Phase Fault			Line-to-Ground Fault			Line-to-Line Fault			*Line-to-Line-to-Ground		
ID	kV	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.
BS3 AC-102 DISC	0.48	5.654	-2.202	6.068	3.623	-0.925	3.739	1.907	4.896	5.255	-3.226	-4.634	5.647
BS3 AC-102 TERM	0.48	5.269	-1.926	5.610	3.339	-0.802	3.434	1.668	4.563	4.859	-2.879	-4.336	5.205
BS3 AIR COMP DISC	0.48	2.702	-0.972	2.871	1.652	-0.430	1.707	0.842	2.340	2.487	-1.433	-2.210	2.634
BS3 AIR COMP TERM	0.48	2.610	-0.916	2.766	1.591	-0.403	1.641	0.794	2.260	2.395	-1.363	-2.138	2.535
BS3 AIR HANDLER DISC	0.48	3.592	-0.758	3.671	2.173	-0.294	2.193	0.656	3.110	3.179	-1.433	-3.030	3.352
BS3 AIR HANDLER TERM	0.48	3.190	-0.608	3.247	1.917	-0.236	1.932	0.526	2.762	2.812	-1.210	-2.698	2.957
BS3 ATS SEC	0.48	4.729	-23.512	23.983	5.042	-24.822	25.329	20.362	4.096	20.770	-23.060	9.048	24.772
BS3 ATS UTIL	0.48	4.729	-23.512	23.983	5.042	-24.822	25.329	20.362	4.096	20.770	-23.060	9.048	24.772
BS3 GEN RM EF DISC	0.48	8.698	-4.992	10.029	6.203	-2.254	6.600	4.323	7.533	8.685	-6.671	-6.895	9.594
BS3 GEN RM EF TERM	0.48	5.294	-1.616	5.535	3.314	-0.641	3.375	1.400	4.585	4.794	-2.597	-4.410	5.118
BS3 PANEL H1	0.48	5.943	-19.383	20.274	7.001	-18.087	19.394	16.786	5.147	17.557	-20.684	3.244	20.937
BS3 PANEL H2	0.48	5.230	-8.206	9.731	4.577	-5.480	7.140	7.106	4.529	8.427	-9.053	-2.519	9.397
BS3 PANEL H2 PRI	0.48	5.230	-8.206	9.731	4.577	-5.480	7.140	7.106	4.529	8.427	-9.053	-2.519	9.397
BS3 PANEL L1A PRI	0.21	1.244	-2.076	2.420	1.277	-2.082	2.443	1.798	1.077	2.096	-2.453	-0.033	2.454
BS3 PANEL L2A PRI	0.21	1.977	-2.964	3.563	2.091	-3.068	3.713	2.567	1.712	3.086	-3.675	-0.123	3.678
BS3 PANEL L2B PRI	0.21	2.031	-2.839	3.491	2.185	-2.769	3.527	2.458	1.759	3.023	-3.625	-0.418	3.649
BS3 SWBD DB	0.48	4.796	-23.050	23.544	5.200	-24.030	24.586	19.962	4.153	20.390	-22.792	8.393	24.288
BS3 SWBD MSB	0.48	4.637	-24.088	24.530	4.808	-25.832	26.275	20.861	4.016	21.244	18.371	17.938	25.676
BS3 VFD 280 PRI	0.48	5.297	-21.718	22.354	6.119	-21.787	22.630	18.808	4.588	19.359	-22.290	6.312	23.166
BS3 VFD 290 PRI	0.48	4.922	-21.984	22.529	5.474	-22.280	22.943	19.039	4.263	19.510	-22.068	7.019	23.157
BS3 VFD 300 PRI	0.48	5.402	-21.401	22.072	6.288	-21.268	22.178	18.533	4.678	19.115	-22.117	5.853	22.879
BS3 VFD 310 PRI	0.48	5.876	-21.130	21.932	7.055	-20.725	21.893	18.299	5.088	18.994	-22.386	5.008	22.940
BS3 XFMR L1A PRI	0.48	7.967	-16.640	18.448	9.131	-13.616	16.394	14.410	6.899	15.977	-19.116	-1.360	19.164
BS3 XFMR L1A SEC	0.21	1.241	-2.121	2.458	1.269	-2.161	2.506	1.837	1.075	2.128	-2.486	0.026	2.486
BS3 XFMR L2A PRI	0.48	5.426	-6.362	8.362	4.358	-3.874	5.831	5.510	4.699	7.241	-7.273	-3.349	8.007
BS3 XFMR L2A SEC	0.21	1.979	-3.108	3.685	2.081	-3.337	3.933	2.692	1.714	3.191	1.596	3.515	3.860
BS3 XFMR L2B PRI	0.48	5.399	-7.221	9.016	4.515	-4.587	6.437	6.253	4.676	7.808	-8.122	-3.041	8.672
BS3 XFMR L2B SEC	0.21	1.962	-3.174	3.731	2.067	-3.387	3.968	2.749	1.699	3.231	1.657	3.514	3.885
BS4 AH-1 DISC	0.48	3.003	-1.038	3.177	1.978	-0.434	2.025	0.899	2.601	2.752	-1.629	-2.481	2.968
BS4 AH-1 TERM	0.48	2.732	-0.855	2.863	1.768	-0.351	1.802	0.740	2.366	2.479	-1.388	-2.271	2.661
BS4 ATS UTIL	0.48	4.200	-9.467	10.356	4.397	-9.848	10.785	8.198	3.637	8.969	-10.505	1.494	10.610
BS4 BRIDGE CRANE DISC	0.48	4.959	-4.311	6.571	4.340	-2.607	5.063	3.733	4.294	5.690	-5.574	-3.442	6.551
BS4 BRIDGE CRANE TERM	0.48	3.576	-1.769	3.989	2.508	-0.813	2.637	1.532	3.097	3.455	-2.481	-2.862	3.788
BS4 CU-1 DISC	0.48	4.018	-2.125	4.545	2.909	-0.997	3.075	1.841	3.479	3.936	-2.955	-3.193	4.351

1/2 Cycle - 3-Phase, LG, LL, & LLG Fault Currents

Prefault Voltage = 100 % of the Bus Nominal Voltage

Bus		3-Phase Fault			Line-to-Ground Fault			Line-to-Line Fault			*Line-to-Line-to-Ground		
ID	kV	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.
BS4 CU-1 TERM	0.48	3.519	-1.576	3.856	2.423	-0.695	2.521	1.365	3.047	3.339	-2.274	-2.852	3.648
BS4 ENTRY GATE PNL	0.48	0.825	-0.092	0.830	0.490	-0.037	0.491	0.080	0.714	0.718	-0.254	-0.704	0.748
BS4 ENTRY GATE TERM	0.48	0.801	-0.088	0.806	0.476	-0.035	0.477	0.076	0.694	0.698	-0.245	-0.684	0.726
BS4 PANEL H1	0.48	4.214	-8.621	9.596	4.470	-8.401	9.516	7.466	3.649	8.310	-9.820	0.435	9.829
BS4 SWBD MS	0.48	4.200	-9.467	10.356	4.397	-9.848	10.785	8.198	3.637	8.969	-10.505	1.494	10.610
BS4 UTIL SWBD	0.48	4.234	-9.666	10.553	4.431	-10.203	11.123	8.371	3.667	9.139	6.048	9.068	10.900
BS6 27, 29, 31 PRI	0.21	2.836	-1.844	3.383	2.472	-1.183	2.741	1.597	2.456	2.930	-2.665	-2.056	3.366
BS6 28, 30, 32 PRI	0.21	1.965	-0.704	2.087	1.399	-0.327	1.436	0.610	1.702	1.808	-1.147	-1.610	1.977
BS6 33, 35, 37 PRI	0.21	2.505	-1.268	2.808	1.984	-0.693	2.102	1.098	2.170	2.432	-1.903	-1.957	2.730
BS6 120/208V PNL PRI	0.21	2.239	-2.739	3.538	2.259	-2.288	3.215	2.372	1.939	3.064	-3.478	-0.980	3.613
BS6 AFD-32	0.48	7.649	-37.791	38.558	8.827	-37.975	38.987	32.728	6.624	33.392	-37.748	12.422	39.740
BS6 AFD-33	0.48	7.718	-37.301	38.091	8.940	-37.203	38.262	32.303	6.684	32.988	-37.385	11.829	39.212
BS6 AFD-34	0.48	7.649	-37.791	38.558	8.827	-37.975	38.987	32.728	6.624	33.392	-37.748	12.422	39.740
BS6 AFD-401 PRI	0.48	12.776	-25.709	28.709	14.014	-19.945	24.376	22.265	11.064	24.862	-29.166	-3.233	29.344
BS6 AFD-402 PRI	0.48	14.231	-9.425	17.070	10.392	-4.537	11.339	8.163	12.325	14.783	-12.139	-10.978	16.366
BS6 AH-101 DISC	0.48	11.959	-5.125	13.011	7.856	-2.131	8.140	4.438	10.357	11.268	-7.321	-9.767	12.206
BS6 AH-101 TERM	0.48	9.713	-3.324	10.266	6.133	-1.338	6.277	2.878	8.412	8.891	-5.099	-8.043	9.523
BS6 ATS-1 SEC	0.48	6.955	-41.641	42.218	7.434	-44.363	44.982	36.062	6.023	36.562	-40.054	17.710	43.795
BS6 ATS-1 UTIL	0.48	6.955	-41.641	42.218	7.434	-44.363	44.982	36.062	6.023	36.562	-40.054	17.710	43.795
BS6 ATS-2 GEN	0.48	8.719	-34.427	35.514	10.409	-32.692	34.309	29.815	7.551	30.756	-35.707	7.902	36.571
BS6 ATS-2 SEC	0.48	7.820	-36.724	37.548	9.092	-36.195	37.319	31.804	6.772	32.517	-36.958	11.019	38.565
BS6 ATS-2 UTIL	0.48	7.820	-36.724	37.548	9.092	-36.195	37.319	31.804	6.772	32.517	-36.958	11.019	38.565
BS6 B-AFD-401, 402 SEC	0.48	7.092	-40.989	41.598	7.740	-43.241	43.928	35.497	6.142	36.025	-39.745	16.734	43.124
BS6 CU-101 DISC	0.48	13.269	-23.036	26.584	13.701	-16.669	21.577	19.949	11.492	23.023	-26.356	-5.256	26.875
BS6 CU-101 TERM	0.48	13.363	-21.463	25.283	13.322	-14.992	20.056	18.587	11.572	21.895	-24.659	-6.086	25.399
BS6 FCV-400 DISC	0.48	0.501	-0.024	0.502	0.292	-0.011	0.293	0.021	0.434	0.435	-0.124	-0.431	0.448
BS6 FCV-400 TERM	0.48	0.492	-0.023	0.493	0.287	-0.011	0.287	0.020	0.426	0.427	-0.121	-0.423	0.440
BS6 HP-101 DISC	0.48	10.707	-5.088	11.855	7.074	-2.255	7.425	4.406	9.273	10.266	-7.011	-8.615	11.107
BS6 HP-101 TERM	0.48	9.858	-4.345	10.773	6.405	-1.905	6.682	3.763	8.537	9.330	-6.107	-7.981	10.050
BS6 MAIN SWBD SB-1	0.48	6.837	-42.176	42.726	7.160	-45.295	45.858	36.525	5.921	37.002	32.774	30.377	44.686
BS6 MAIN SWBD SB-1 EUSERC	0.48	6.837	-42.176	42.726	7.160	-45.295	45.858	36.525	5.921	37.002	32.774	30.377	44.686
BS6 NEW OFFICE PRI	0.21	3.124	-3.302	4.545	3.211	-3.058	4.435	2.859	2.705	3.936	-4.495	-1.295	4.678
BS6 PAH-101 DISC	0.48	6.603	-2.207	6.962	4.070	-0.938	4.176	1.912	5.718	6.029	-3.373	-5.444	6.404

1/2 Cycle - 3-Phase, LG, LL, & LLG Fault Currents

Prefault Voltage = 100 % of the Bus Nominal Voltage

Bus		3-Phase Fault			Line-to-Ground Fault			Line-to-Line Fault			*Line-to-Line-to-Ground		
ID	kV	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.
BS6 PAH-101 TERM	0.48	6.249	-2.025	6.569	3.834	-0.859	3.929	1.754	5.412	5.689	-3.129	-5.161	6.035
BS6 PCV-32 DISC	0.48	0.460	-0.033	0.461	0.268	-0.015	0.269	0.029	0.399	0.400	-0.123	-0.394	0.413
BS6 PCV-32, 33, 34	0.48	7.949	-35.652	36.527	9.264	-34.546	35.767	30.875	6.884	31.634	-36.091	9.809	37.401
BS6 PCV-33 DISC	0.48	0.675	-0.051	0.677	0.394	-0.023	0.394	0.044	0.584	0.586	-0.183	-0.577	0.606
BS6 PCV-34 DISC	0.48	0.953	-0.078	0.956	0.557	-0.034	0.558	0.067	0.825	0.828	-0.264	-0.814	0.856
BS6 PNL LP-1	0.21	2.128	-3.491	4.089	2.183	-3.470	4.099	3.024	1.843	3.541	-4.142	-0.120	4.144
BS6 PNL LP-1 PRI	0.21	2.128	-3.491	4.089	2.183	-3.470	4.099	3.024	1.843	3.541	-4.142	-0.120	4.144
BS6 PNL PP-1	0.48	7.949	-35.652	36.527	9.264	-34.546	35.767	30.875	6.884	31.634	-36.091	9.809	37.401
BS6 PNL PP-1 PRI	0.48	7.949	-35.652	36.527	9.264	-34.546	35.767	30.875	6.884	31.634	-36.091	9.809	37.401
BS6 PROP FAN PF-101 DISC	0.48	2.973	-0.394	2.999	1.756	-0.163	1.764	0.341	2.575	2.597	-0.964	-2.527	2.705
BS6 PROP FAN PF-101 TERM	0.48	2.687	-0.330	2.708	1.584	-0.137	1.590	0.286	2.327	2.345	-0.847	-2.287	2.439
BS6 SHOP PNL A	0.21	3.230	-4.119	5.234	3.395	-4.524	5.656	3.567	2.797	4.533	1.784	5.302	5.594
BS6 SHOP PNL A PRI	0.21	3.230	-4.119	5.234	3.395	-4.524	5.656	3.567	2.797	4.533	1.784	5.302	5.594
BS6 SWBD DSB-1	0.48	7.092	-40.989	41.598	7.740	-43.241	43.928	35.497	6.142	36.025	-39.745	16.734	43.124
BS6 WTR HTR-1 TERM	0.48	2.987	-0.431	3.018	1.760	-0.171	1.768	0.373	2.587	2.614	-0.996	-2.538	2.727
BS6 XFMR TLP-1 PRI	0.48	14.448	-27.577	31.132	16.310	-21.343	26.862	23.882	12.512	26.961	-32.023	-4.262	32.306
BS6 XFMR TLP-1 SEC	0.21	2.128	-3.621	4.200	2.174	-3.691	4.284	3.136	1.843	3.638	-4.247	0.039	4.247
BS6 XFMR TLP-SHOP PRI	0.48	5.786	-3.802	6.924	3.870	-1.993	4.353	3.293	5.011	5.996	-4.732	-4.356	6.431
BS6 XFMR TLP-SHOP SEC	0.21	3.317	-4.376	5.491	3.501	-5.056	6.150	3.790	2.872	4.755	1.965	5.841	6.163

All fault currents are symmetrical momentary (1/2 Cycle network) values in rms kA

* LLG fault current is the larger of the two faulted line currents

Short-Circuit Summary Report

Bus		Positive Sequence Imp. (ohm)			Negative Sequence Imp. (ohm)			Zero Sequence Imp. (ohm)		
ID	kV	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance
BS1 AC-1 DISC	0.480	0.10103	0.02770	0.10476	0.10103	0.02770	0.10476	0.31162	0.04572	0.31495
BS1 AC-2 DISC	0.480	0.10103	0.02770	0.10476	0.10103	0.02770	0.10476	0.31162	0.04572	0.31495
BS1 AC-3 DISC	0.480	0.10103	0.02770	0.10476	0.10103	0.02770	0.10476	0.31162	0.04572	0.31495
BS1 AC-4 DISC	0.480	0.10103	0.02770	0.10476	0.10103	0.02770	0.10476	0.31162	0.04572	0.31495
BS1 AC-5 DISC	0.480	0.10103	0.02770	0.10476	0.10103	0.02770	0.10476	0.31162	0.04572	0.31495
BS1 ADMIN AIR COMP	0.480	0.01863	0.02180	0.02868	0.01863	0.02180	0.02868	0.05206	0.03121	0.06069
BS1 ADMIN ELEV DISC	0.480	0.01832	0.02181	0.02849	0.01832	0.02181	0.02849	0.05206	0.03121	0.06069
BS1 ADMIN SWBD	0.480	0.00663	0.01838	0.01954	0.00663	0.01838	0.01954	0.01426	0.02279	0.02688
BS1 ADMIN SWBD DISC	0.480	0.00663	0.01838	0.01954	0.00663	0.01838	0.01954	0.01426	0.02279	0.02688
BS1 BFV-07 DISC	0.480	0.05559	0.02738	0.06197	0.05559	0.02738	0.06197	0.15921	0.03259	0.16252
BS1 BFV-07 TERM	0.480	0.06559	0.02772	0.07121	0.06559	0.02772	0.07121	0.19071	0.03343	0.19362
BS1 CIP HEATER TERM	0.480	0.01053	0.02619	0.02823	0.01053	0.02619	0.02823	0.01715	0.02959	0.03420
BS1 CIP PUMP VFD PRI	0.480	0.01963	0.02821	0.03437	0.01963	0.02821	0.03437	0.04581	0.03456	0.05739
BS1 COMPRESSOR PNL	0.480	0.12449	0.02953	0.12795	0.12449	0.02953	0.12795	0.38286	0.03279	0.38427
BS1 COMPRESSOR TERM	0.480	0.13032	0.03006	0.13375	0.13032	0.03006	0.13375	0.40176	0.03356	0.40316
BS1 DESALTER ELEV DISC	0.480	0.01864	0.02736	0.03311	0.01864	0.02736	0.03311	0.04392	0.03268	0.05475
BS1 FV-116 DISC	0.480	0.05559	0.02738	0.06197	0.05559	0.02738	0.06197	0.15921	0.03259	0.16252
BS1 FV-116 TERM	0.480	0.06559	0.02772	0.07121	0.06559	0.02772	0.07121	0.19071	0.03343	0.19362
BS1 IRR PUMP PNL IPP-1	0.480	0.04257	0.02308	0.04843	0.04257	0.02308	0.04843	0.11826	0.02194	0.12028
BS1 IRR PUMP TERM	0.480	0.08444	0.02534	0.08816	0.08444	0.02534	0.08816	0.25056	0.02737	0.25205
BS1 METER SHOP DISC	0.480	0.03015	0.02259	0.03768	0.03015	0.02259	0.03768	0.08817	0.03303	0.09415
BS1 METER SHOP XFMR PRI	0.480	0.03175	0.02305	0.03923	0.03175	0.02305	0.03923	0.09321	0.03415	0.09927
BS1 METER SHOP XFMR SEC	0.208	0.02035	0.03196	0.03789	0.02035	0.03196	0.03789	0.01439	0.02763	0.03115
BS1 MPC1 PRI	0.480	0.05097	0.03100	0.05966	0.05097	0.03100	0.05966	0.15393	0.05384	0.16307
BS1 MPC1 XFMR PRI	0.480	0.05097	0.03100	0.05966	0.05097	0.03100	0.05966	0.15393	0.05384	0.16307
BS1 MPC1 XFMR SEC	0.208	0.03160	0.04305	0.05341	0.03160	0.04305	0.05341	0.02203	0.03723	0.04326
BS1 MSB	0.480	0.00663	0.02119	0.02221	0.00663	0.02119	0.02221	0.00486	0.01729	0.01796
BS1 MSB ATS EMER	0.480	0.00737	0.01931	0.02067	0.00737	0.01931	0.02067	0.01641	0.02495	0.02986
BS1 MSB EUSERC	0.480	0.00663	0.02119	0.02221	0.00663	0.02119	0.02221	0.00486	0.01729	0.01796
BS1 N PWR BLDG MAIN SWBD	0.480	0.00291	0.01418	0.01448	0.00291	0.01418	0.01448	0.00230	0.01229	0.01250
BS1 NAOH PUMP TERM	0.480	0.14632	0.02606	0.14862	0.14632	0.02606	0.14862	0.44586	0.02900	0.44681
BS1 NPB ATS-1 SEC	0.480	0.00353	0.01468	0.01510	0.00353	0.01468	0.01510	0.00429	0.01354	0.01421
BS1 NPB ATS-1 UTIL	0.480	0.00353	0.01468	0.01510	0.00353	0.01468	0.01510	0.00429	0.01354	0.01421
BS1 NPB ATS-2 SEC	0.480	0.00362	0.01475	0.01519	0.00362	0.01475	0.01519	0.00453	0.01370	0.01443

Bus		Positive Sequence Imp. (ohm)			Negative Sequence Imp. (ohm)			Zero Sequence Imp. (ohm)		
ID	kV	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance
BS1 NPB ATS-2 UTIL	0.480	0.00362	0.01475	0.01519	0.00362	0.01475	0.01519	0.00453	0.01370	0.01443
BS1 NPB MAIN SWBD 1	0.480	0.00415	0.01518	0.01574	0.00415	0.01518	0.01574	0.00627	0.01480	0.01607
BS1 NPB MAIN SWBD 2	0.480	0.00433	0.01533	0.01593	0.00433	0.01533	0.01593	0.00677	0.01511	0.01656
BS1 PANEL A	0.208	0.02942	0.04936	0.05746	0.02942	0.04936	0.05746	0.02896	0.04574	0.05414
BS1 PANEL A PRI	0.208	0.02942	0.04936	0.05746	0.02942	0.04936	0.05746	0.02896	0.04574	0.05414
BS1 PANEL A2 PRI	0.208	0.05392	0.05256	0.07530	0.05392	0.05256	0.07530	0.10613	0.05362	0.11891
BS1 PANEL DP1	0.480	0.01559	0.02602	0.03033	0.01559	0.02602	0.03033	0.03321	0.02925	0.04426
BS1 PANEL DP1 PRI	0.480	0.01559	0.02602	0.03033	0.01559	0.02602	0.03033	0.03321	0.02925	0.04426
BS1 PANEL DP2	0.480	0.01633	0.02651	0.03113	0.01633	0.02651	0.03113	0.03636	0.03058	0.04751
BS1 PANEL DP2 PRI	0.480	0.01633	0.02651	0.03113	0.01633	0.02651	0.03113	0.03636	0.03058	0.04751
BS1 PANEL HA PRI	0.480	0.04828	0.02382	0.05384	0.04828	0.02382	0.05384	0.14545	0.03618	0.14988
BS1 PANEL HB	0.480	0.02103	0.02498	0.03265	0.02103	0.02498	0.03265	0.05962	0.03903	0.07126
BS1 PANEL HB PRI	0.480	0.02103	0.02498	0.03265	0.02103	0.02498	0.03265	0.05962	0.03903	0.07126
BS1 PANEL L	0.480	0.01532	0.02410	0.02856	0.01532	0.02410	0.02856	0.04163	0.03687	0.05561
BS1 PANEL LA	0.208	0.01941	0.03295	0.03825	0.01941	0.03295	0.03825	0.02523	0.03311	0.04163
BS1 PANEL LA PRI	0.208	0.01941	0.03295	0.03825	0.01941	0.03295	0.03825	0.02523	0.03311	0.04163
BS1 PANEL LAA PRI	0.208	0.02541	0.03466	0.04298	0.02541	0.03466	0.04298	0.04413	0.03732	0.05779
BS1 PANEL LB PRI	0.208	0.02541	0.03466	0.04298	0.02541	0.03466	0.04298	0.04413	0.03732	0.05779
BS1 PANEL LPB PRI	0.208	0.02759	0.04399	0.05192	0.02759	0.04399	0.05192	0.02781	0.03988	0.04861
BS1 PANEL LPC PRI	0.208	0.02784	0.04410	0.05215	0.02784	0.04410	0.05215	0.02781	0.03988	0.04861
BS1 PANEL P PRI	0.208	0.03763	0.04578	0.05926	0.03763	0.04578	0.05926	0.04471	0.04535	0.06369
BS1 PANEL P1	0.208	0.02142	0.03279	0.03916	0.02142	0.03279	0.03916	0.01774	0.02967	0.03457
BS1 PANEL P1 DISC	0.208	0.02078	0.03237	0.03847	0.02078	0.03237	0.03847	0.01575	0.02865	0.03269
BS1 PERMEATE PMP1 VFD PRI	0.480	0.00741	0.02219	0.02340	0.00741	0.02219	0.02340	0.00732	0.01975	0.02107
BS1 PERMEATE PMP2 VFD PRI	0.480	0.00741	0.02219	0.02340	0.00741	0.02219	0.02340	0.00732	0.01975	0.02107
BS1 PERMEATE PMP3 VFD PRI	0.480	0.00741	0.02219	0.02340	0.00741	0.02219	0.02340	0.00732	0.01975	0.02107
BS1 PNL P PRI	0.208	0.04324	0.06691	0.07967	0.04324	0.06691	0.07967	0.04249	0.06442	0.07717
BS1 RO UNIT #1 TERM	0.480	0.19559	0.03214	0.19822	0.19559	0.03214	0.19822	0.60021	0.04430	0.60185
BS1 RO UNIT #2 TERM	0.480	0.15559	0.03078	0.15861	0.15559	0.03078	0.15861	0.47421	0.04096	0.47598
BS1 RO UNIT #3 TERM	0.480	0.12559	0.02976	0.12907	0.12559	0.02976	0.12907	0.37971	0.03845	0.38166
BS1 SF-301 DISC	0.480	0.14492	0.03077	0.14815	0.14492	0.03077	0.14815	0.44271	0.04012	0.44453
BS1 SF-301 TERM	0.480	0.17465	0.03198	0.17755	0.17465	0.03198	0.17755	0.53721	0.04263	0.53890
BS1 SF-302 DISC	0.480	0.03953	0.02683	0.04778	0.03953	0.02683	0.04778	0.10881	0.03125	0.11321
BS1 SF-302 TERM	0.480	0.06941	0.02789	0.07481	0.06941	0.02789	0.07481	0.20331	0.03376	0.20610
BS1 SF-303 DISC	0.480	0.10522	0.02922	0.10920	0.10522	0.02922	0.10920	0.31671	0.03678	0.31884
BS1 SF-303 TERM	0.480	0.13500	0.03038	0.13838	0.13500	0.03038	0.13838	0.41121	0.03928	0.41309

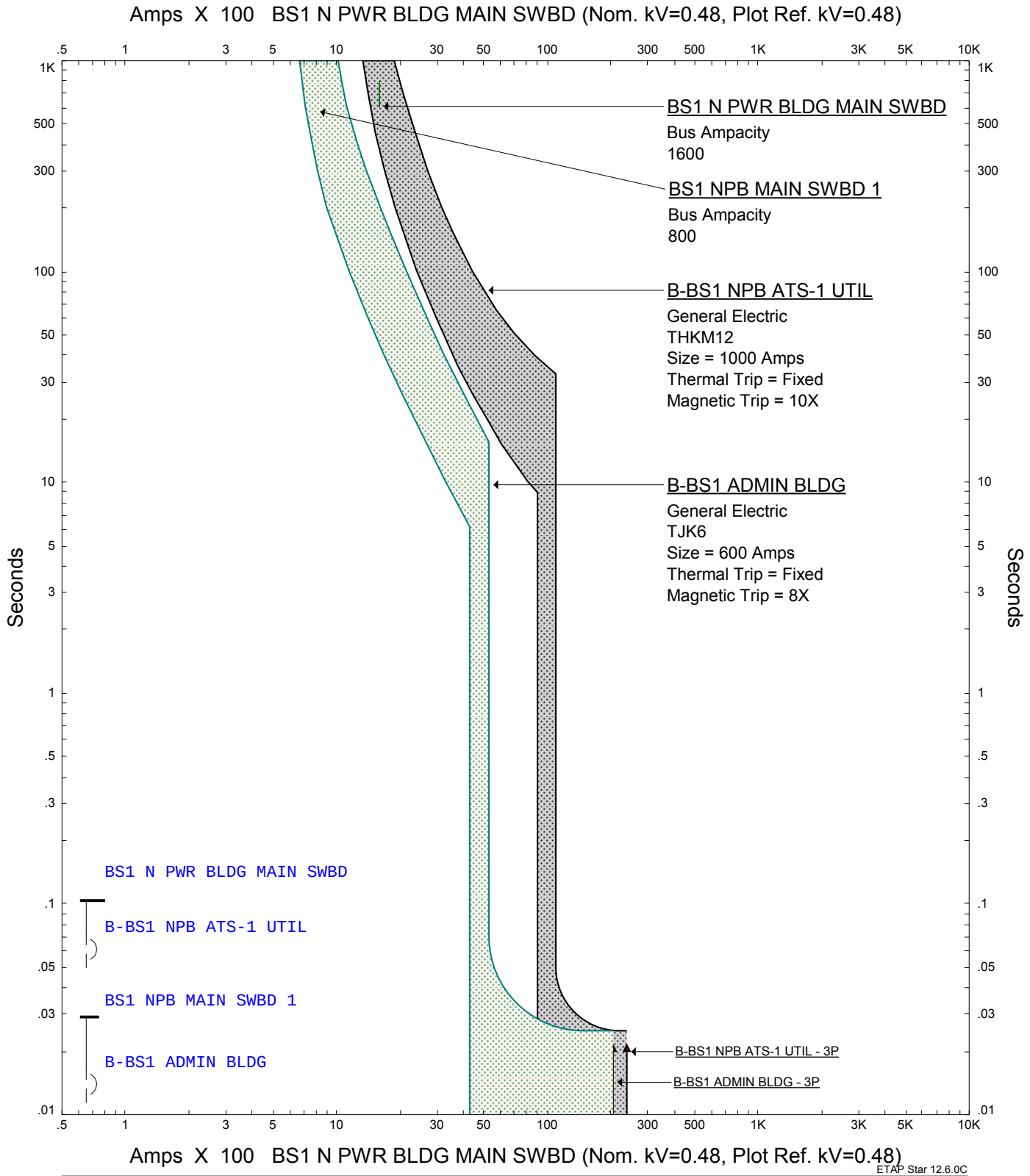
Bus		Positive Sequence Imp. (ohm)			Negative Sequence Imp. (ohm)			Zero Sequence Imp. (ohm)		
ID	kV	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance
BS1 SOLAR CONTROL CABINET	0.480	0.01804	0.02451	0.03043	0.01804	0.02451	0.03043	0.04065	0.02669	0.04863
BS1 SOLAR INVERTER DISC	0.480	0.01248	0.02270	0.02591	0.01248	0.02270	0.02591	0.02339	0.02132	0.03165
BS1 WELL 20 VFD PRI	0.480	0.00527	0.01609	0.01693	0.00527	0.01609	0.01693	0.00974	0.01699	0.01959
BS1 WELL 22 VFD PRI	0.480	0.00511	0.01596	0.01676	0.00511	0.01596	0.01676	0.00925	0.01668	0.01907
BS1 WELL 23 VFD PRI	0.480	0.00531	0.01710	0.01791	0.00531	0.01710	0.01791	0.00992	0.01952	0.02190
BS1 XFMR A PRI	0.480	0.01163	0.02262	0.02544	0.01163	0.02262	0.02544	0.02061	0.02080	0.02928
BS1 XFMR A SEC	0.208	0.02862	0.04893	0.05669	0.02862	0.04893	0.05669	0.02644	0.04468	0.05192
BS1 XFMR B PRI	0.480	0.01714	0.02632	0.03141	0.01714	0.02632	0.03141	0.03810	0.02999	0.04848
BS1 XFMR B SEC	0.208	0.02599	0.04342	0.05060	0.02599	0.04342	0.05060	0.02277	0.03848	0.04471
BS1 XFMR C PRI	0.480	0.01850	0.02693	0.03267	0.01850	0.02693	0.03267	0.04320	0.03161	0.05353
BS1 XFMR C SEC	0.208	0.02624	0.04353	0.05083	0.02624	0.04353	0.05083	0.02277	0.03848	0.04471
BS1 XFMR LA PRI	0.480	0.01230	0.02297	0.02606	0.01230	0.02297	0.02606	0.03212	0.03409	0.04683
BS1 XFMR LA SEC	0.208	0.01563	0.02989	0.03373	0.01563	0.02989	0.03373	0.01332	0.02558	0.02884
BS1 XFMR P DISC	0.480	0.01603	0.01630	0.02286	0.01603	0.01630	0.02286	0.04362	0.01751	0.04701
BS1 XFMR P PRI	0.480	0.02227	0.01682	0.02791	0.02227	0.01682	0.02791	0.06328	0.01879	0.06601
BS1 XFMR P SEC	0.208	0.04164	0.06646	0.07842	0.04164	0.06646	0.07842	0.03745	0.06330	0.07355
BS1 XFMR T1 PRI	0.480	0.04472	0.02794	0.05273	0.04472	0.02794	0.05273	0.13424	0.04631	0.14200
BS1 XFMR T1 SEC	0.208	0.03043	0.04248	0.05225	0.03043	0.04248	0.05225	0.02203	0.03723	0.04326
BS2 ATS PRI	0.480	0.00790	0.01839	0.02001	0.00790	0.01839	0.02001	0.00658	0.01541	0.01676
BS2 ATS SEC	0.480	0.00790	0.01839	0.02001	0.00790	0.01839	0.02001	0.00658	0.01541	0.01676
BS2 B-XFMR SEC	0.480	0.00945	0.01869	0.02094	0.00945	0.01869	0.02094	0.01146	0.01615	0.01981
BS2 MAIN SWBD	0.480	0.00774	0.01819	0.01977	0.00774	0.01819	0.01977	0.00609	0.01492	0.01612
BS2 PNL PRI	0.208	0.06446	0.10122	0.12000	0.06446	0.10122	0.12000	0.06705	0.09828	0.11898
BS2 XFMR PRI	0.480	0.02170	0.02029	0.02970	0.02170	0.02029	0.02970	0.05005	0.02009	0.05393
BS2 XFMR SEC	0.208	0.06136	0.10062	0.11785	0.06136	0.10062	0.11785	0.05728	0.09681	0.11249
BS3 AC-101 DISC	0.480	0.12931	0.03626	0.13429	0.12931	0.03626	0.13429	0.41258	0.06533	0.41772
BS3 AC-101 TERM	0.480	0.13305	0.03675	0.13803	0.13305	0.03675	0.13803	0.42487	0.06613	0.42998
BS3 AC-102 DISC	0.480	0.04256	0.01658	0.04567	0.04256	0.01658	0.04567	0.13031	0.02183	0.13213
BS3 AC-102 TERM	0.480	0.04639	0.01696	0.04940	0.04639	0.01696	0.04940	0.14259	0.02263	0.14438
BS3 AIR COMP DISC	0.480	0.09082	0.03267	0.09651	0.09082	0.03267	0.09651	0.28973	0.05733	0.29535
BS3 AIR COMP TERM	0.480	0.09454	0.03320	0.10020	0.09454	0.03320	0.10020	0.30202	0.05813	0.30756
BS3 AIR HANDLER DISC	0.480	0.07387	0.01559	0.07550	0.07387	0.01559	0.07550	0.22796	0.01969	0.22881
BS3 AIR HANDLER TERM	0.480	0.08384	0.01597	0.08534	0.08384	0.01597	0.08534	0.25946	0.02053	0.26027
BS3 ATS SEC	0.480	0.00228	0.01133	0.01156	0.00228	0.01133	0.01156	0.00198	0.00951	0.00971
BS3 ATS UTIL	0.480	0.00228	0.01133	0.01156	0.00228	0.01133	0.01156	0.00198	0.00951	0.00971
BS3 GEN RM EF DISC	0.480	0.02397	0.01375	0.02763	0.02397	0.01375	0.02763	0.07046	0.01551	0.07215

Bus		Positive Sequence Imp. (ohm)			Negative Sequence Imp. (ohm)			Zero Sequence Imp. (ohm)		
ID	kV	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance
BS3 GEN RM EF TERM	0.480	0.04788	0.01462	0.05007	0.04788	0.01462	0.05007	0.14606	0.01752	0.14711
BS3 PANEL H1	0.480	0.00401	0.01307	0.01367	0.00401	0.01307	0.01367	0.00746	0.01384	0.01572
BS3 PANEL H2	0.480	0.01531	0.02402	0.02848	0.01531	0.02402	0.02848	0.04403	0.04134	0.06040
BS3 PANEL H2 PRI	0.480	0.01531	0.02402	0.02848	0.01531	0.02402	0.02848	0.04403	0.04134	0.06040
BS3 PANEL L1A PRI	0.208	0.02551	0.04256	0.04962	0.02551	0.04256	0.04962	0.02610	0.04058	0.04825
BS3 PANEL L2A PRI	0.208	0.01870	0.02804	0.03370	0.01870	0.02804	0.03370	0.01724	0.02411	0.02964
BS3 PANEL L2B PRI	0.208	0.02002	0.02798	0.03440	0.02002	0.02798	0.03440	0.02323	0.02423	0.03357
BS3 SWBD DB	0.480	0.00240	0.01152	0.01177	0.00240	0.01152	0.01177	0.00236	0.01000	0.01028
BS3 SWBD MSB	0.480	0.00214	0.01109	0.01130	0.00214	0.01109	0.01130	0.00152	0.00892	0.00905
BS3 VFD 280 PRI	0.480	0.00294	0.01204	0.01240	0.00294	0.01204	0.01240	0.00406	0.01128	0.01199
BS3 VFD 290 PRI	0.480	0.00269	0.01200	0.01230	0.00269	0.01200	0.01230	0.00327	0.01118	0.01165
BS3 VFD 300 PRI	0.480	0.00307	0.01217	0.01256	0.00307	0.01217	0.01256	0.00448	0.01160	0.01244
BS3 VFD 310 PRI	0.480	0.00339	0.01217	0.01264	0.00339	0.01217	0.01264	0.00547	0.01160	0.01282
BS3 XFMR L1A PRI	0.480	0.00649	0.01355	0.01502	0.00649	0.01355	0.01502	0.01527	0.01502	0.02142
BS3 XFMR L1A SEC	0.208	0.02467	0.04218	0.04886	0.02467	0.04218	0.04886	0.02345	0.03963	0.04605
BS3 XFMR L2A PRI	0.480	0.02151	0.02522	0.03314	0.02151	0.02522	0.03314	0.06356	0.04429	0.07747
BS3 XFMR L2A SEC	0.208	0.01750	0.02749	0.03259	0.01750	0.02749	0.03259	0.01346	0.02275	0.02644
BS3 XFMR L2B PRI	0.480	0.01841	0.02462	0.03074	0.01841	0.02462	0.03074	0.05380	0.04282	0.06876
BS3 XFMR L2B SEC	0.208	0.01692	0.02738	0.03218	0.01692	0.02738	0.03218	0.01346	0.02275	0.02644
BS4 AH-1 DISC	0.480	0.08243	0.02850	0.08722	0.08243	0.02850	0.08722	0.23618	0.03109	0.23821
BS4 AH-1 TERM	0.480	0.09238	0.02890	0.09680	0.09238	0.02890	0.09680	0.26768	0.03192	0.26957
BS4 ATS UTIL	0.480	0.01085	0.02446	0.02676	0.01085	0.02446	0.02676	0.00972	0.02147	0.02357
BS4 BRIDGE CRANE DISC	0.480	0.03183	0.02767	0.04218	0.03183	0.02767	0.04218	0.07710	0.02923	0.08246
BS4 BRIDGE CRANE TERM	0.480	0.06226	0.03081	0.06947	0.06226	0.03081	0.06947	0.17538	0.03563	0.17896
BS4 CU-1 DISC	0.480	0.05389	0.02851	0.06097	0.05389	0.02851	0.06097	0.14798	0.03066	0.15112
BS4 CU-1 TERM	0.480	0.06559	0.02938	0.07187	0.06559	0.02938	0.07187	0.18578	0.03221	0.18855
BS4 ENTRY GATE PNL	0.480	0.33198	0.03704	0.33404	0.33198	0.03704	0.33404	1.02368	0.05200	1.02500
BS4 ENTRY GATE TERM	0.480	0.34194	0.03739	0.34398	0.34194	0.03739	0.34398	1.05518	0.05283	1.05650
BS4 PANEL H1	0.480	0.01268	0.02595	0.02888	0.01268	0.02595	0.02888	0.01568	0.02523	0.02971
BS4 SWBD MS	0.480	0.01085	0.02446	0.02676	0.01085	0.02446	0.02676	0.00972	0.02147	0.02357
BS4 UTIL SWBD	0.480	0.01054	0.02406	0.02626	0.01054	0.02406	0.02626	0.00870	0.02044	0.02222
BS6 27, 29, 31 PRI	0.208	0.02976	0.01935	0.03550	0.02976	0.01935	0.03550	0.05905	0.01804	0.06175
BS6 28, 30, 32 PRI	0.208	0.05416	0.01941	0.05753	0.05416	0.01941	0.05753	0.13591	0.01818	0.13713
BS6 33, 35, 37 PRI	0.208	0.03816	0.01931	0.04277	0.03816	0.01931	0.04277	0.08551	0.01794	0.08738
BS6 120/208V PNL PRI	0.208	0.02148	0.02628	0.03394	0.02148	0.02628	0.03394	0.03576	0.02718	0.04492
BS6 AFD-32	0.480	0.00143	0.00704	0.00719	0.00143	0.00704	0.00719	0.00198	0.00668	0.00697
BS6 AFD-33	0.480	0.00147	0.00712	0.00728	0.00147	0.00712	0.00728	0.00213	0.00688	0.00720

Bus		Positive Sequence Imp. (ohm)			Negative Sequence Imp. (ohm)			Zero Sequence Imp. (ohm)		
ID	kV	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance
BS6 AFD-34	0.480	0.00143	0.00704	0.00719	0.00143	0.00704	0.00719	0.00198	0.00668	0.00697
BS6 AFD-401 PRI	0.480	0.00430	0.00864	0.00965	0.00430	0.00864	0.00965	0.01102	0.01062	0.01530
BS6 AFD-402 PRI	0.480	0.01354	0.00896	0.01624	0.01354	0.00896	0.01624	0.04012	0.01140	0.04171
BS6 AH-101 DISC	0.480	0.01958	0.00839	0.02130	0.01958	0.00839	0.02130	0.05942	0.00997	0.06025
BS6 AH-101 TERM	0.480	0.02554	0.00874	0.02699	0.02554	0.00874	0.02699	0.07832	0.01074	0.07905
BS6 ATS-1 SEC	0.480	0.00108	0.00647	0.00656	0.00108	0.00647	0.00656	0.00089	0.00528	0.00535
BS6 ATS-1 UTIL	0.480	0.00108	0.00647	0.00656	0.00108	0.00647	0.00656	0.00089	0.00528	0.00535
BS6 ATS-2 GEN	0.480	0.00192	0.00756	0.00780	0.00192	0.00756	0.00780	0.00352	0.00796	0.00870
BS6 ATS-2 SEC	0.480	0.00154	0.00722	0.00738	0.00154	0.00722	0.00738	0.00235	0.00717	0.00755
BS6 ATS-2 UTIL	0.480	0.00154	0.00722	0.00738	0.00154	0.00722	0.00738	0.00235	0.00717	0.00755
BS6 B-AFD-401, 402 SEC	0.480	0.00114	0.00656	0.00666	0.00114	0.00656	0.00666	0.00106	0.00550	0.00560
BS6 CU-101 DISC	0.480	0.00520	0.00903	0.01042	0.00520	0.00903	0.01042	0.01406	0.01170	0.01829
BS6 CU-101 TERM	0.480	0.00579	0.00931	0.01096	0.00579	0.00931	0.01096	0.01595	0.01238	0.02019
BS6 FCV-400 DISC	0.480	0.55165	0.02611	0.55227	0.55165	0.02611	0.55227	1.73522	0.05364	1.73605
BS6 FCV-400 TERM	0.480	0.56165	0.02645	0.56227	0.56165	0.02645	0.56227	1.76672	0.05448	1.76756
BS6 HP-101 DISC	0.480	0.02111	0.01003	0.02338	0.02111	0.01003	0.02338	0.06446	0.01394	0.06595
BS6 HP-101 TERM	0.480	0.02354	0.01037	0.02572	0.02354	0.01037	0.02572	0.07218	0.01473	0.07366
BS6 MAIN SWBD SB-1	0.480	0.00104	0.00640	0.00649	0.00104	0.00640	0.00649	0.00075	0.00510	0.00516
BS6 MAIN SWBD SB-1 EUSERC	0.480	0.00104	0.00640	0.00649	0.00104	0.00640	0.00649	0.00075	0.00510	0.00516
BS6 NEW OFFICE PRI	0.208	0.01816	0.01919	0.02642	0.01816	0.01919	0.02642	0.02251	0.01764	0.02860
BS6 PAH-101 DISC	0.480	0.03775	0.01262	0.03981	0.03775	0.01262	0.03981	0.11848	0.01945	0.12007
BS6 PAH-101 TERM	0.480	0.04013	0.01301	0.04219	0.04013	0.01301	0.04219	0.12620	0.02024	0.12781
BS6 PCV-32 DISC	0.480	0.59899	0.04339	0.60056	0.59899	0.04339	0.60056	1.89272	0.08513	1.89463
BS6 PCV-32, 33, 34	0.480	0.00165	0.00741	0.00759	0.00165	0.00741	0.00759	0.00272	0.00764	0.00811
BS6 PCV-33 DISC	0.480	0.40840	0.03090	0.40957	0.40840	0.03090	0.40957	1.28792	0.06033	1.28933
BS6 PCV-34 DISC	0.480	0.28901	0.02356	0.28997	0.28901	0.02356	0.28997	0.90992	0.04484	0.91102
BS6 PNL LP-1	0.208	0.01528	0.02508	0.02937	0.01528	0.02508	0.02937	0.01623	0.02423	0.02916
BS6 PNL LP-1 PRI	0.208	0.01528	0.02508	0.02937	0.01528	0.02508	0.02937	0.01623	0.02423	0.02916
BS6 PNL PP-1	0.480	0.00165	0.00741	0.00759	0.00165	0.00741	0.00759	0.00272	0.00764	0.00811
BS6 PNL PP-1 PRI	0.480	0.00165	0.00741	0.00759	0.00165	0.00741	0.00759	0.00272	0.00764	0.00811
BS6 PROP FAN PF-101 DISC	0.480	0.09160	0.01214	0.09240	0.09160	0.01214	0.09240	0.28622	0.01926	0.28687
BS6 PROP FAN PF-101 TERM	0.480	0.10158	0.01249	0.10235	0.10158	0.01249	0.10235	0.31772	0.02010	0.31835
BS6 SHOP PNL A	0.208	0.01416	0.01805	0.02294	0.01416	0.01805	0.02294	0.00991	0.01484	0.01784
BS6 SHOP PNL A PRI	0.208	0.01416	0.01805	0.02294	0.01416	0.01805	0.02294	0.00991	0.01484	0.01784
BS6 SWBD DSB-1	0.480	0.00114	0.00656	0.00666	0.00114	0.00656	0.00666	0.00106	0.00550	0.00560
BS6 WTR HTR-1 TERM	0.480	0.09089	0.01310	0.09182	0.09089	0.01310	0.09182	0.28622	0.01926	0.28687

Bus		Positive Sequence Imp. (ohm)			Negative Sequence Imp. (ohm)			Zero Sequence Imp. (ohm)		
ID	kV	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance
BS6 XFMR TLP-1 PRI	0.480	0.00413	0.00789	0.00890	0.00413	0.00789	0.00890	0.01053	0.00882	0.01374
BS6 XFMR TLP-1 SEC	0.208	0.01448	0.02465	0.02859	0.01448	0.02465	0.02859	0.01371	0.02317	0.02692
BS6 XFMR TLP-SHOP PRI	0.480	0.03345	0.02198	0.04003	0.03345	0.02198	0.04003	0.10289	0.04350	0.11170
BS6 XFMR TLP-SHOP SEC	0.208	0.01321	0.01743	0.02187	0.01321	0.01743	0.02187	0.00693	0.01330	0.01500

APPENDIX C – TIME CURRENT CURVES



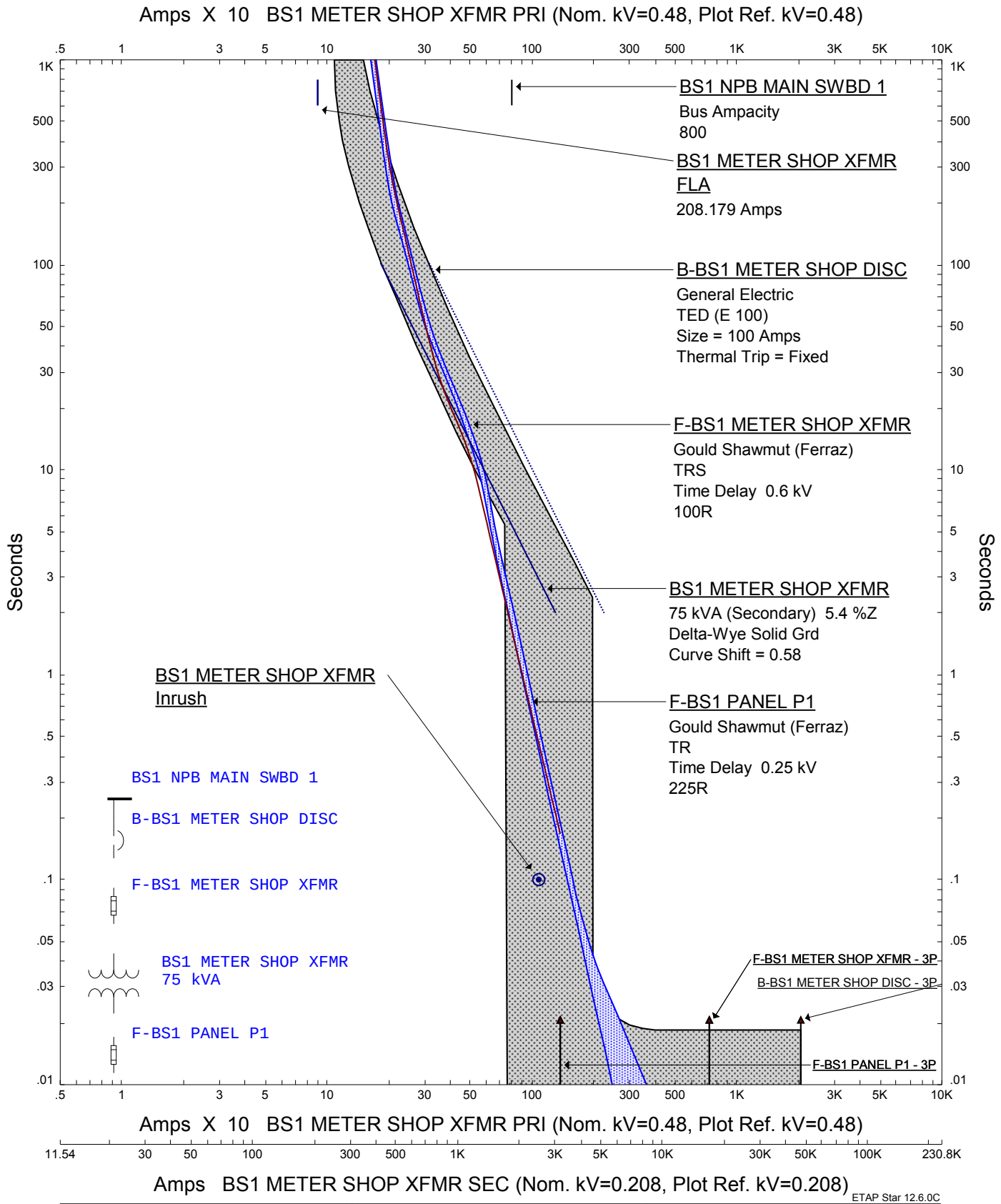
ETAP Star 12.6.0C

TCC 01: BS1 NPB MAIN

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



ETAP Star 12.6.0C

TCC 02: BS1 METER SHOP

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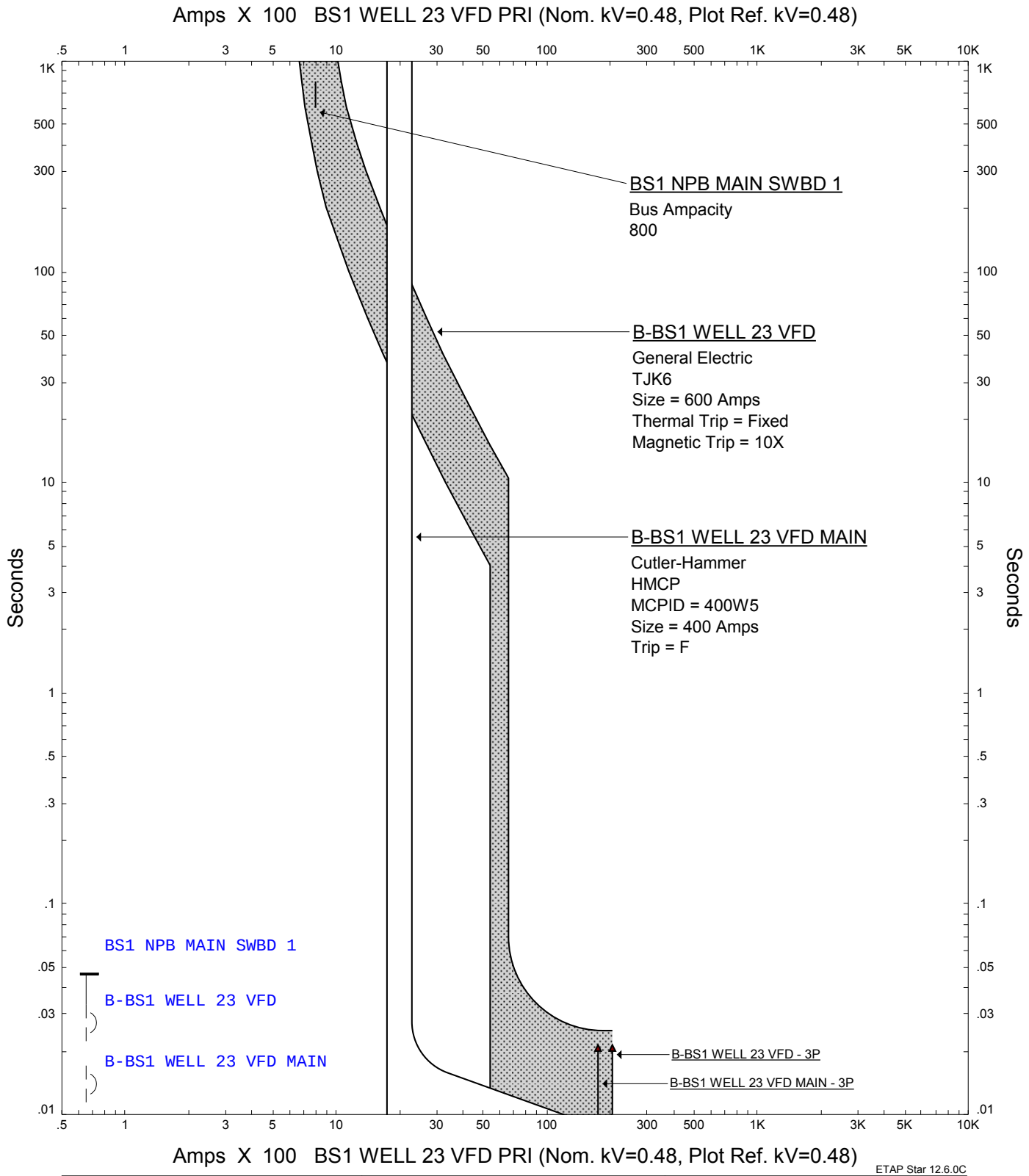
Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base

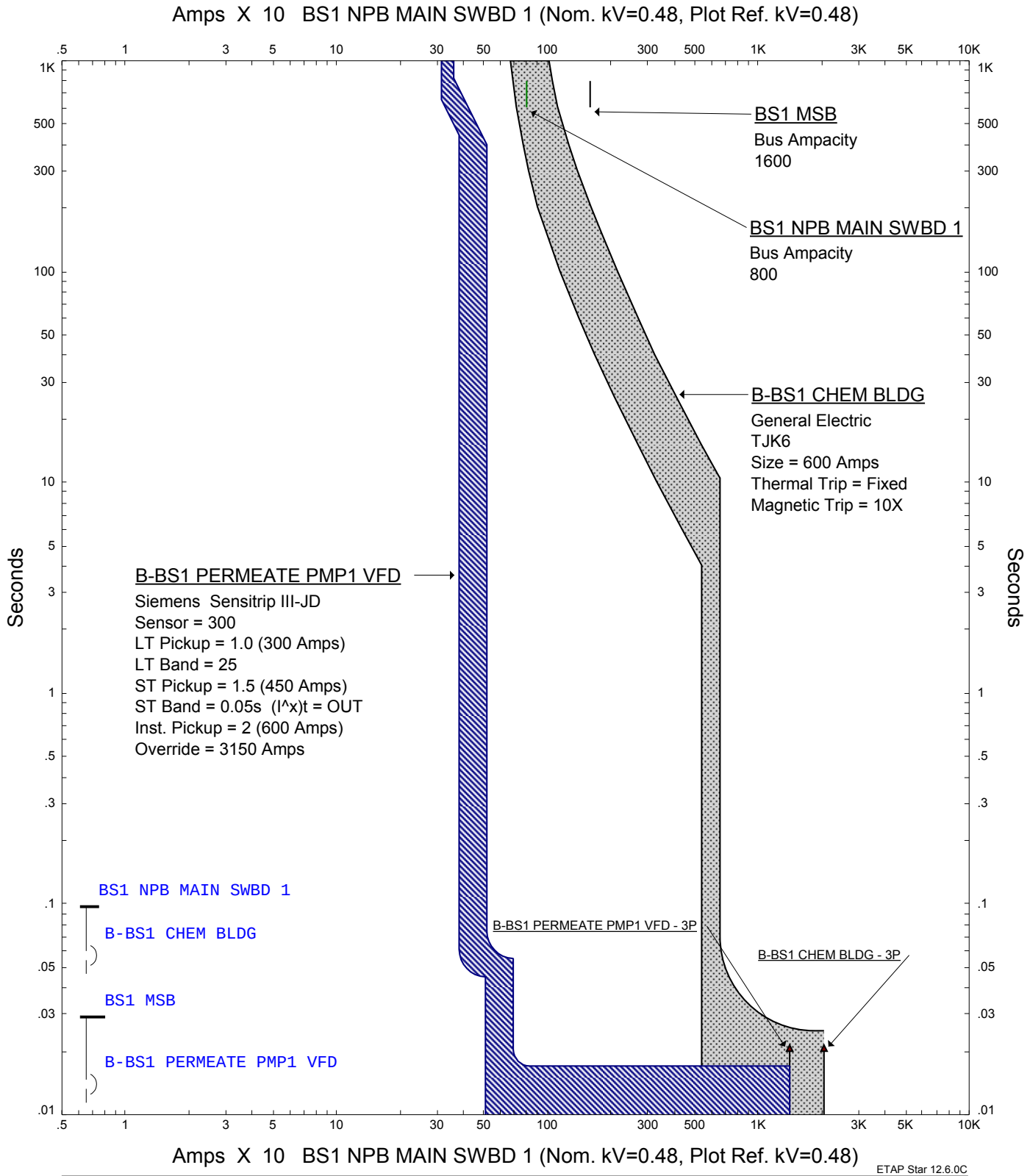


ETAP Star 12.6.0C

TCC 03: BS1 WELL 23 VFD

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB
Filename: C:\ETAP 1260\BlendingStations\BlendingStations.OTI

Date: 07-28-2015
Rev: Base



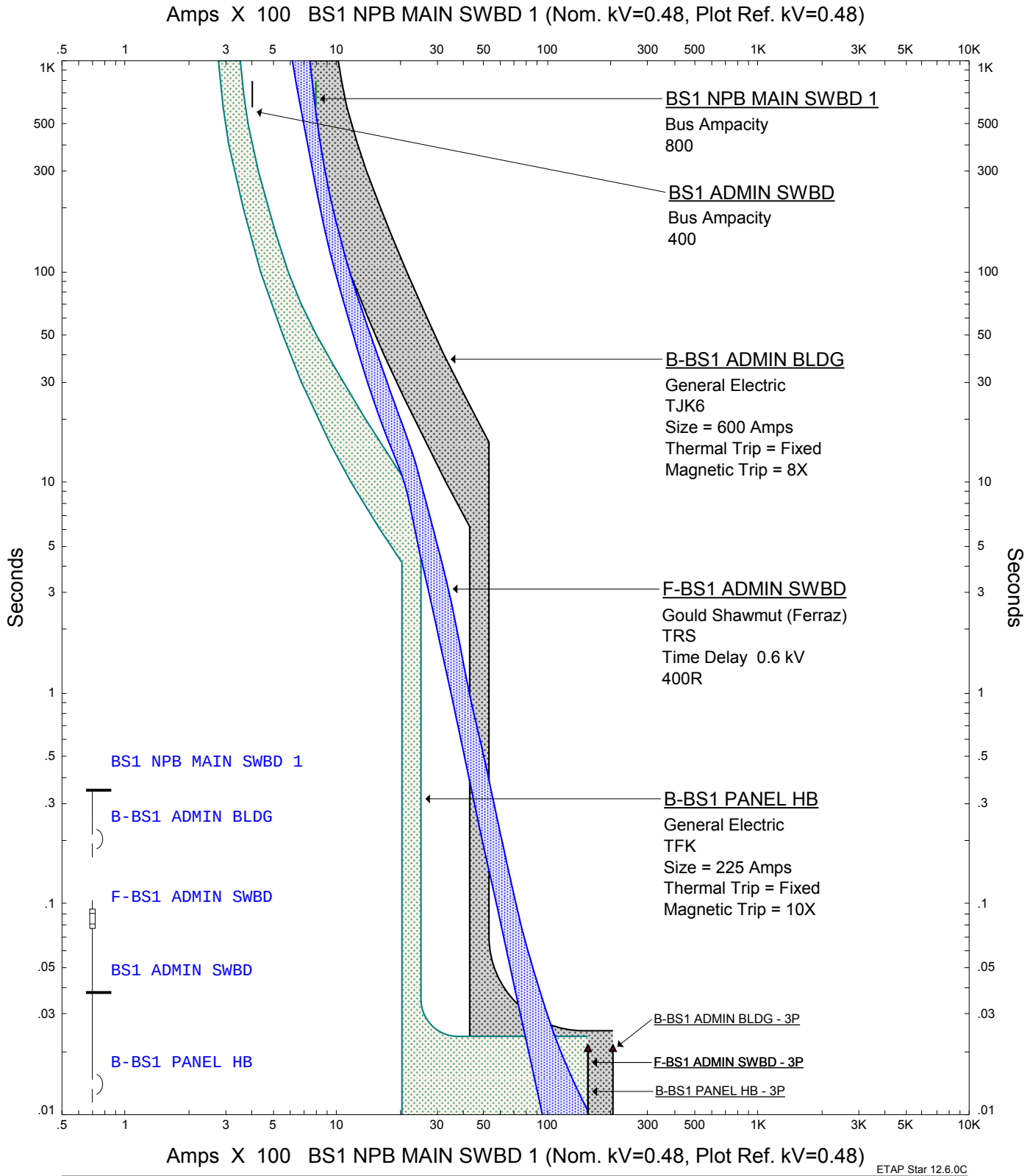
ETAP Star 12.6.0C

TCC 04: BS1 NPB TO MSB

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base
Fault: Phase



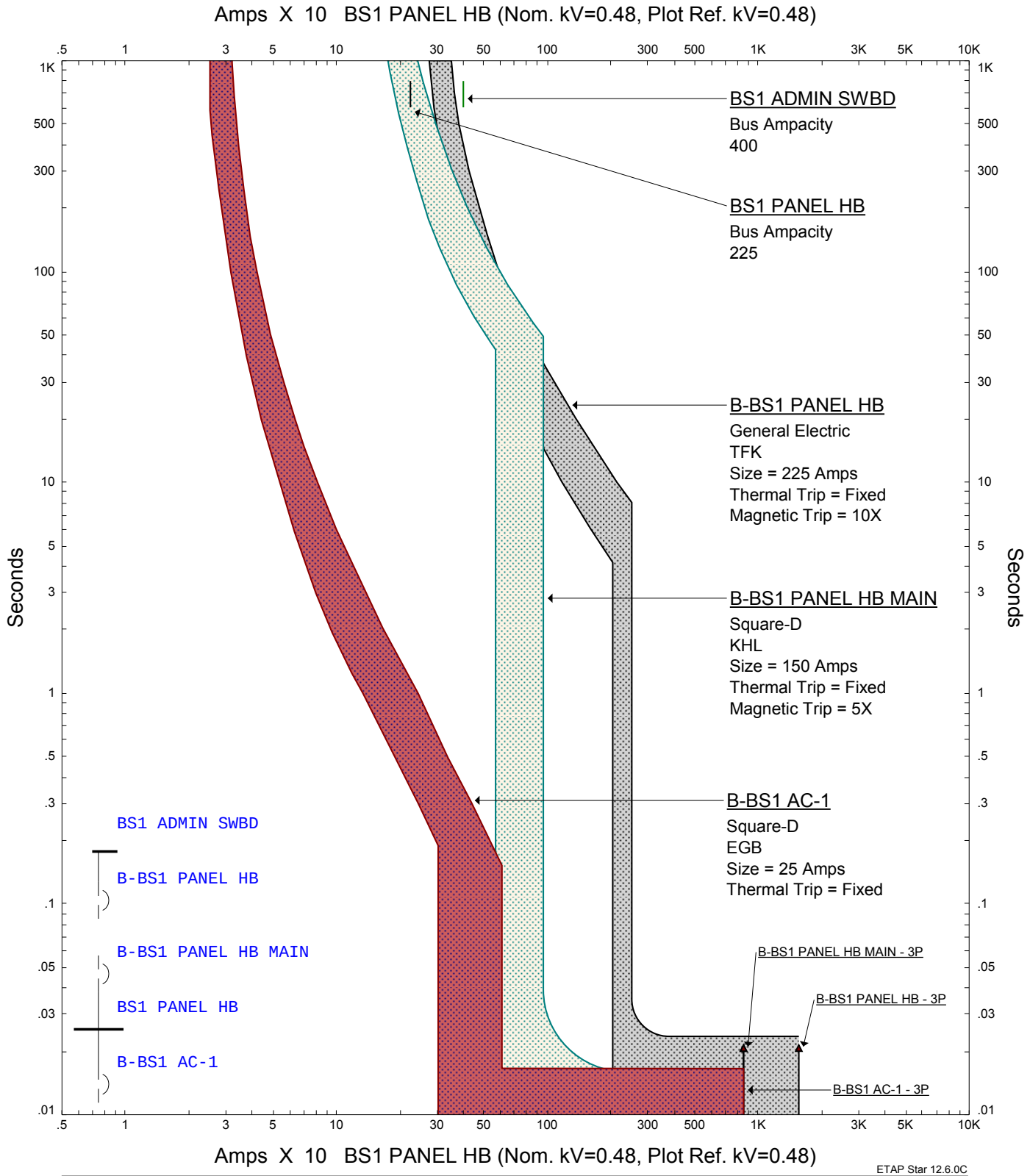
ETAP Star 12.6.0C

TCC 05: BS1 NPB TO ADMIN

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



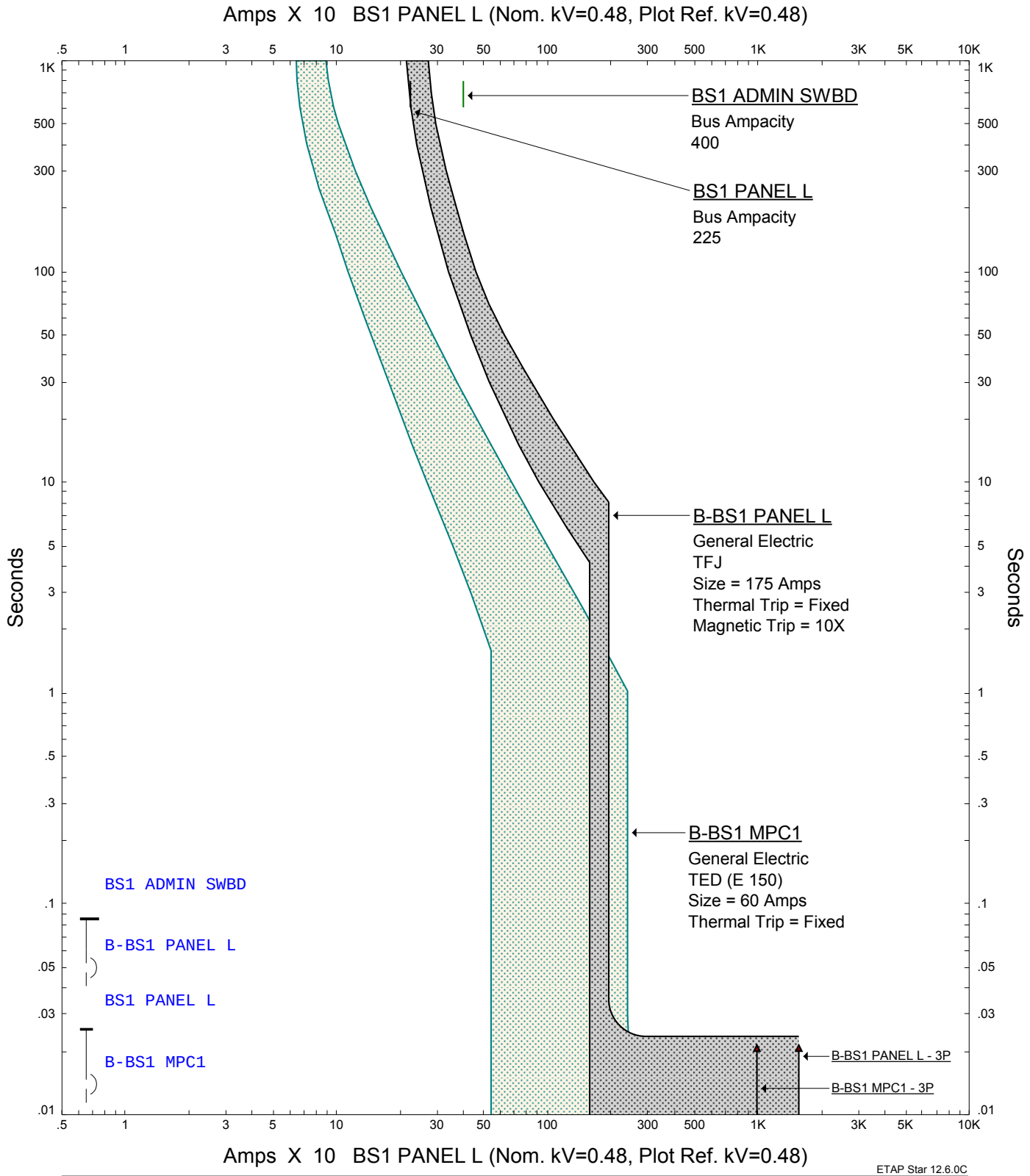
ETAP Star 12.6.0C

TCC 06: BS1 ADMIN TO HB

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



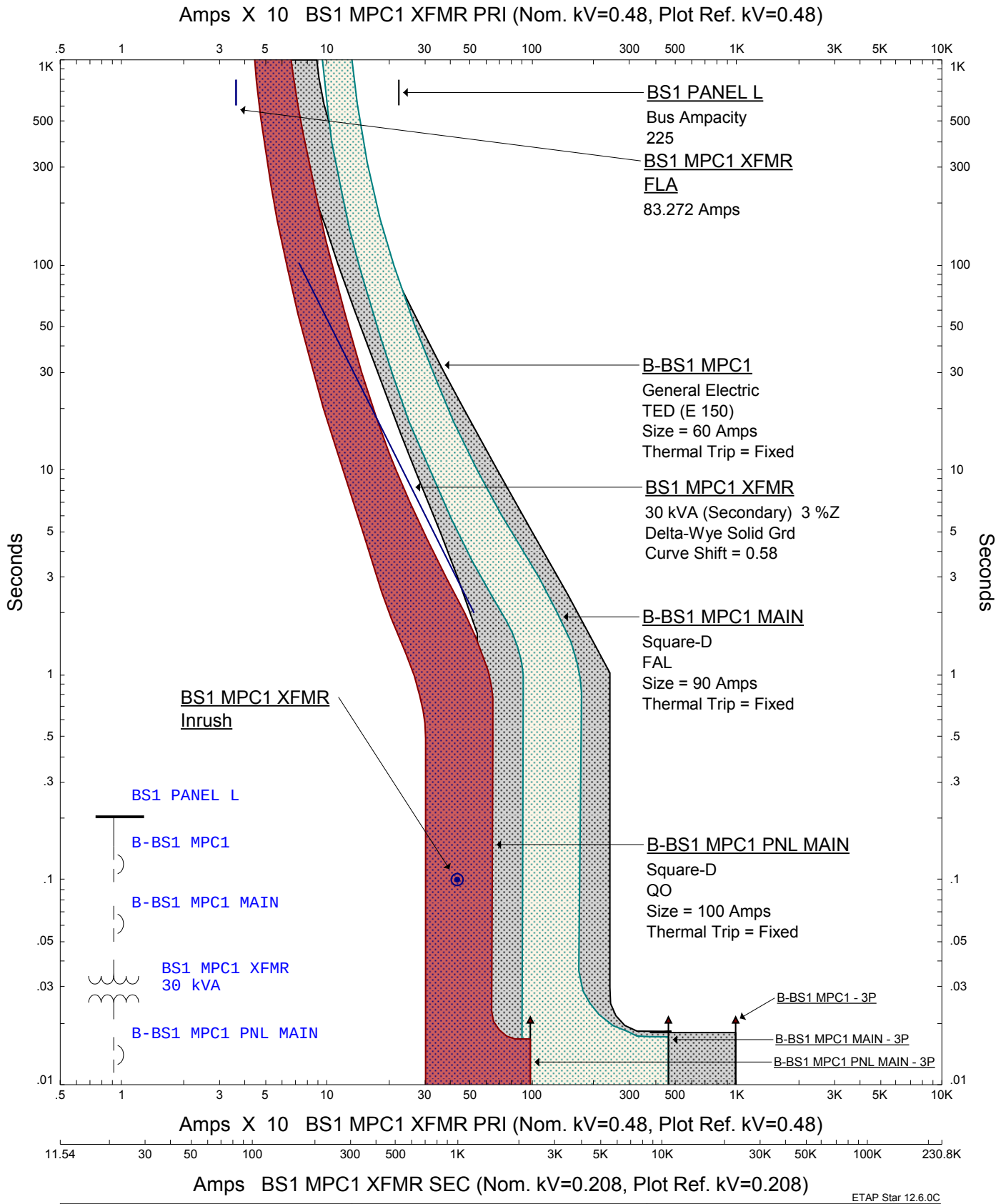
ETAP Star 12.6.0C

TCC 07: BS1 PANEL L

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



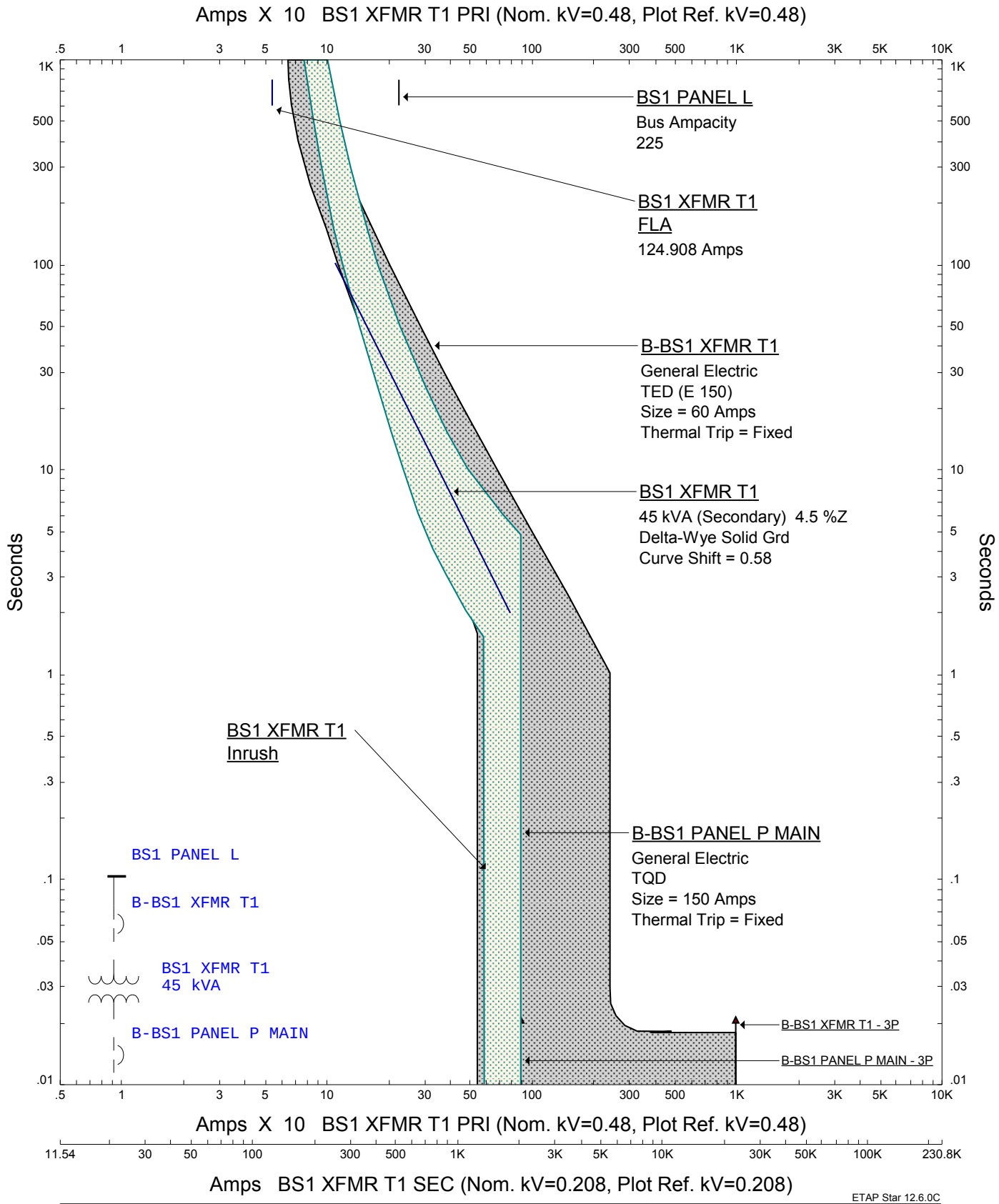
ETAP Star 12.6.0C

TCC 08: BS1 MPC1

carollo
Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



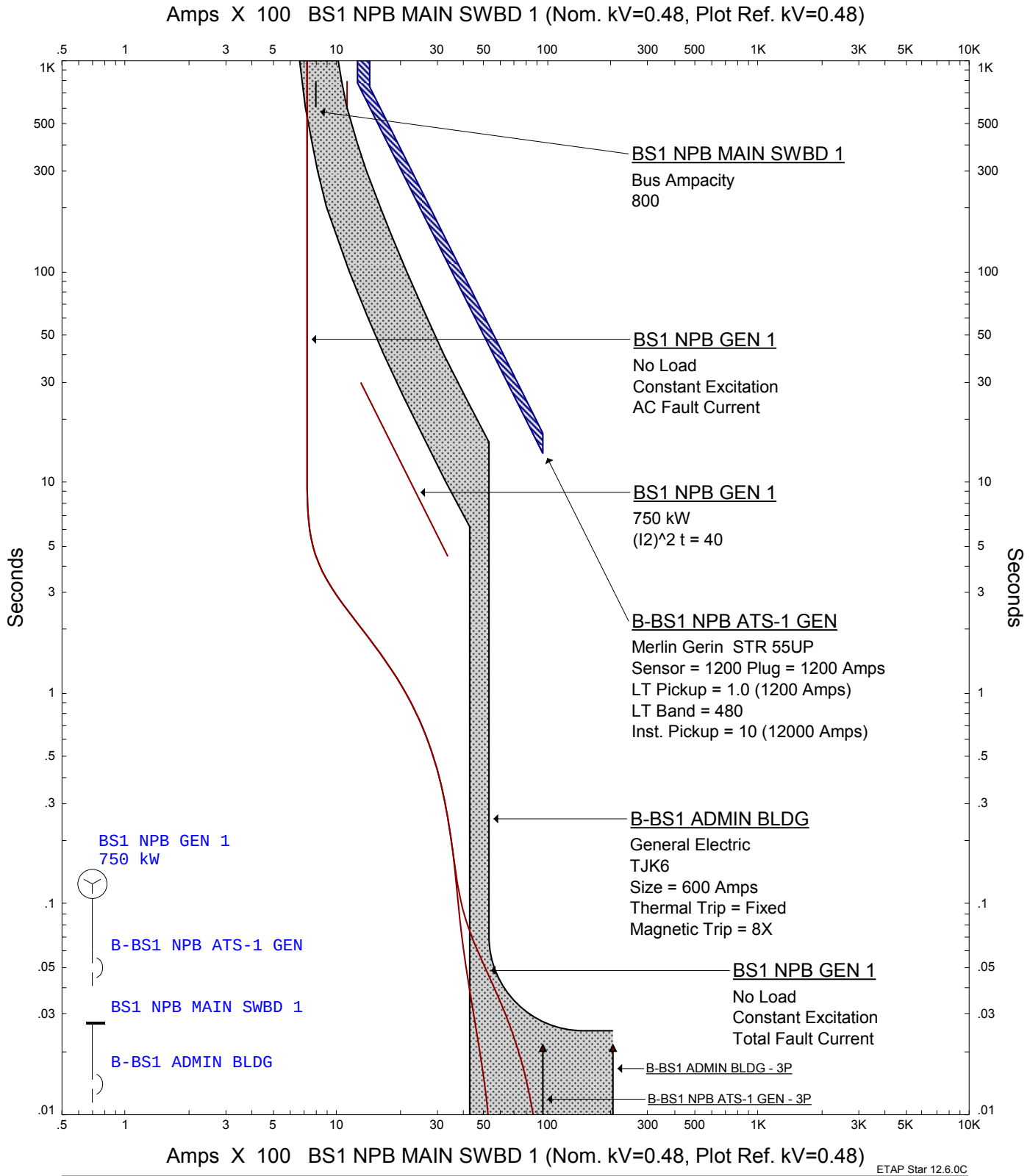
ETAP Star 12.6.0C

TCC 09: BS1 XFMR T1

carollo
Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base

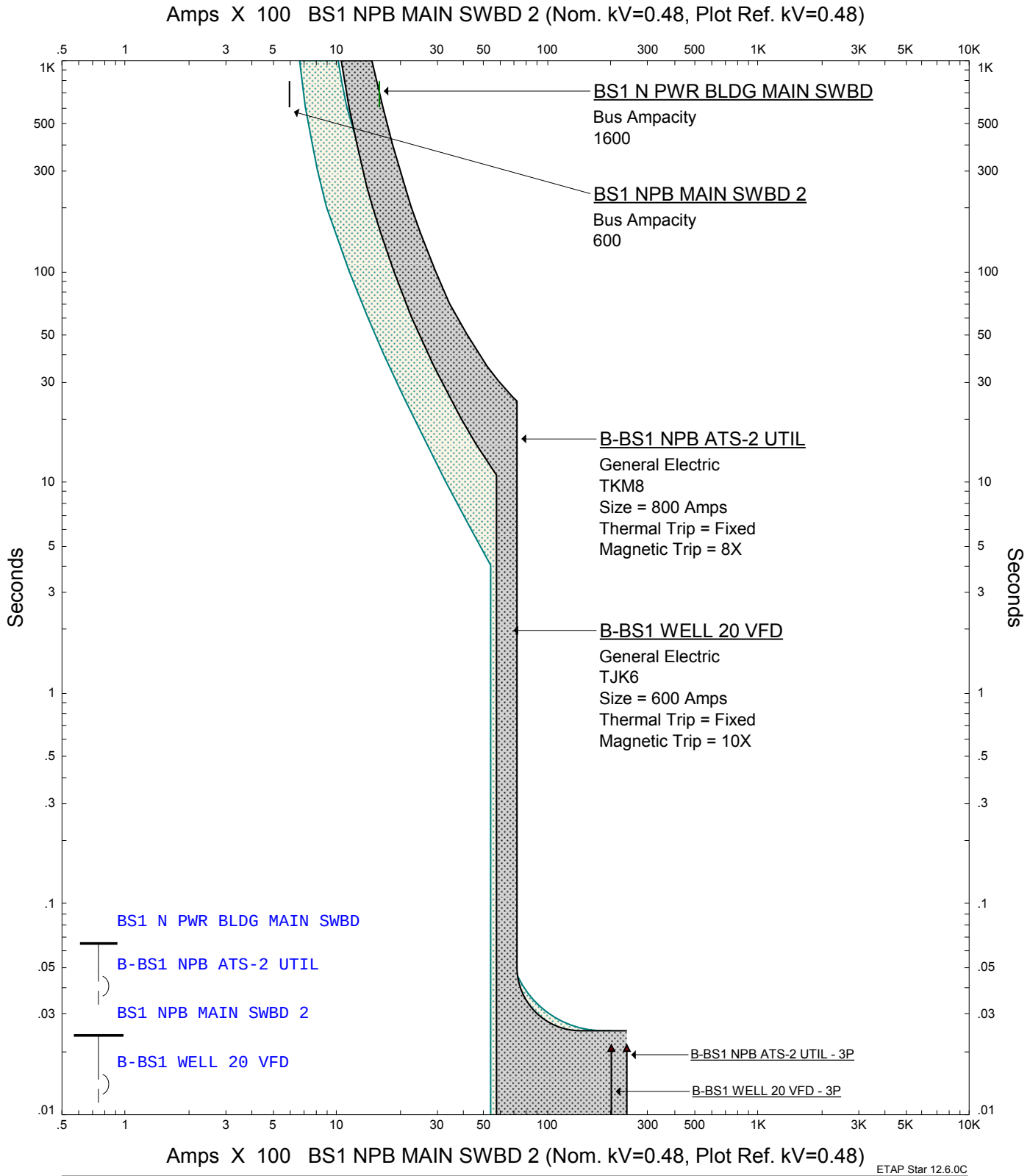


ETAP Star 12.6.0C

TCC 10: BS1 NPB GEN 1

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



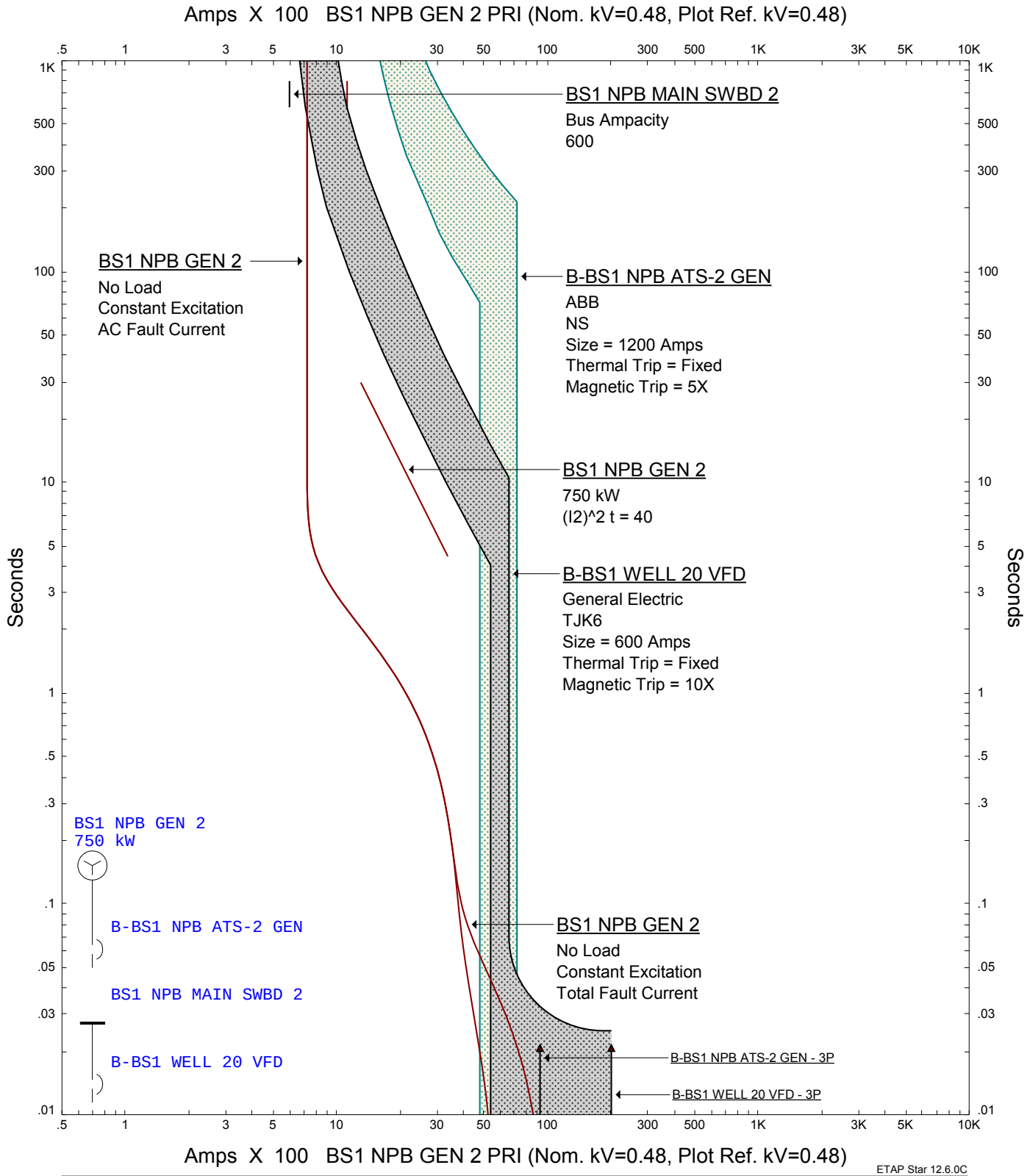
ETAP Star 12.6.0C

TCC 11: BS1 NPB SWBD 2

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



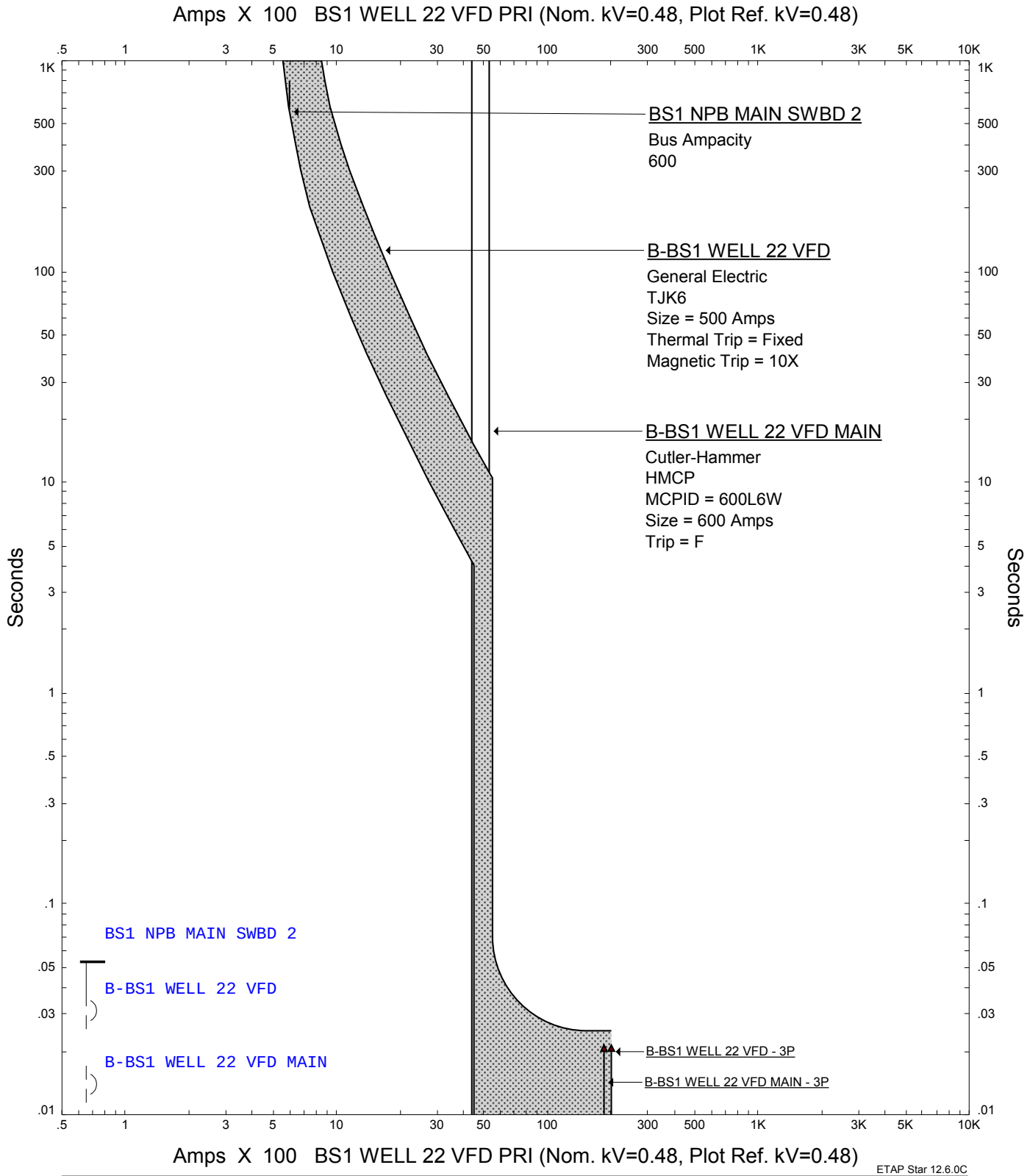
ETAP Star 12.6.0C

TCC 12: BS1 NPB GEN 2

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



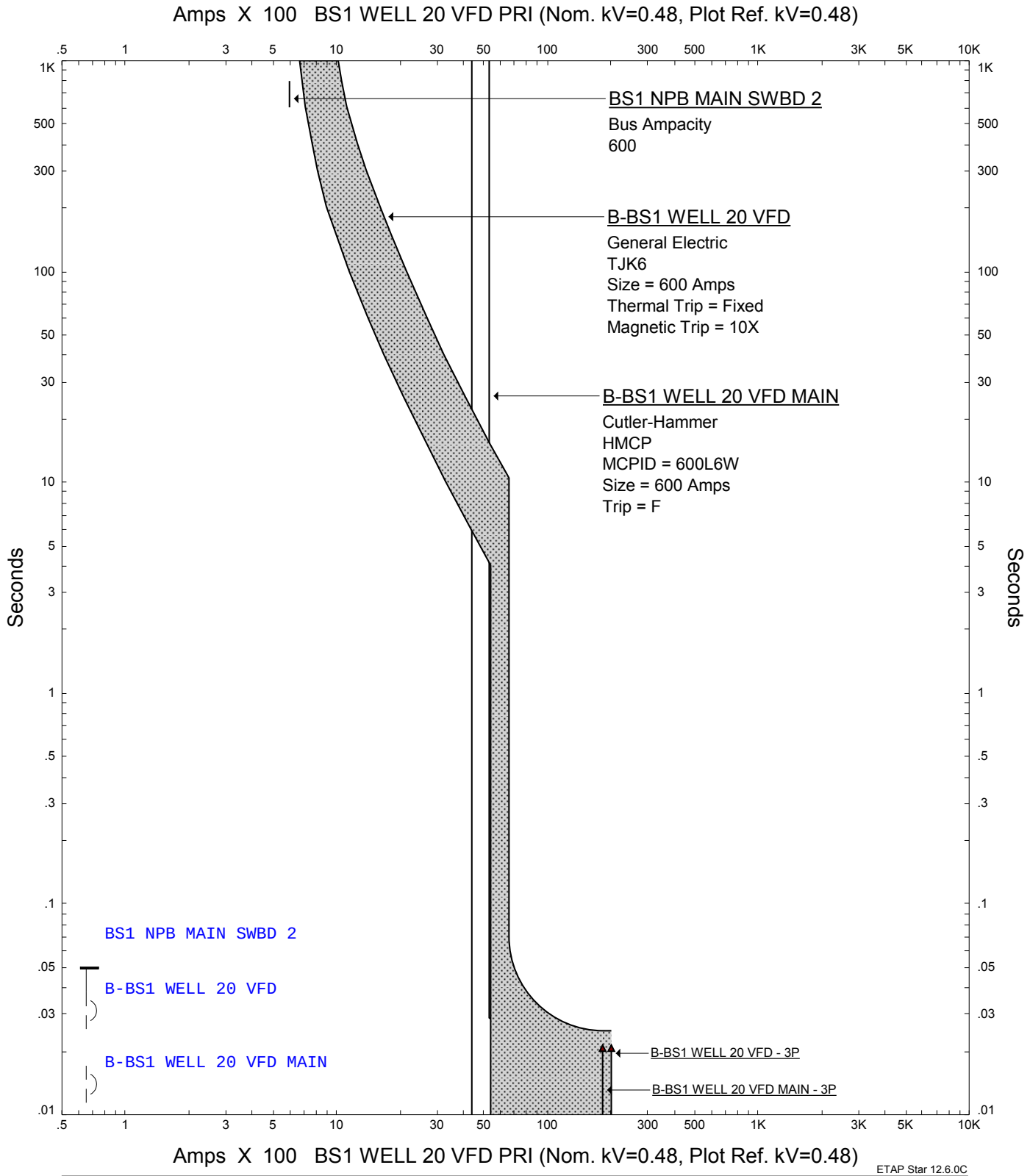
ETAP Star 12.6.0C

TCC 13: BS1 WELL 22 VFD

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



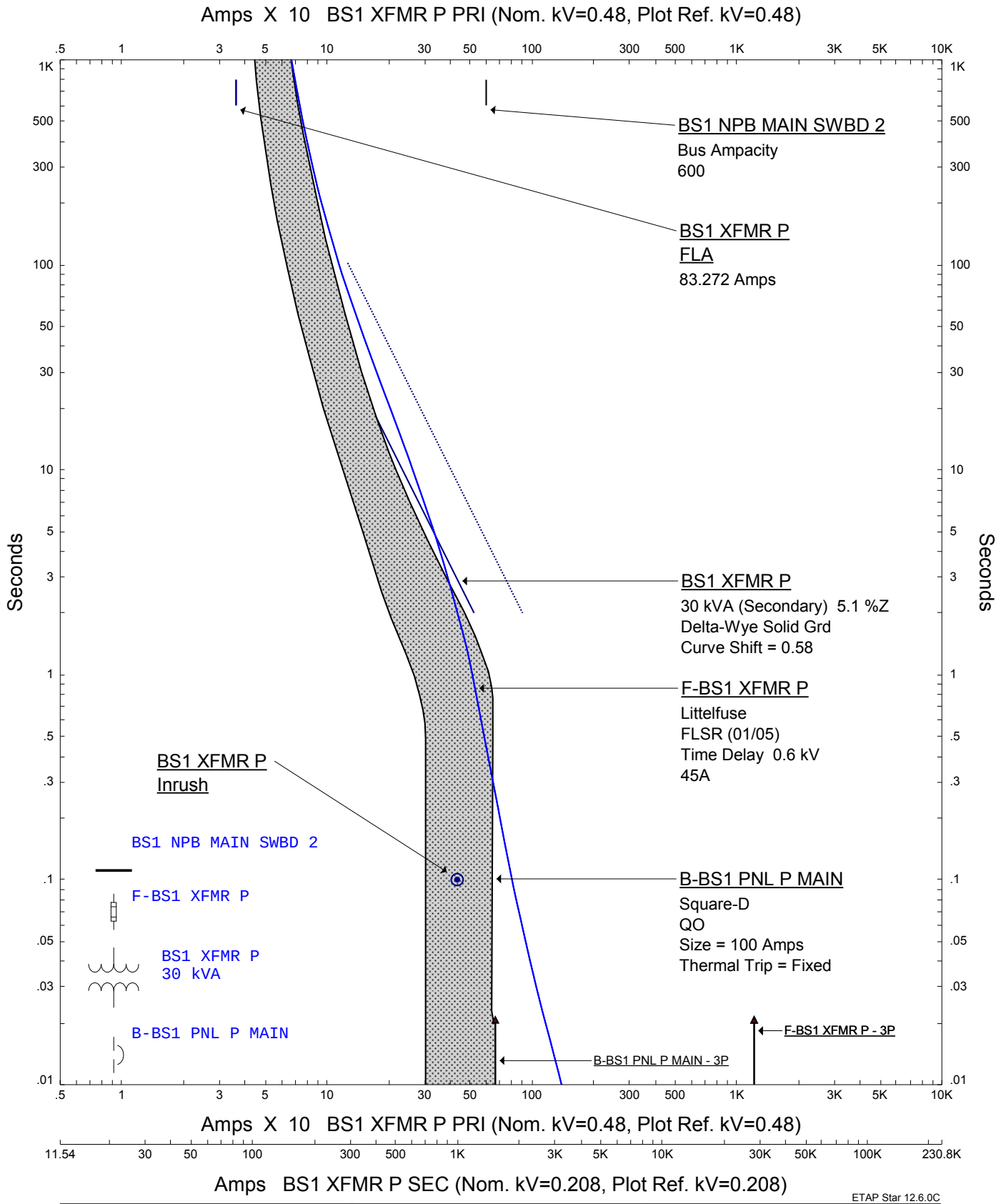
ETAP Star 12.6.0C

TCC 14: BS1 WELL 20 VFD

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



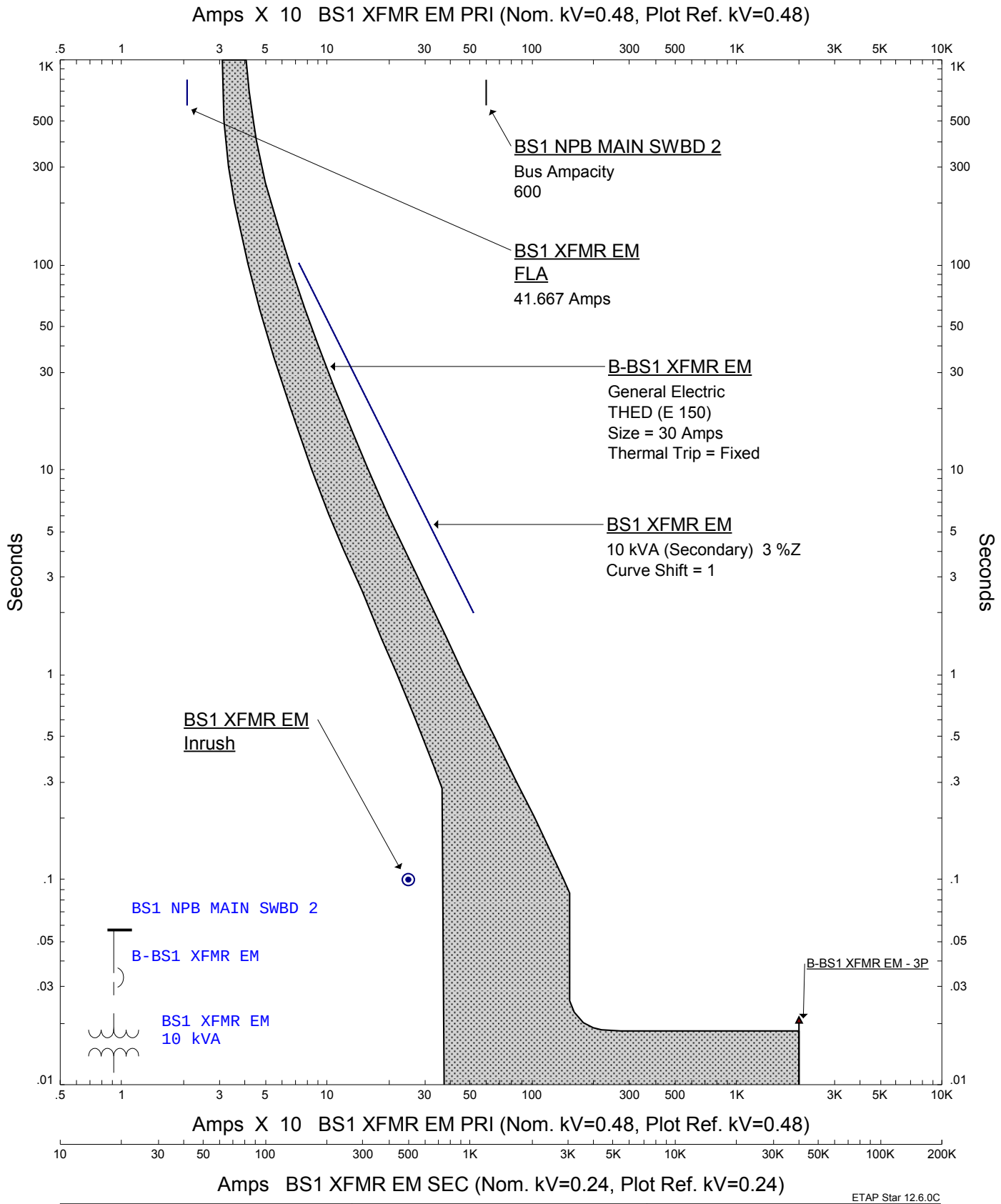
ETAP Star 12.6.0C

TCC 15: BS1 XFMR P

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



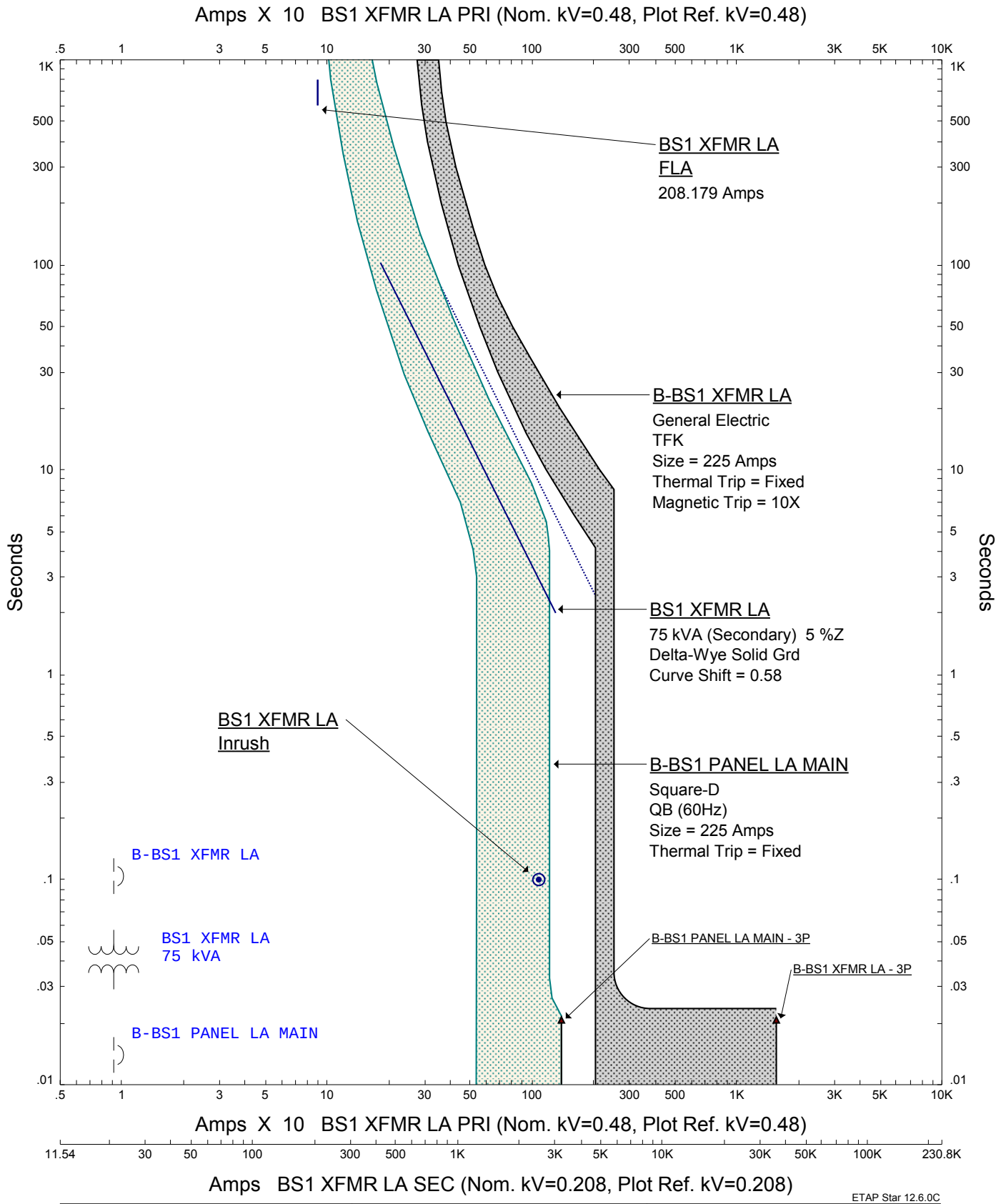
ETAP Star 12.6.0C

TCC 16: BS1 XFMR EM

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



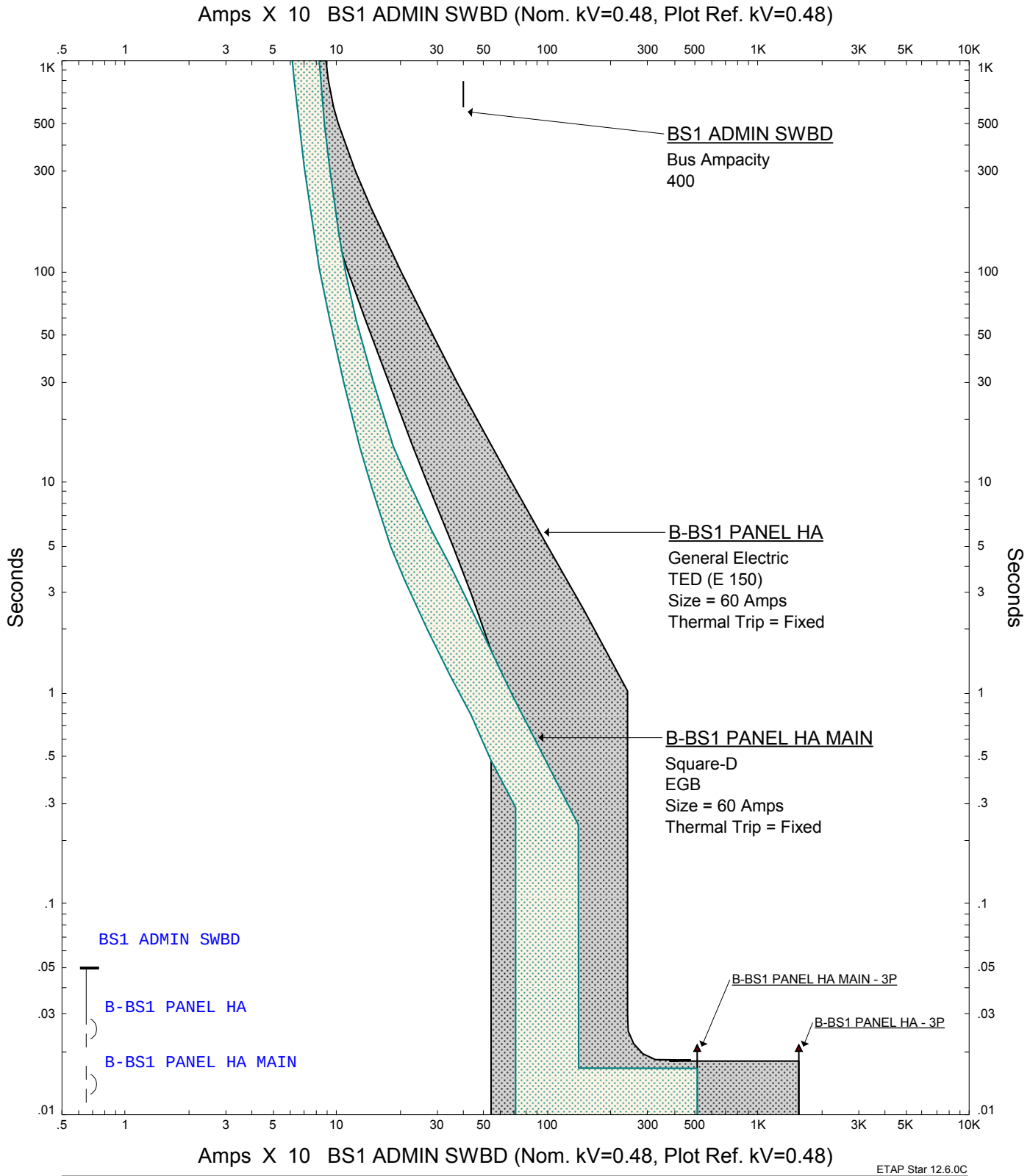
ETAP Star 12.6.0C

TCC 17: BS1 XFMR LA

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



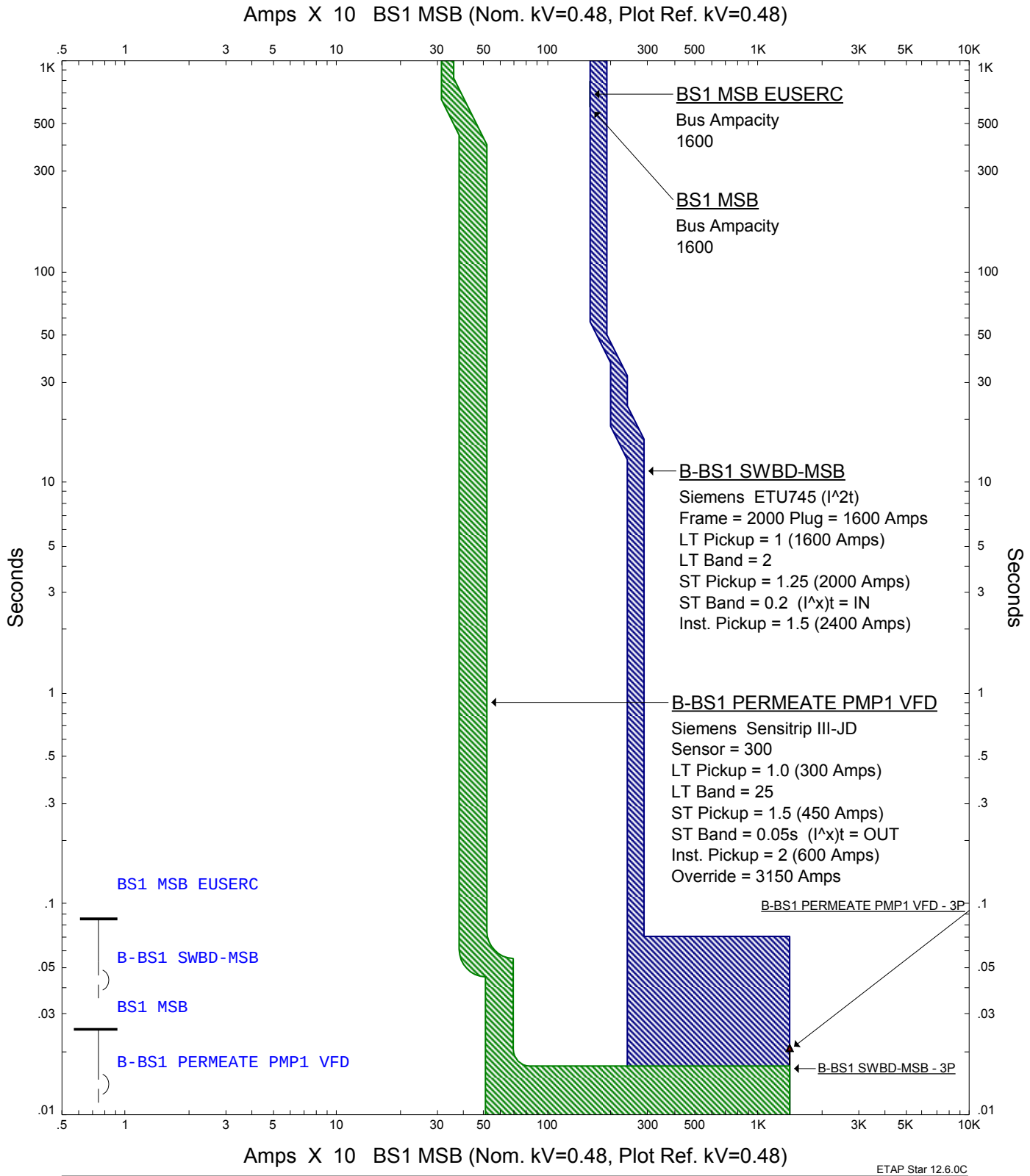
ETAP Star 12.6.0C

TCC 18: BS1 PANEL HA

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



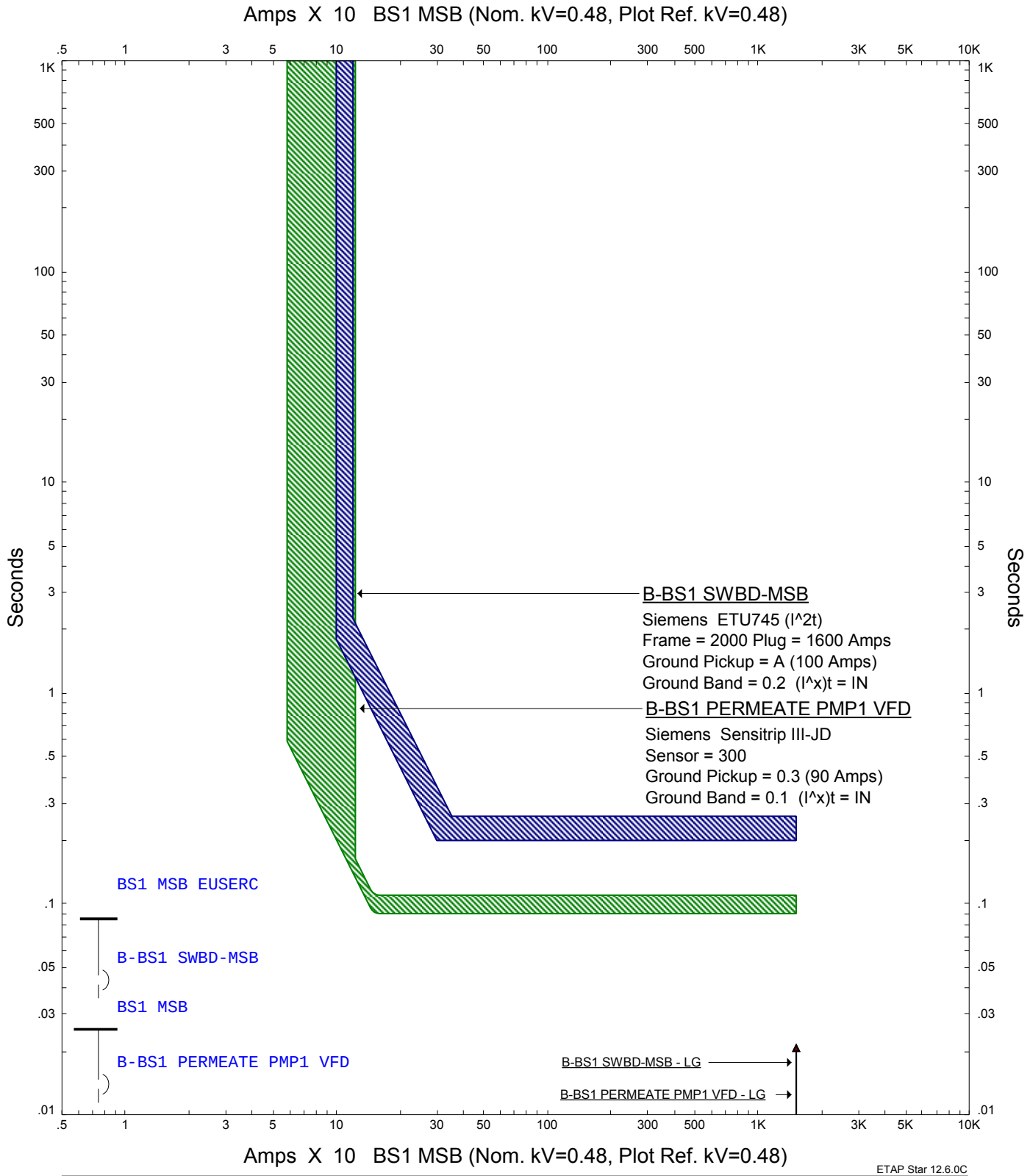
ETAP Star 12.6.0C

TCC 19: BS1 MSB

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base
Fault: Phase



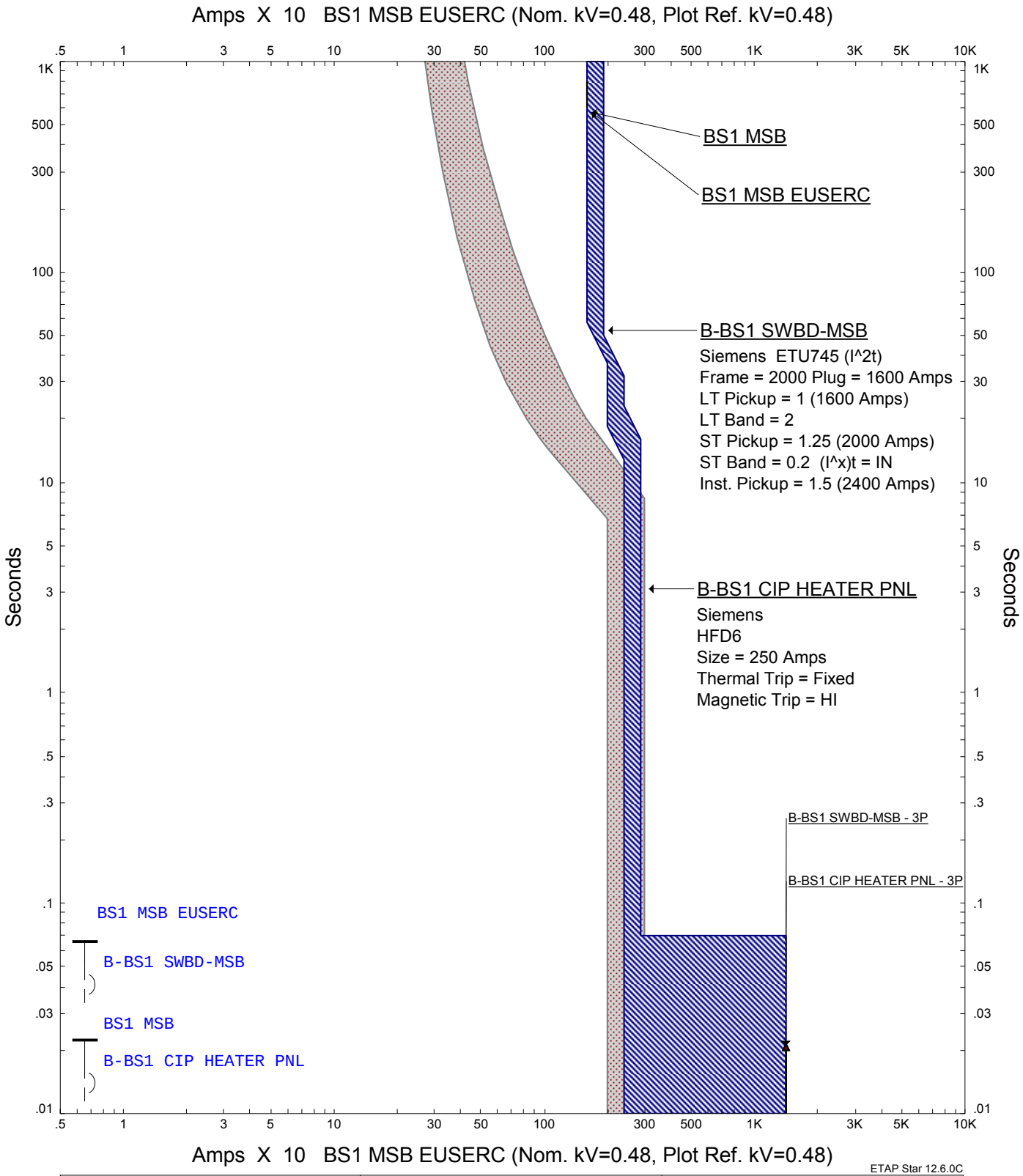
ETAP Star 12.6.0C

TCC 19: BS1 MSB

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base
Fault: Ground



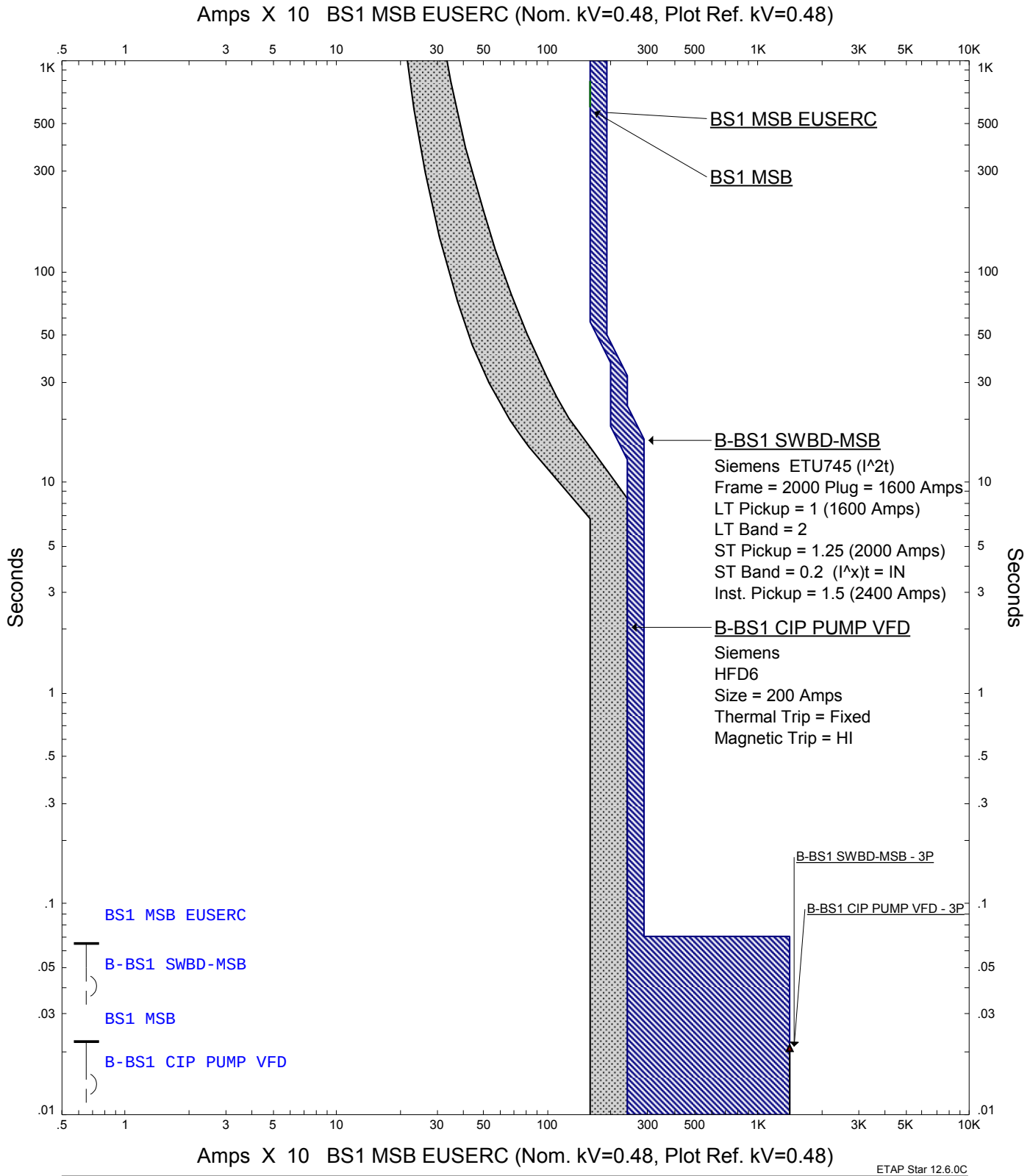
ETAP Star 12.6.0C

TCC 19A:BS1 MSB/CIP HTR

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 08-04-2015
Rev: Base



Amps X 10 BS1 MSB EUSERC (Nom. kV=0.48, Plot Ref. kV=0.48)

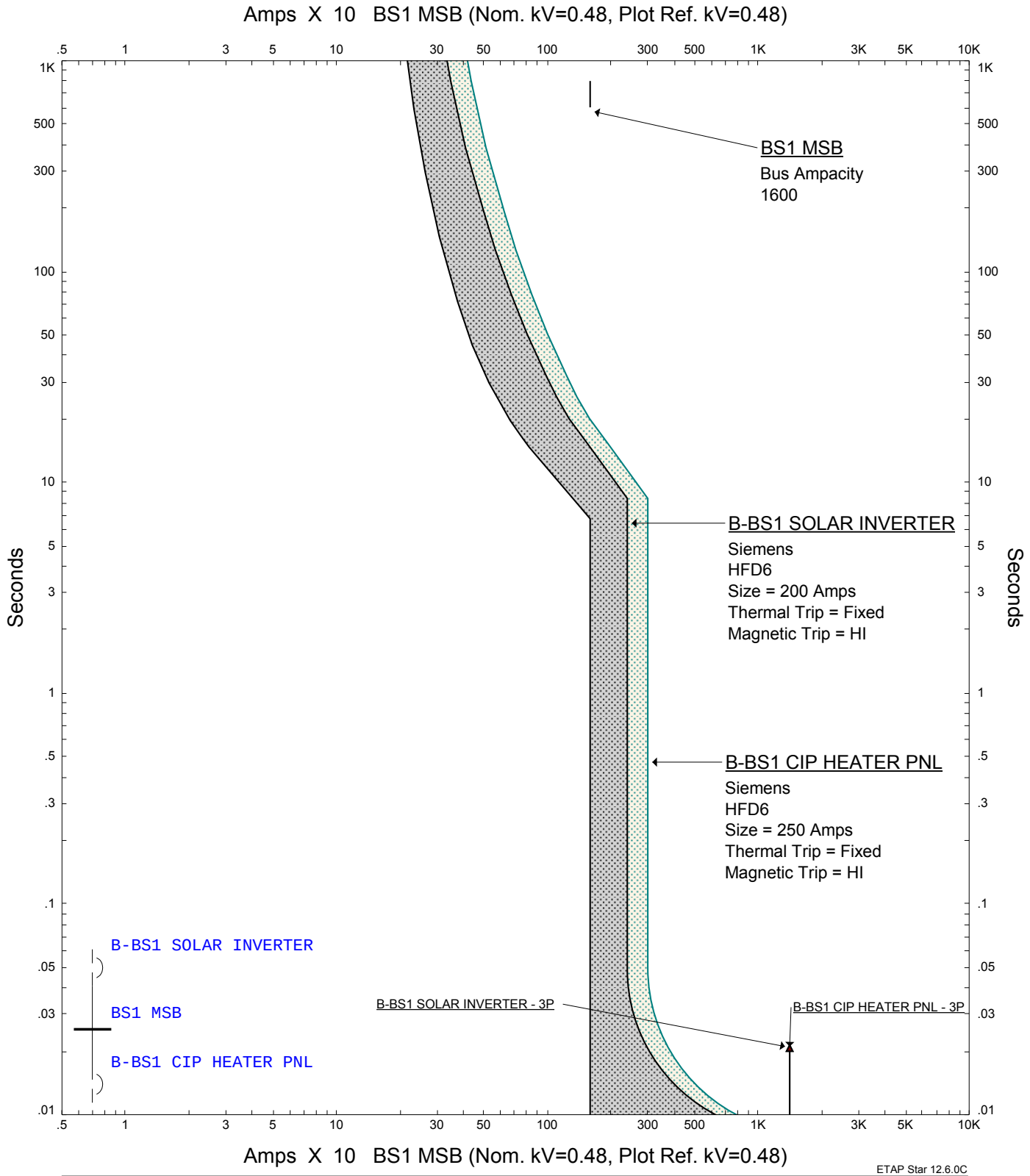
ETAP Star 12.6.0C

TCC 19B: BS1 MSB/CIP PMP

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 08-04-2015
Rev: Base



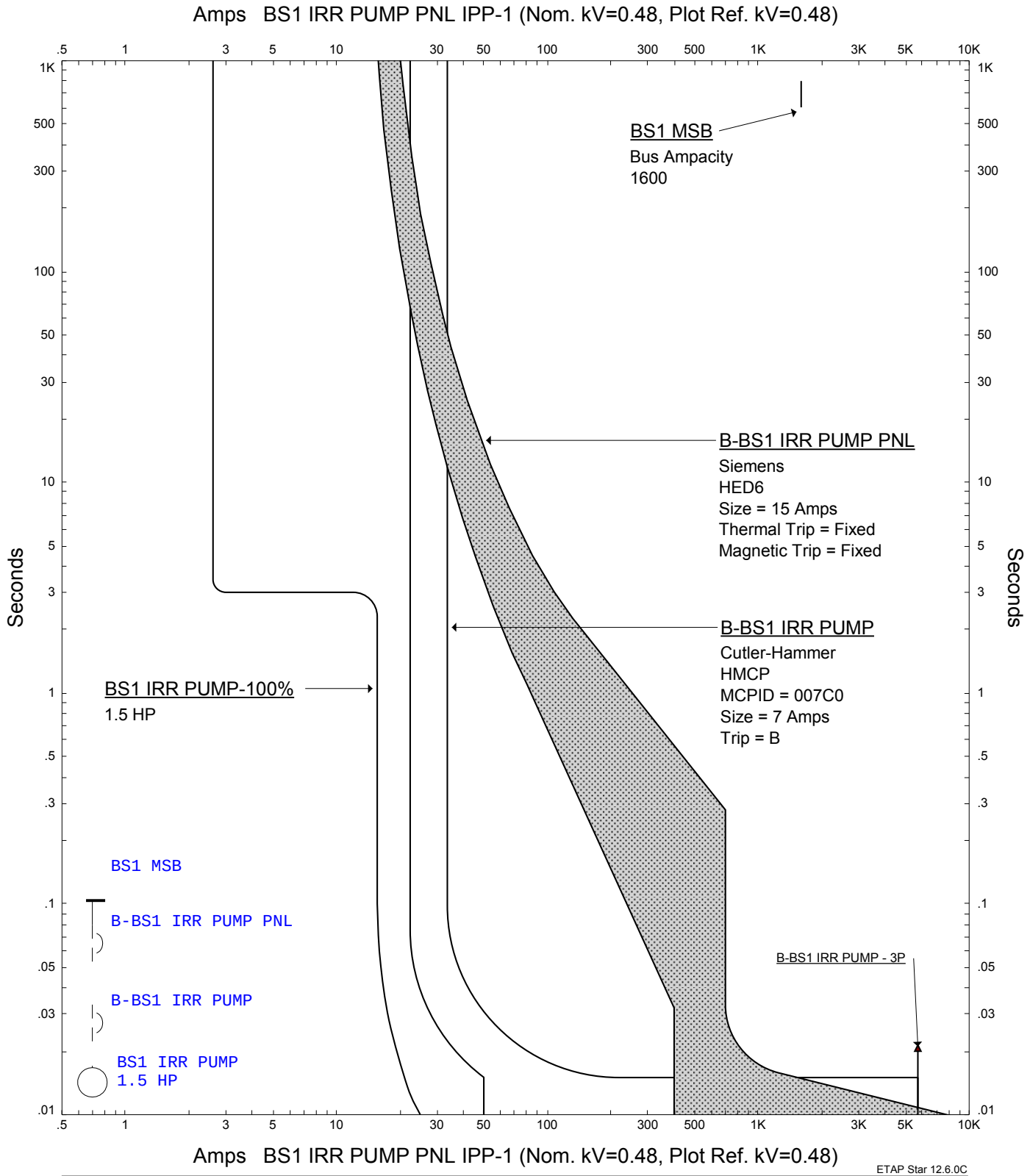
ETAP Star 12.6.0C

TCC 20: BS1 MSB SOLAR

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



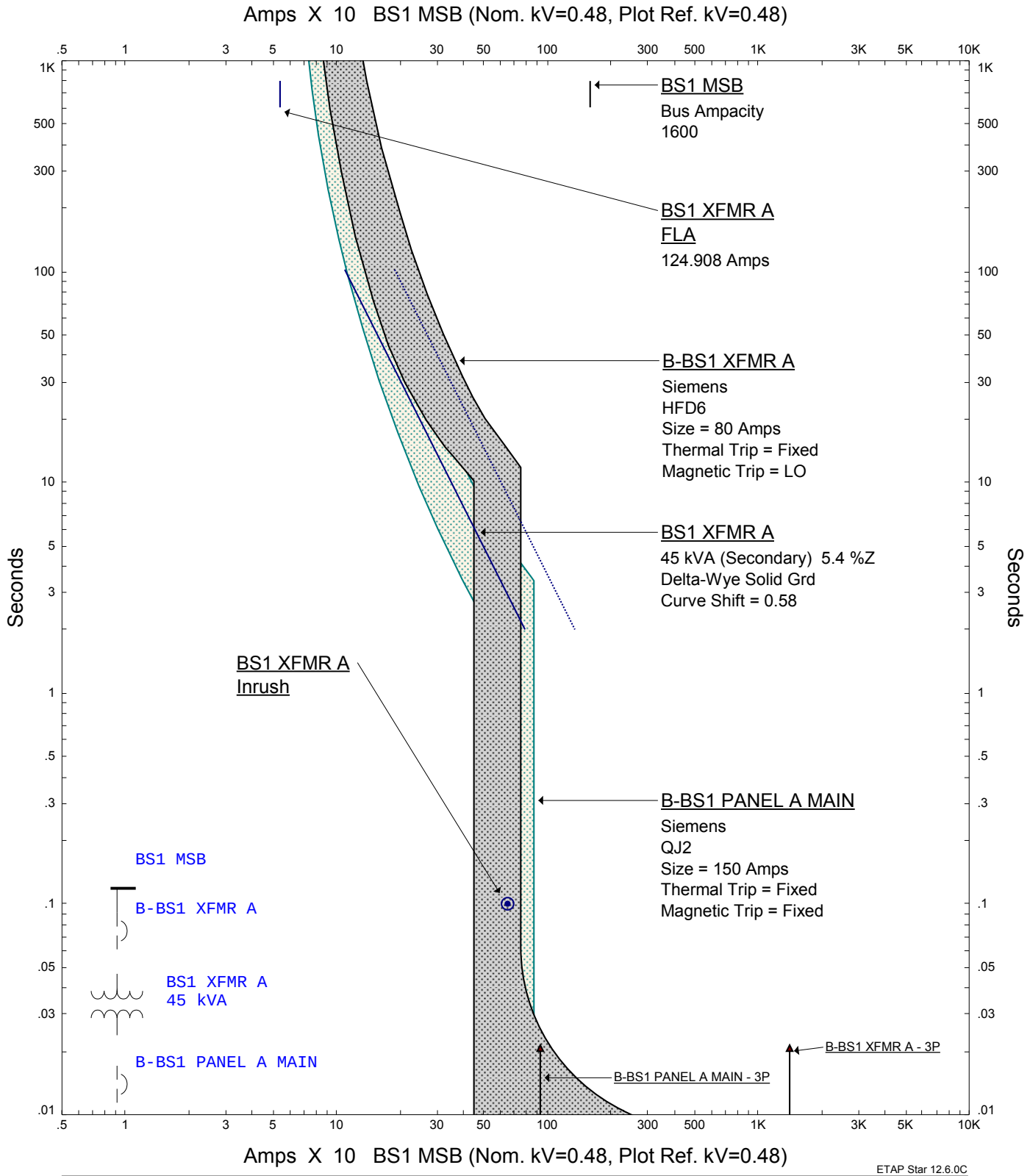
ETAP Star 12.6.0C

TCC 21: BS1 IRR PMP PNL

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base

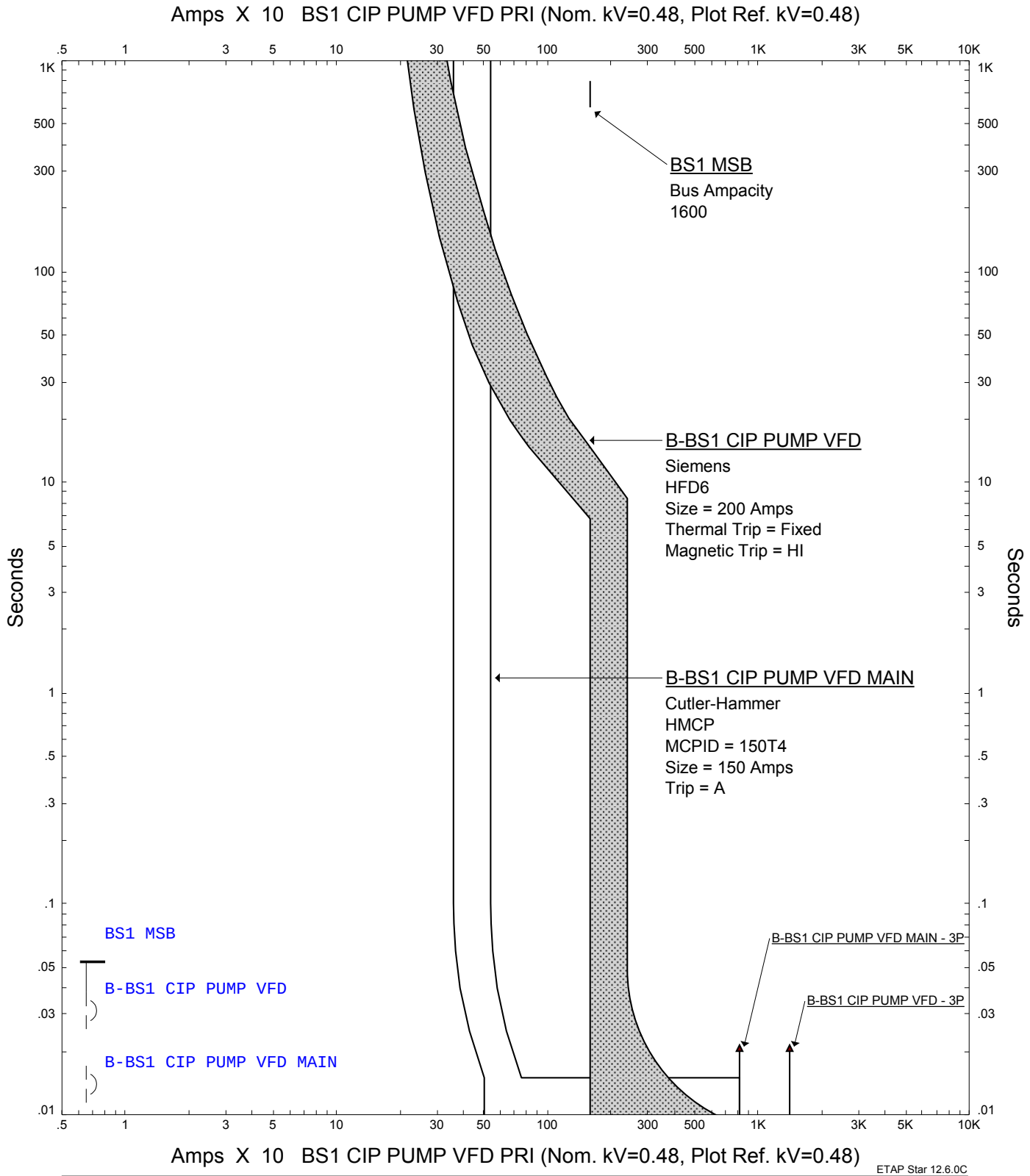


ETAP Star 12.6.0C

TCC 22: BS1 XFMR A

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



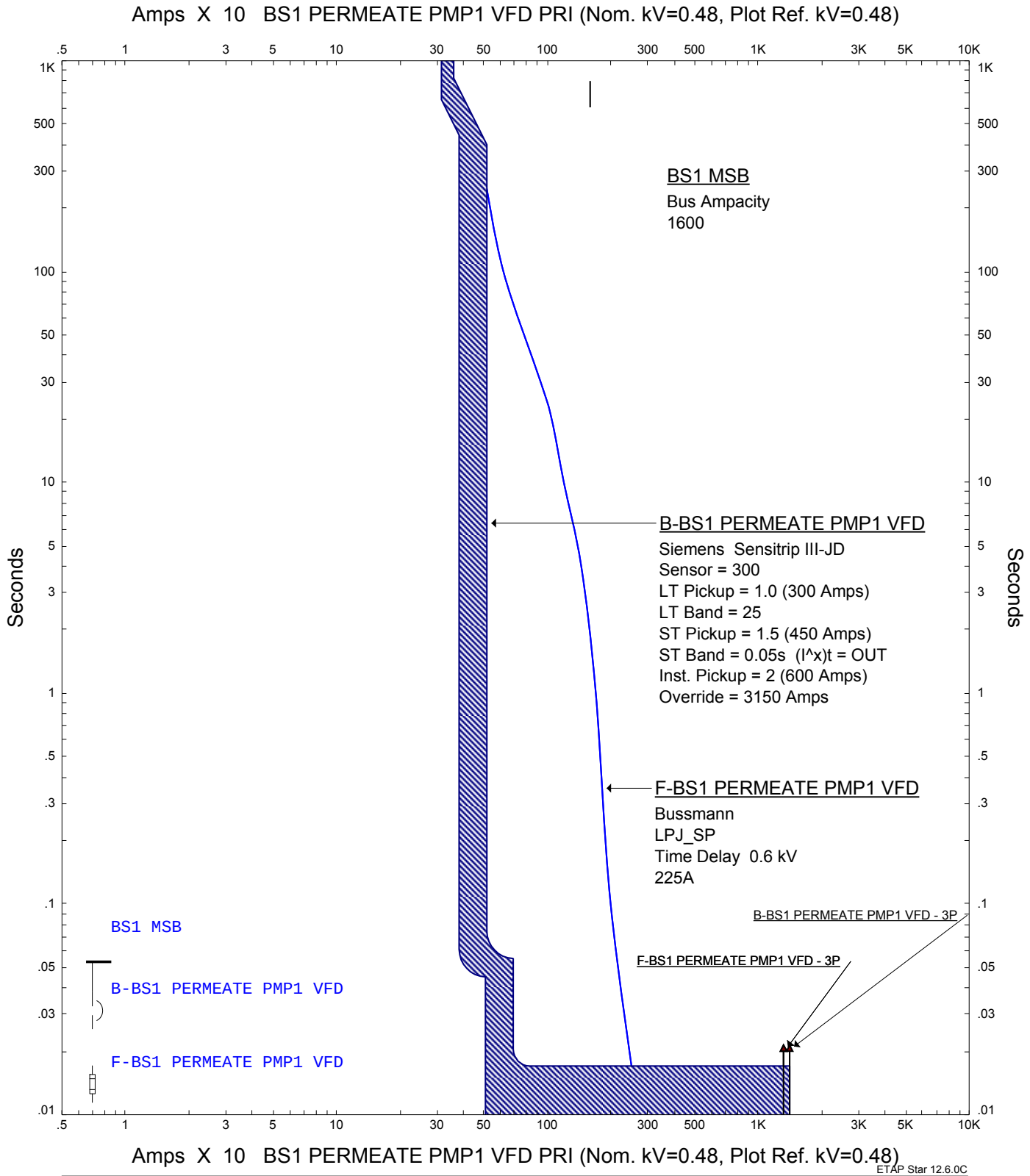
ETAP Star 12.6.0C

TCC 23: BS1 CIP PMP VFD

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



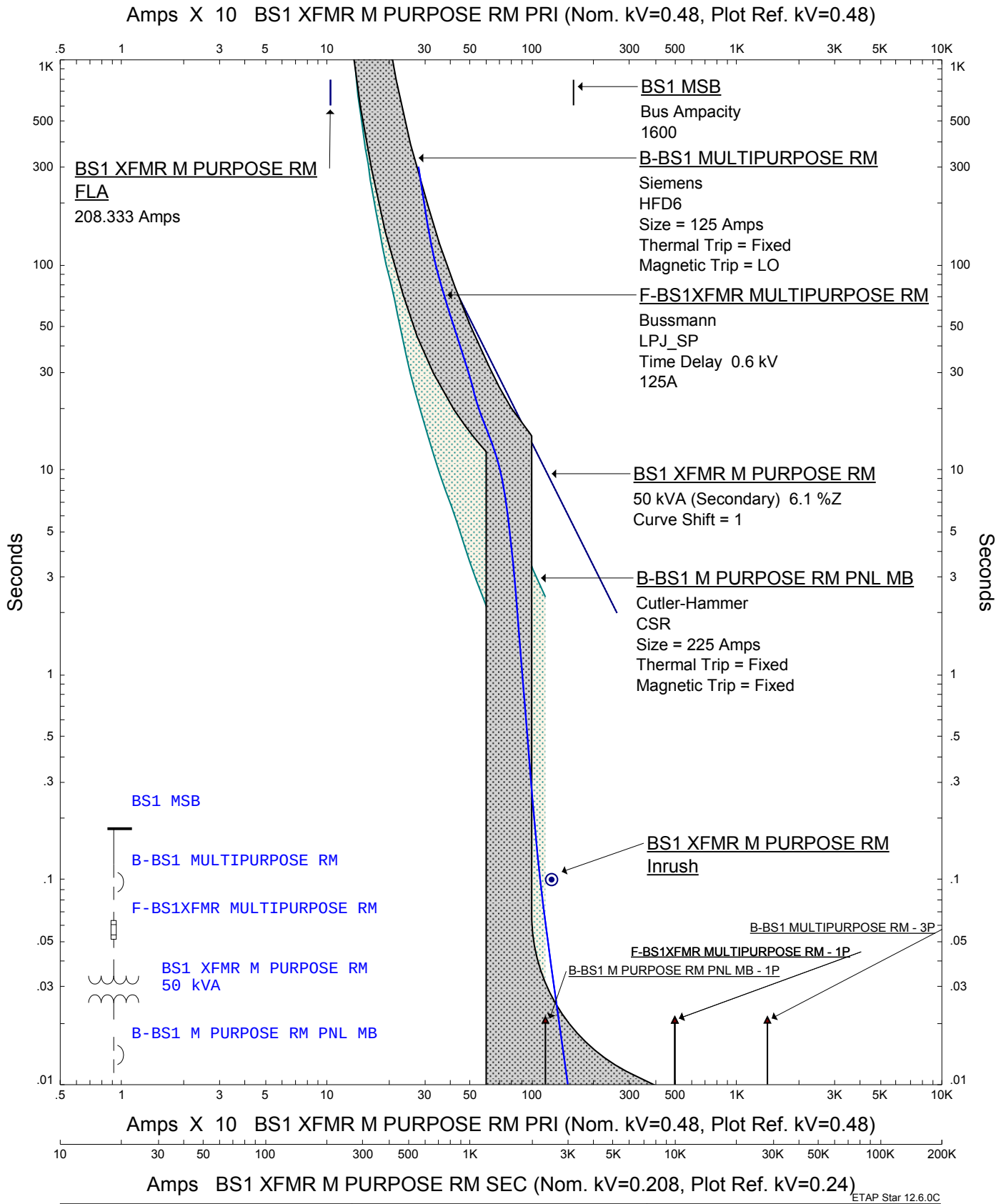
ETAP Star 12.6.0C

TCC 24: BS1 PERM PMP1 VFD

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base
Fault: Phase



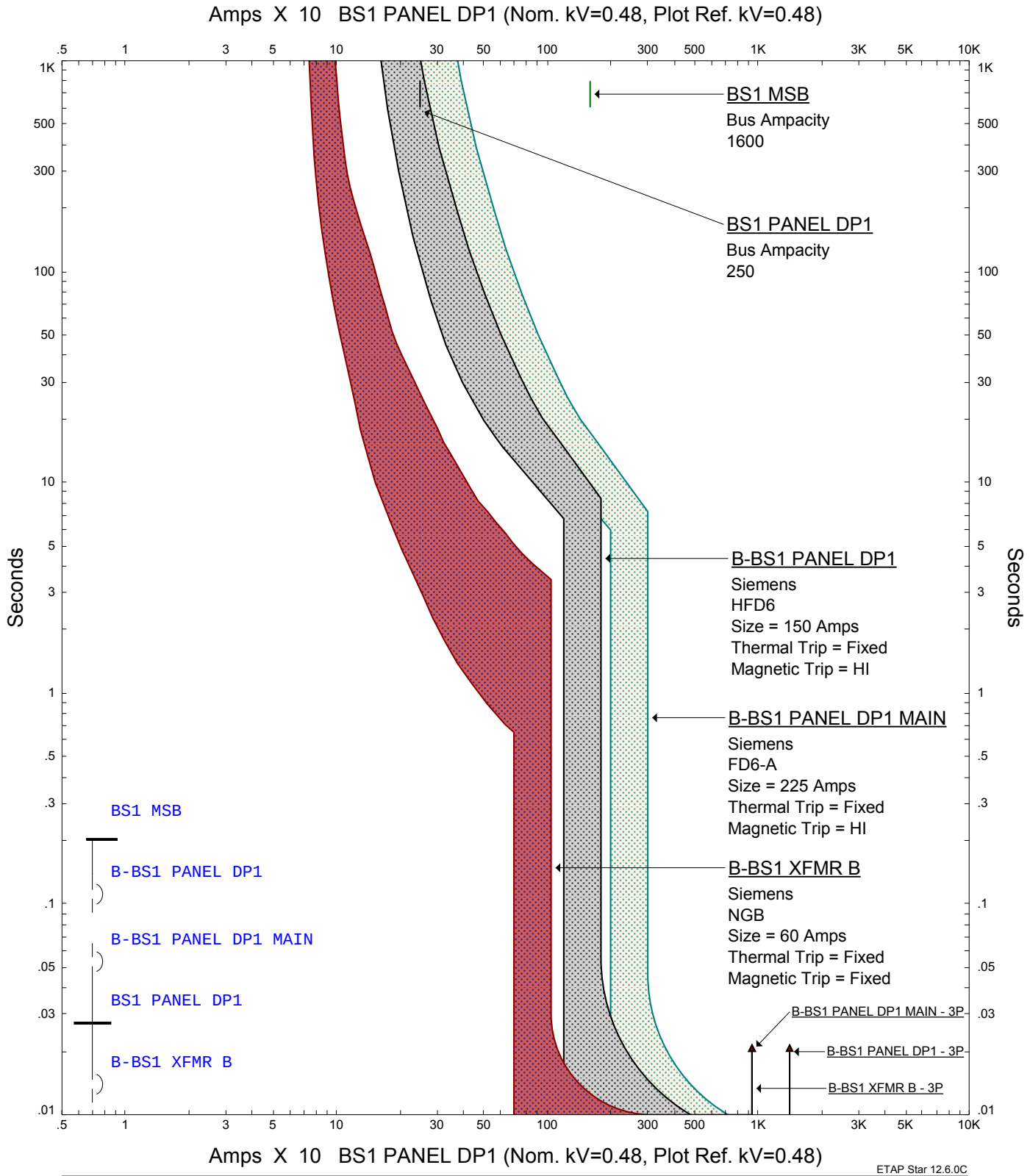
ETAP Star 12.6.0C

TCC 25: BS1 MP RM XFMR

carollo
Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



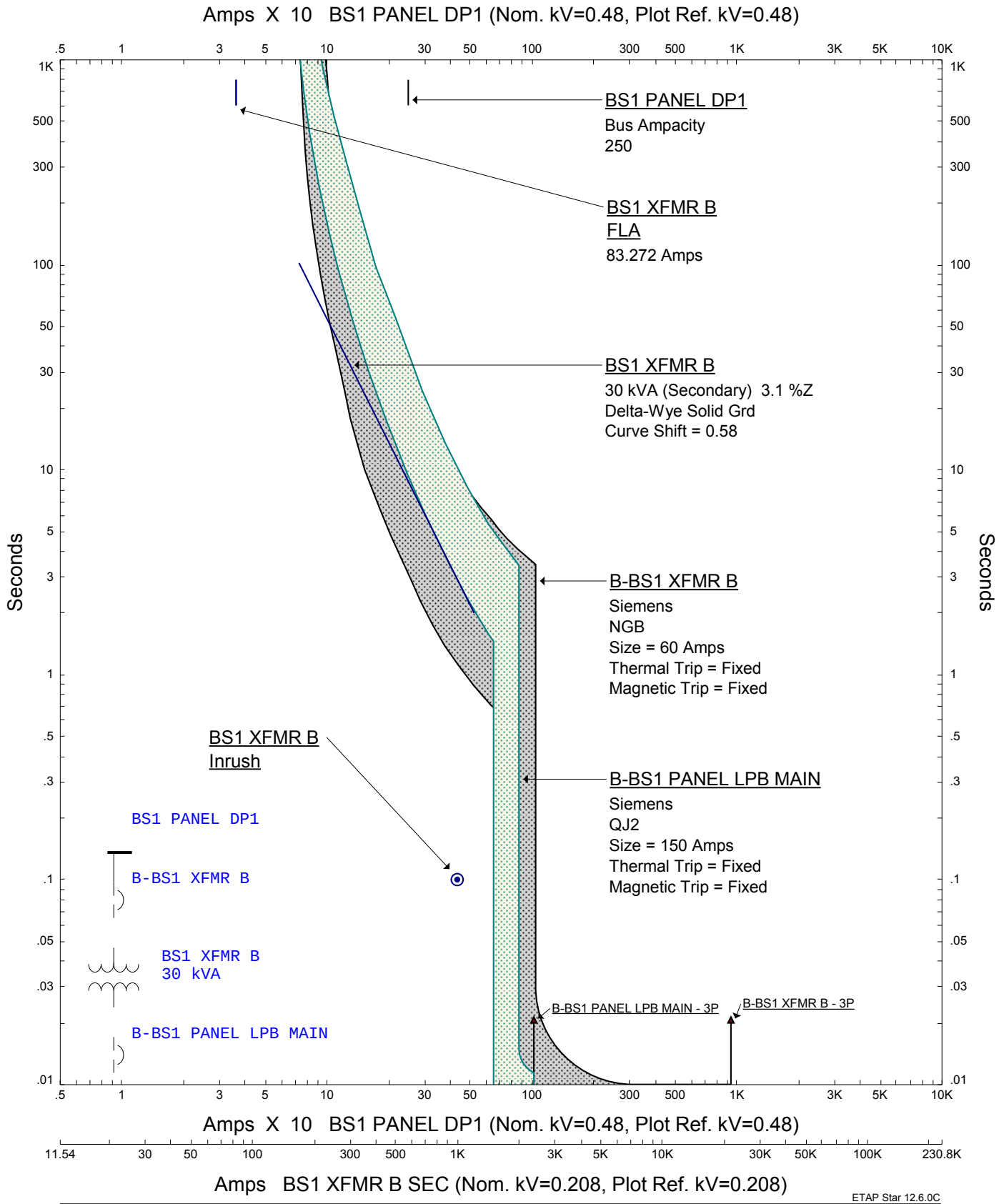
ETAP Star 12.6.0C

TCC 26: BS1 PANEL DP1

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



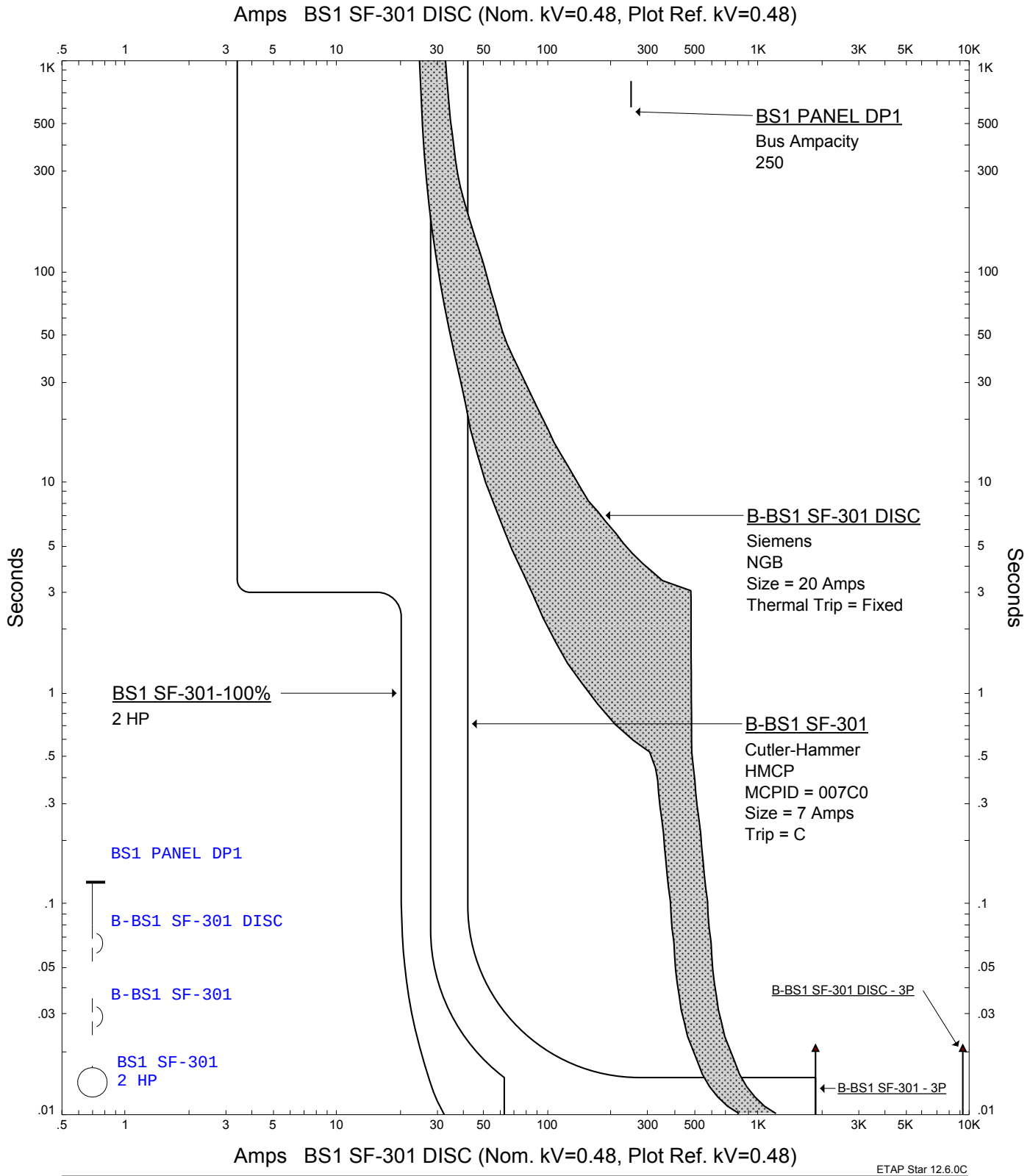
ETAP Star 12.6.0C

TCC 27: BS1 XFMR B

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



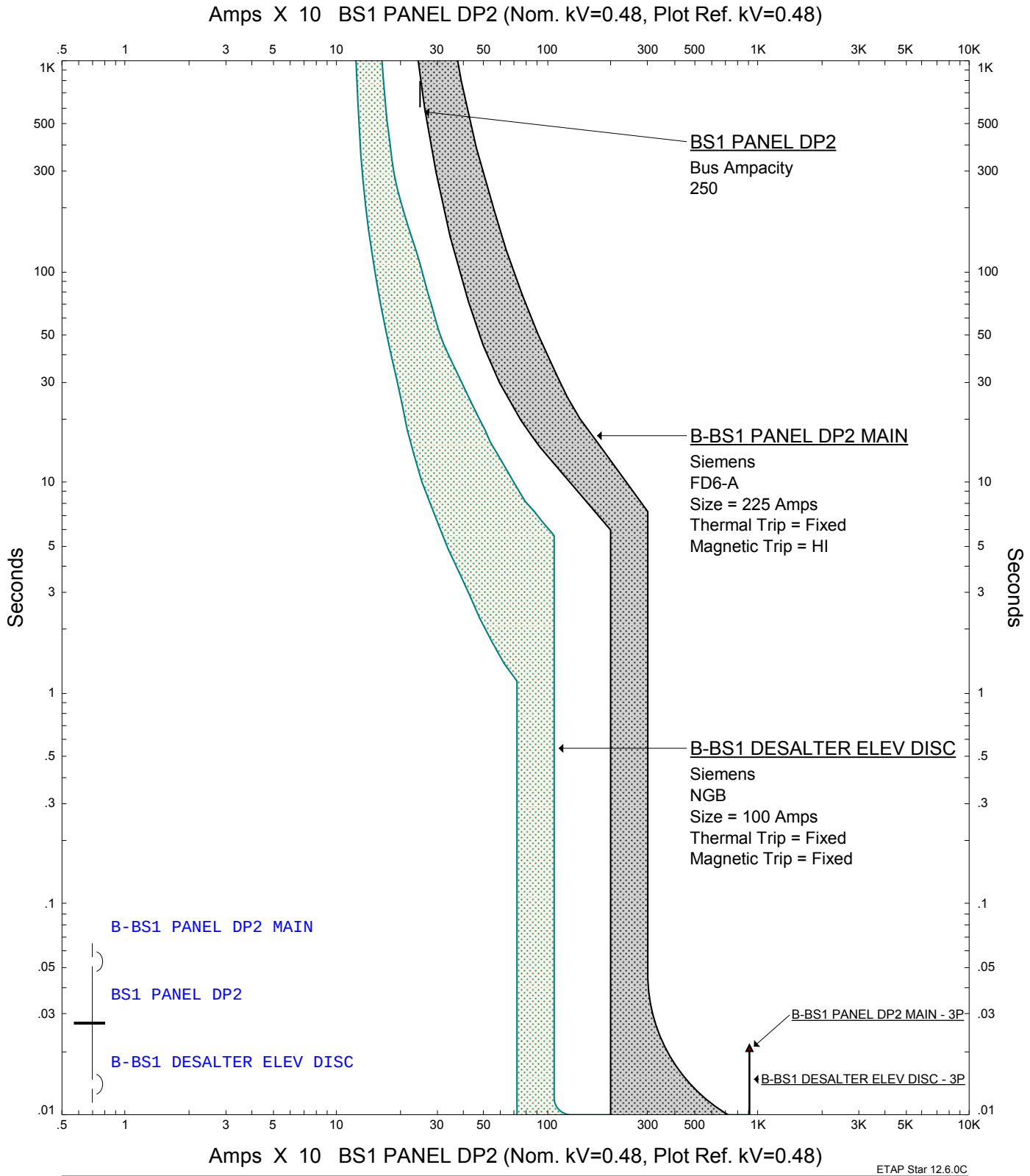
ETAP Star 12.6.0C

TCC 28: BS1 SF-301

carollo
Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



Amps X 10 BS1 PANEL DP2 (Nom. kV=0.48, Plot Ref. kV=0.48)

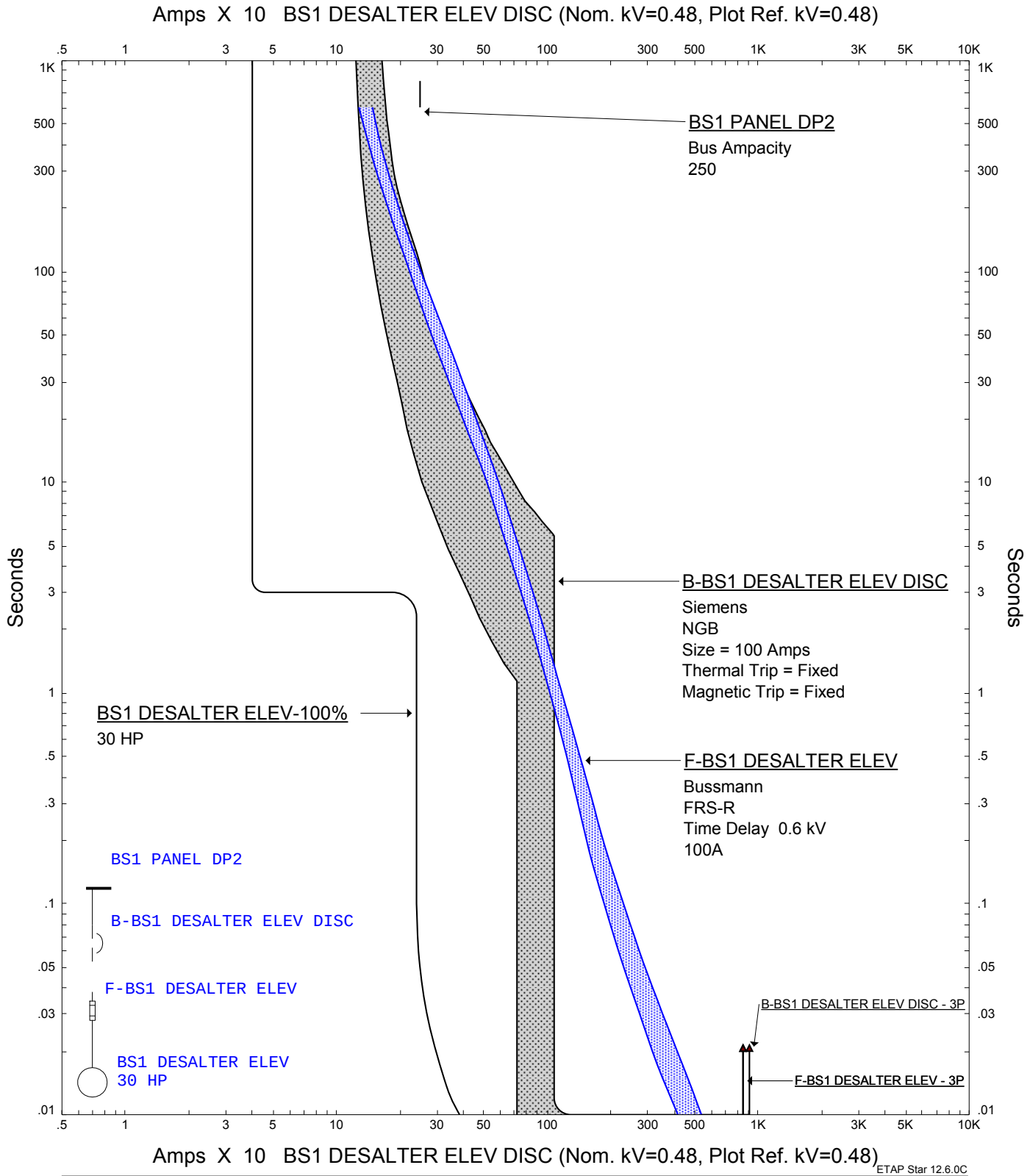
ETAP Star 12.6.0C

TCC 29: BS1 PANEL DP2

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



Amps X 10 BS1 DESALTER ELEV DISC (Nom. kV=0.48, Plot Ref. kV=0.48)

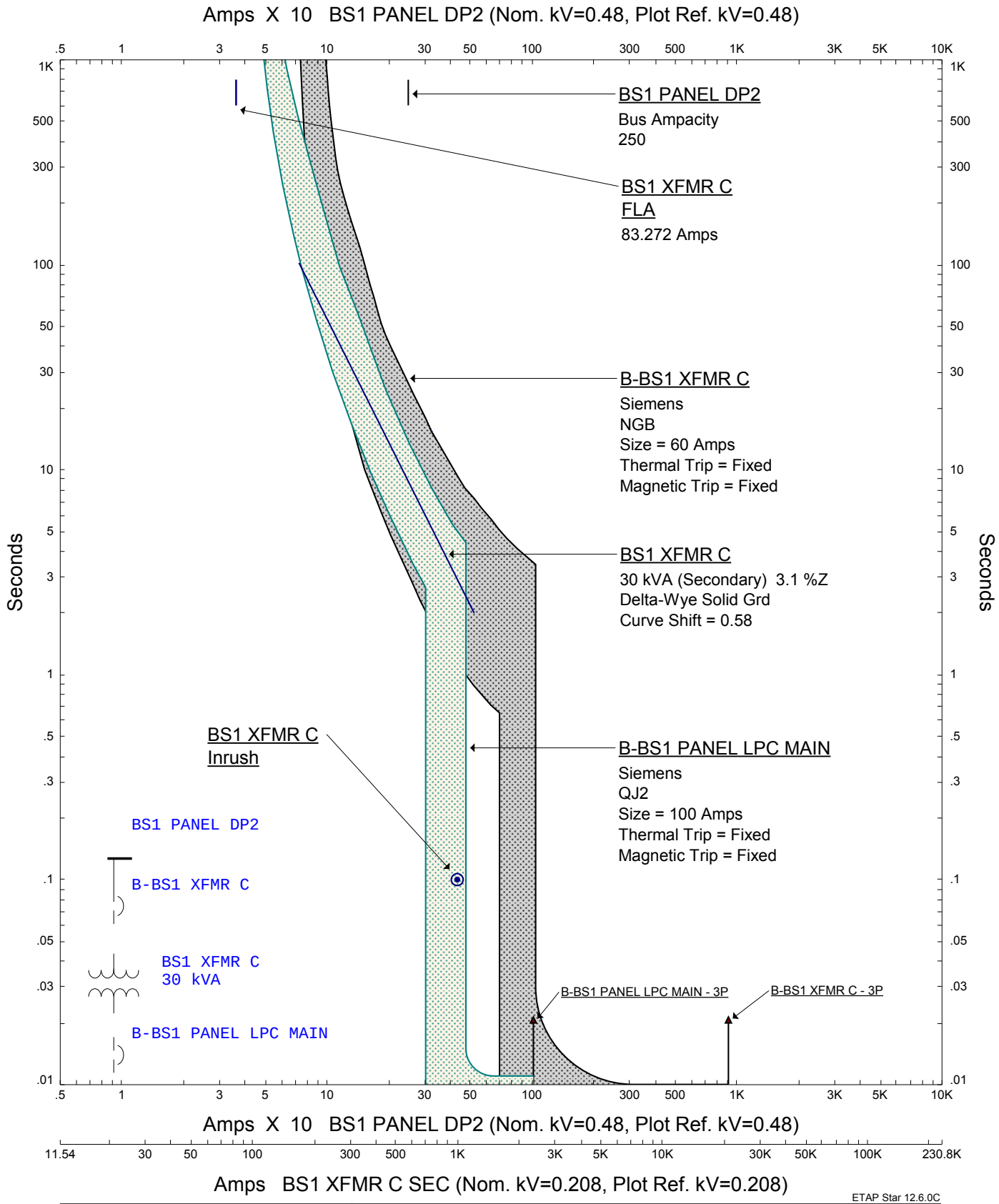
ETAP Star 12.6.0C

TCC 30: BS1 DESALTER ELEV

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



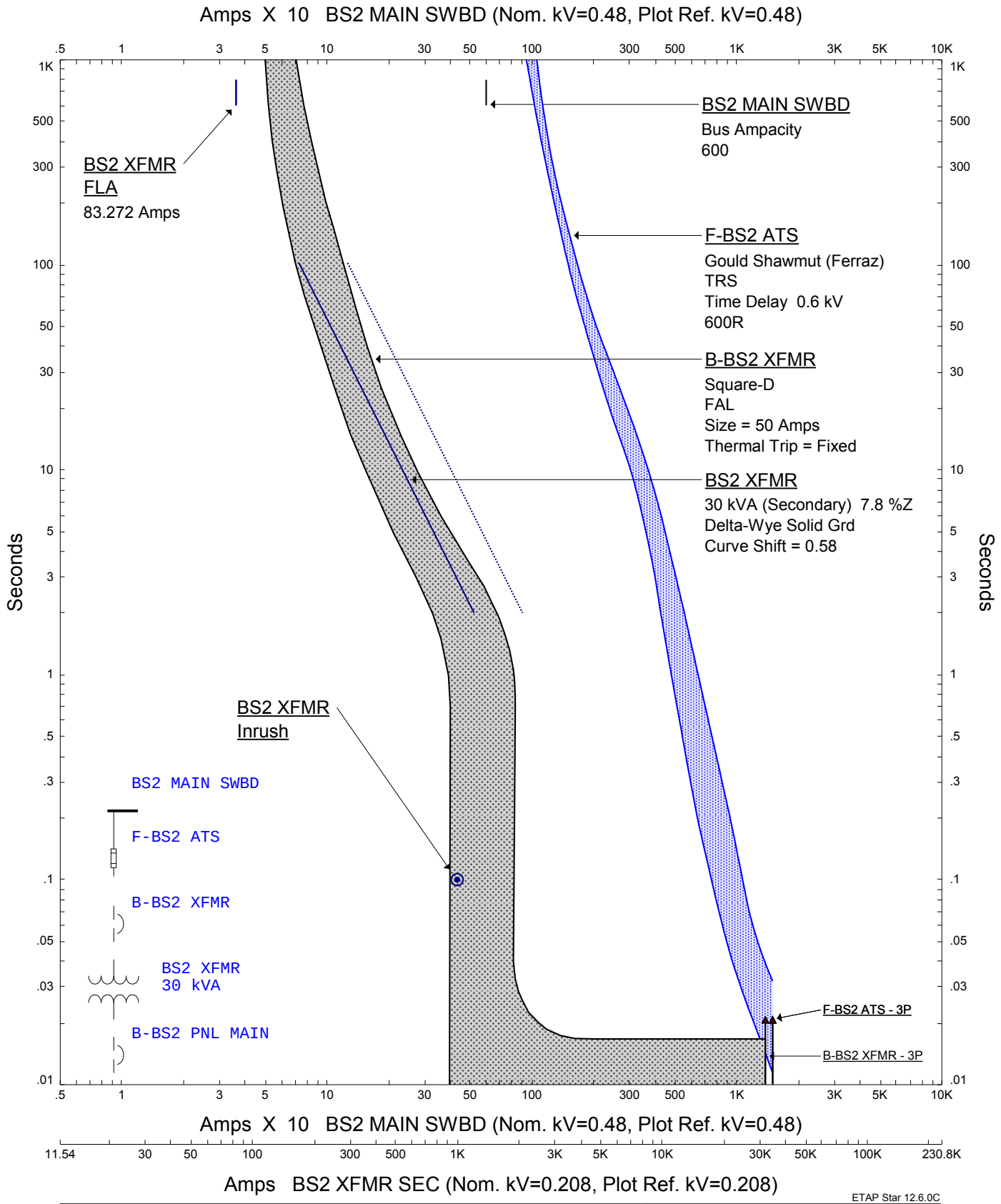
ETAP Star 12.6.0C

TCC 31: BS1 XFMR C

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



Amps X 10 BS2 MAIN SWBD (Nom. kV=0.48, Plot Ref. kV=0.48)

Amps BS2 XFMR SEC (Nom. kV=0.208, Plot Ref. kV=0.208)

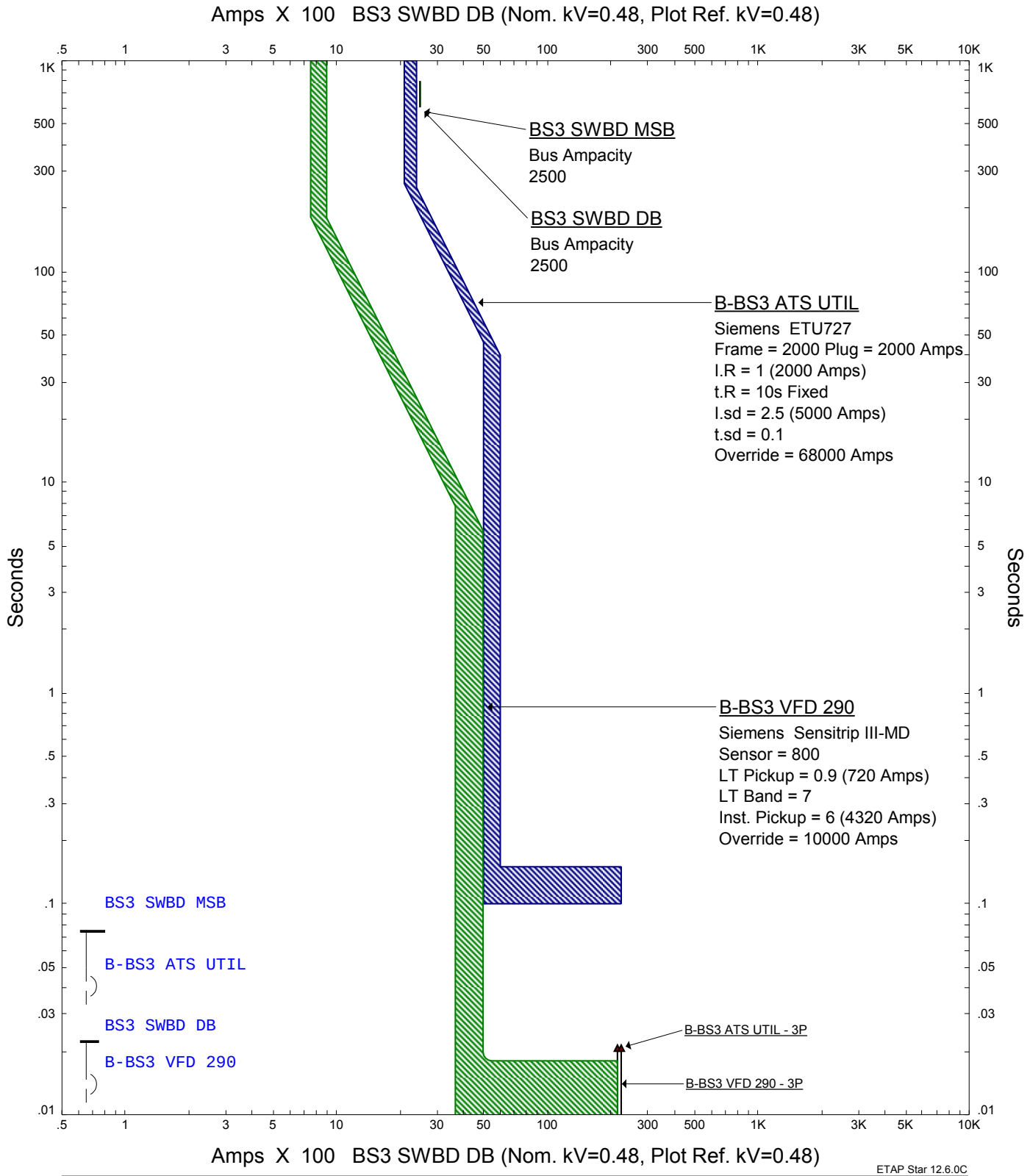
ETAP Star 12.6.0C

TCC 32: BS2 XFMR

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-28-2015
Rev: Base



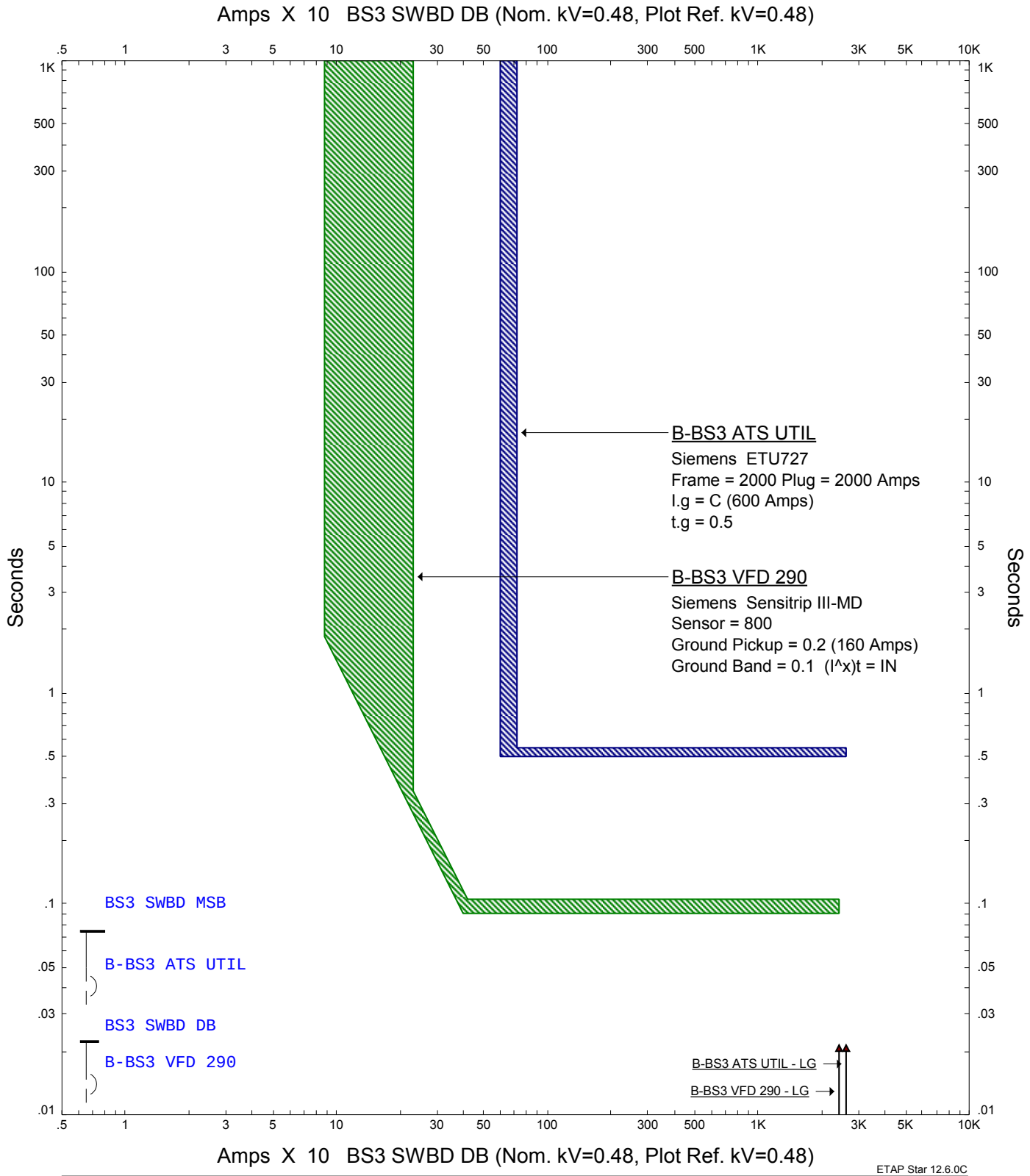
ETAP Star 12.6.0C

TCC 33: BS3 SWBD DB

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base
Fault: Phase



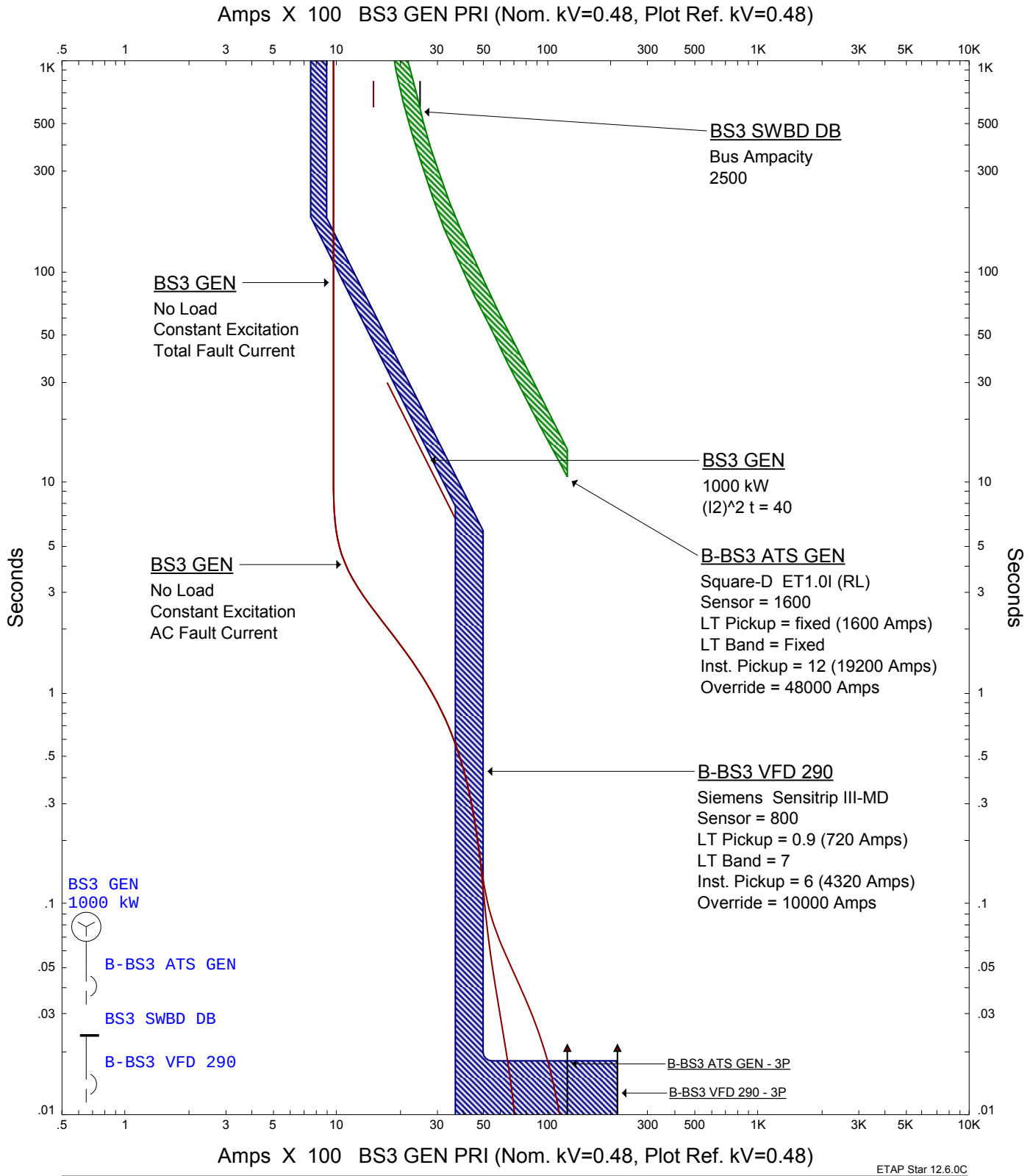
ETAP Star 12.6.0C

TCC 33: BS3 SWBD DB

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base
Fault: Ground



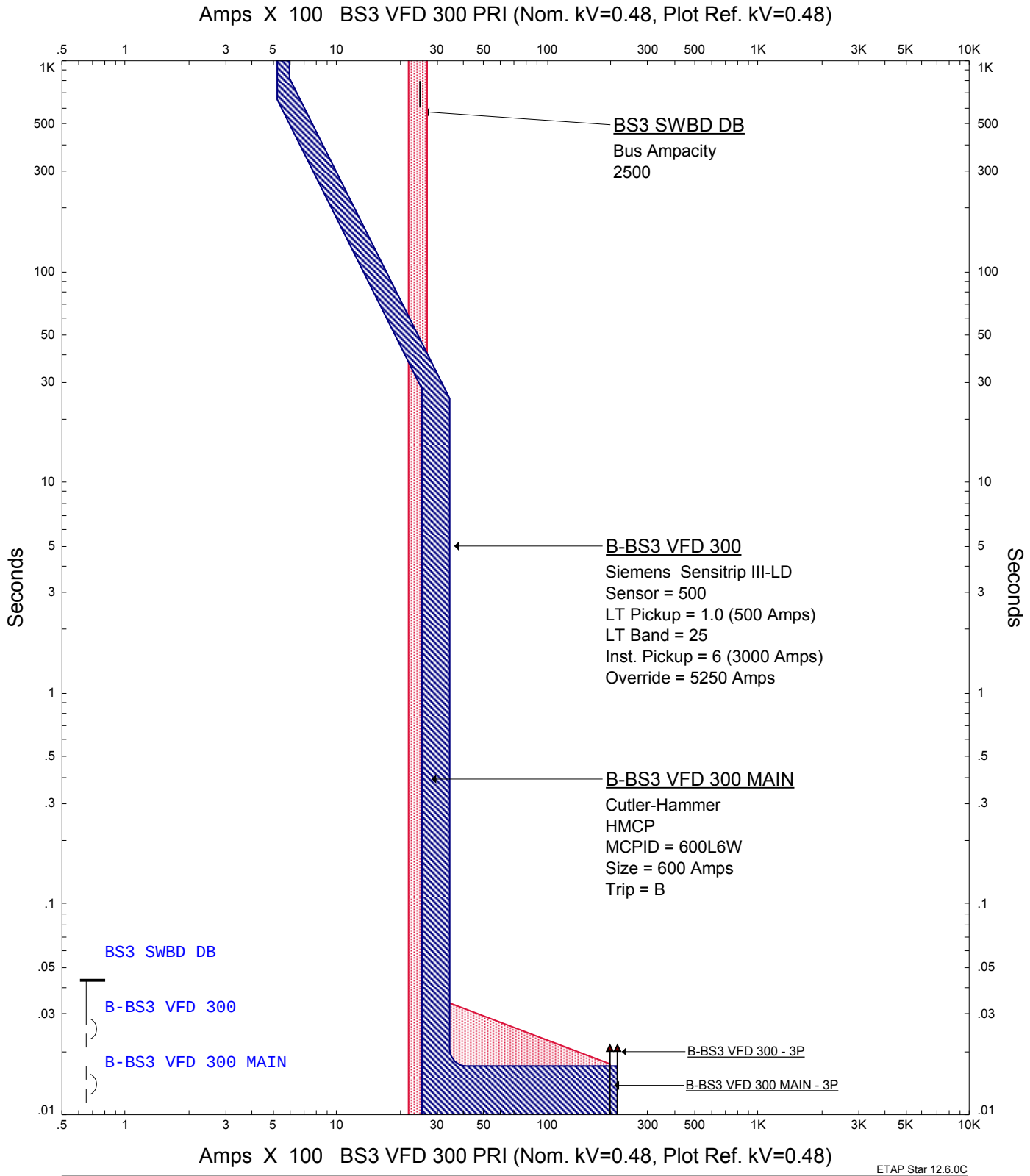
ETAP Star 12.6.0C

TCC 34: BS3 GEN SWBD DB

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base
Fault: Phase



Amps X 100 BS3 VFD 300 PRI (Nom. kV=0.48, Plot Ref. kV=0.48)

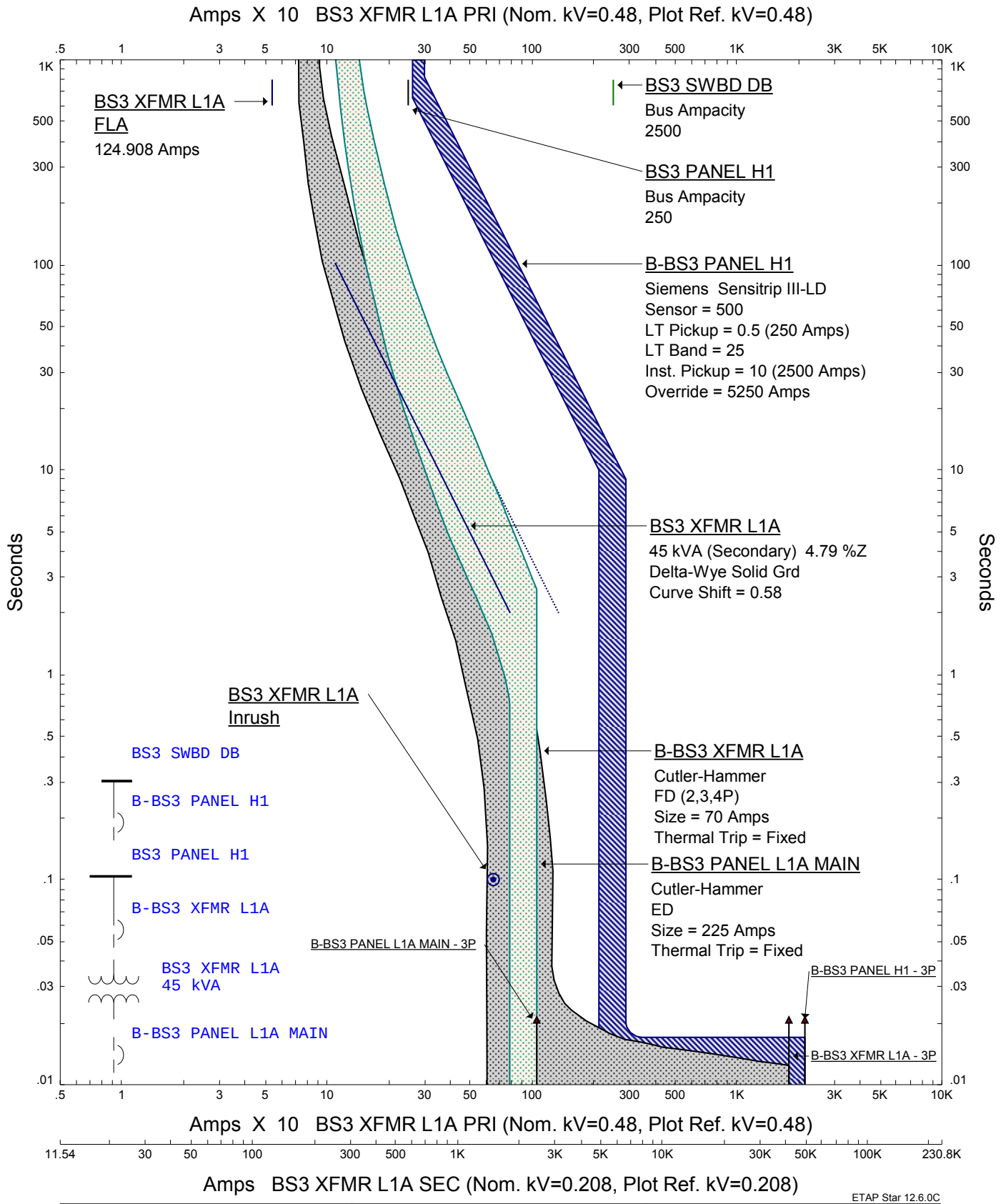
ETAP Star 12.6.0C

TCC 35: BS3 VFD 300

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base
Fault: Phase



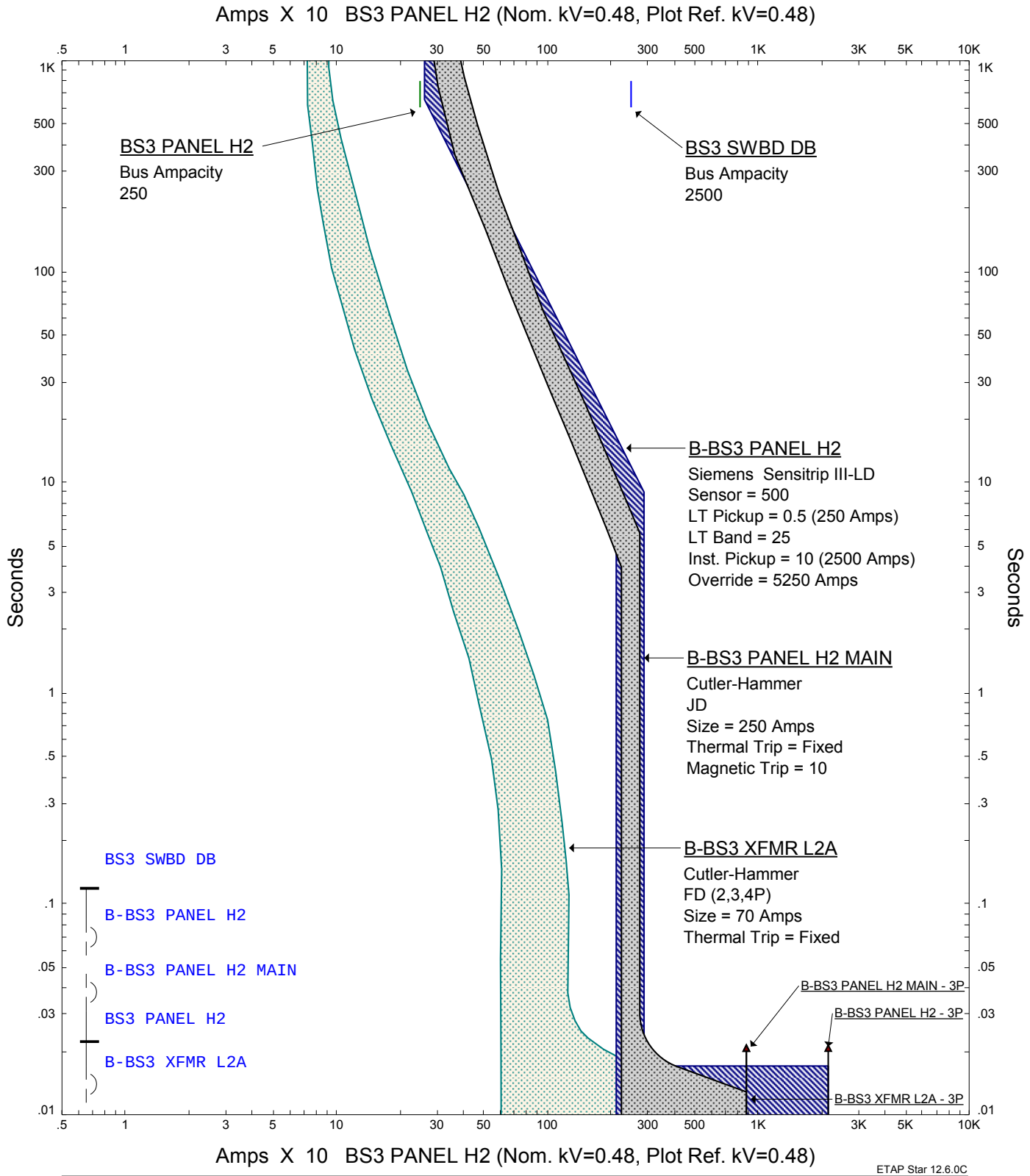
ETAP Star 12.6.0C

TCC 36: BS3 XFMR L1A

carollo
Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base
Fault: Phase



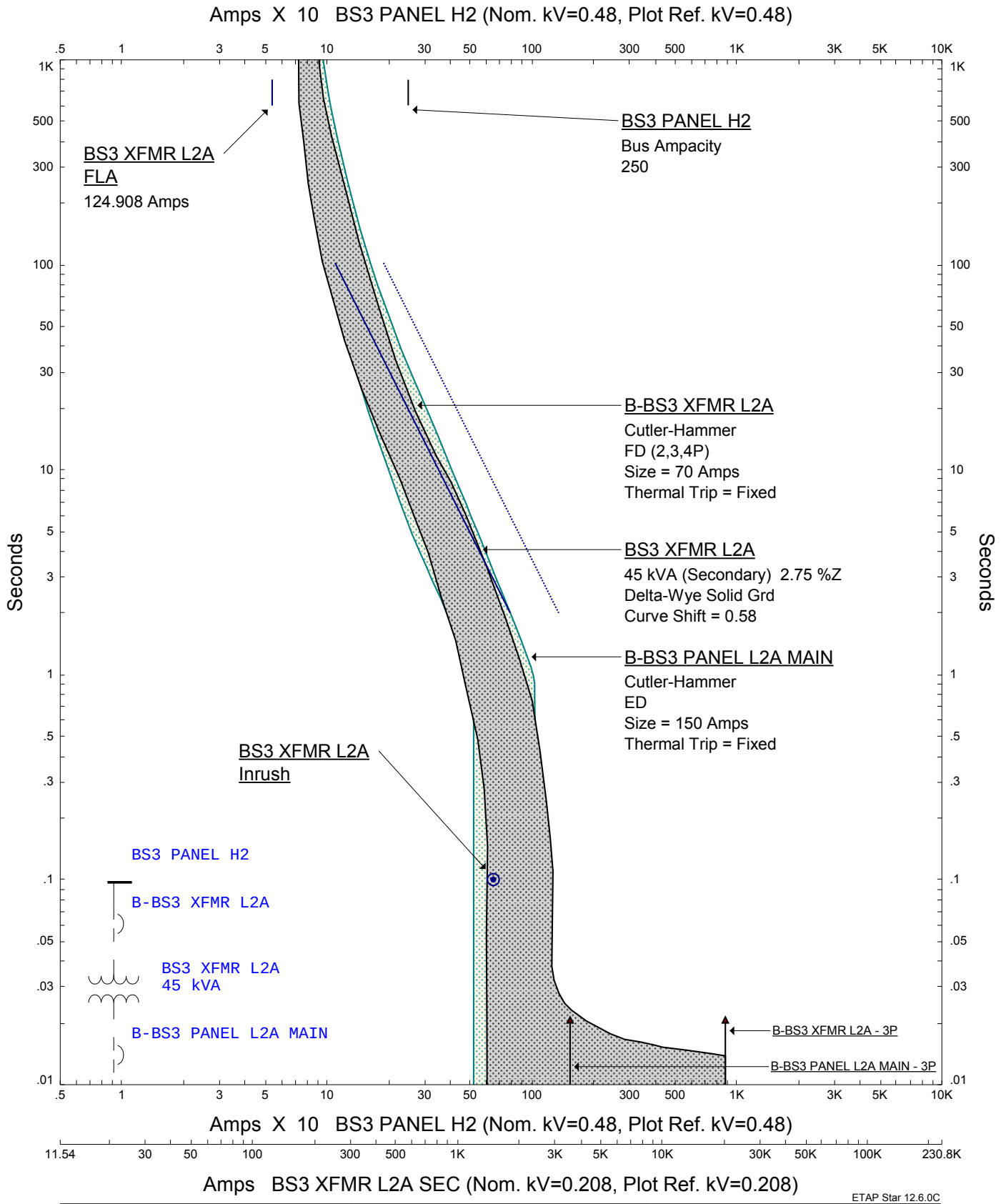
ETAP Star 12.6.0C

TCC 37: BS3 PANEL H2 MAIN

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base
Fault: Phase



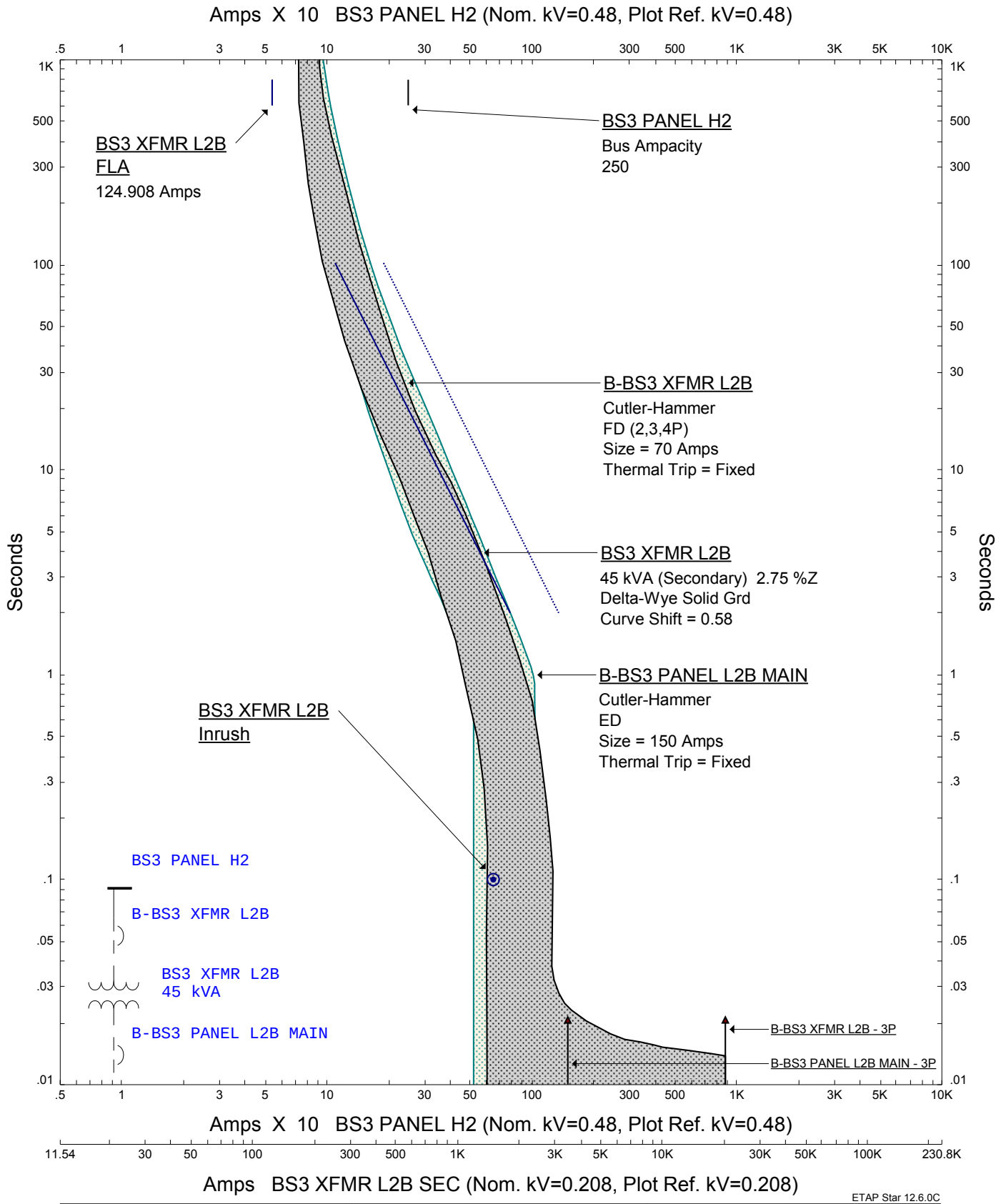
ETAP Star 12.6.0C

TCC 38: BS3 XFMR L2A

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base



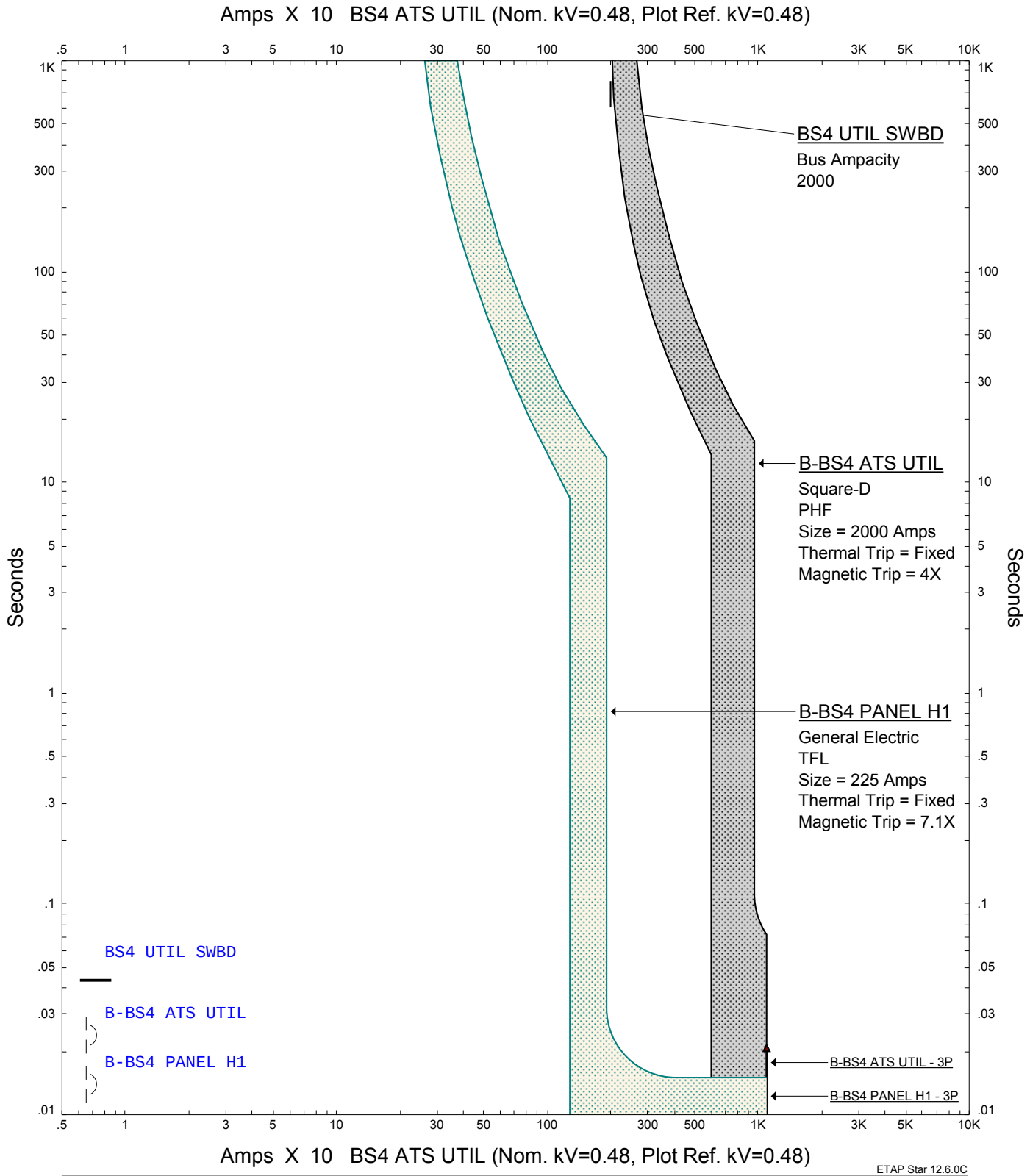
ETAP Star 12.6.0C

TCC 39: BS3 XFMR L2B

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base



Amps X 10 BS4 ATS UTIL (Nom. kV=0.48, Plot Ref. kV=0.48)

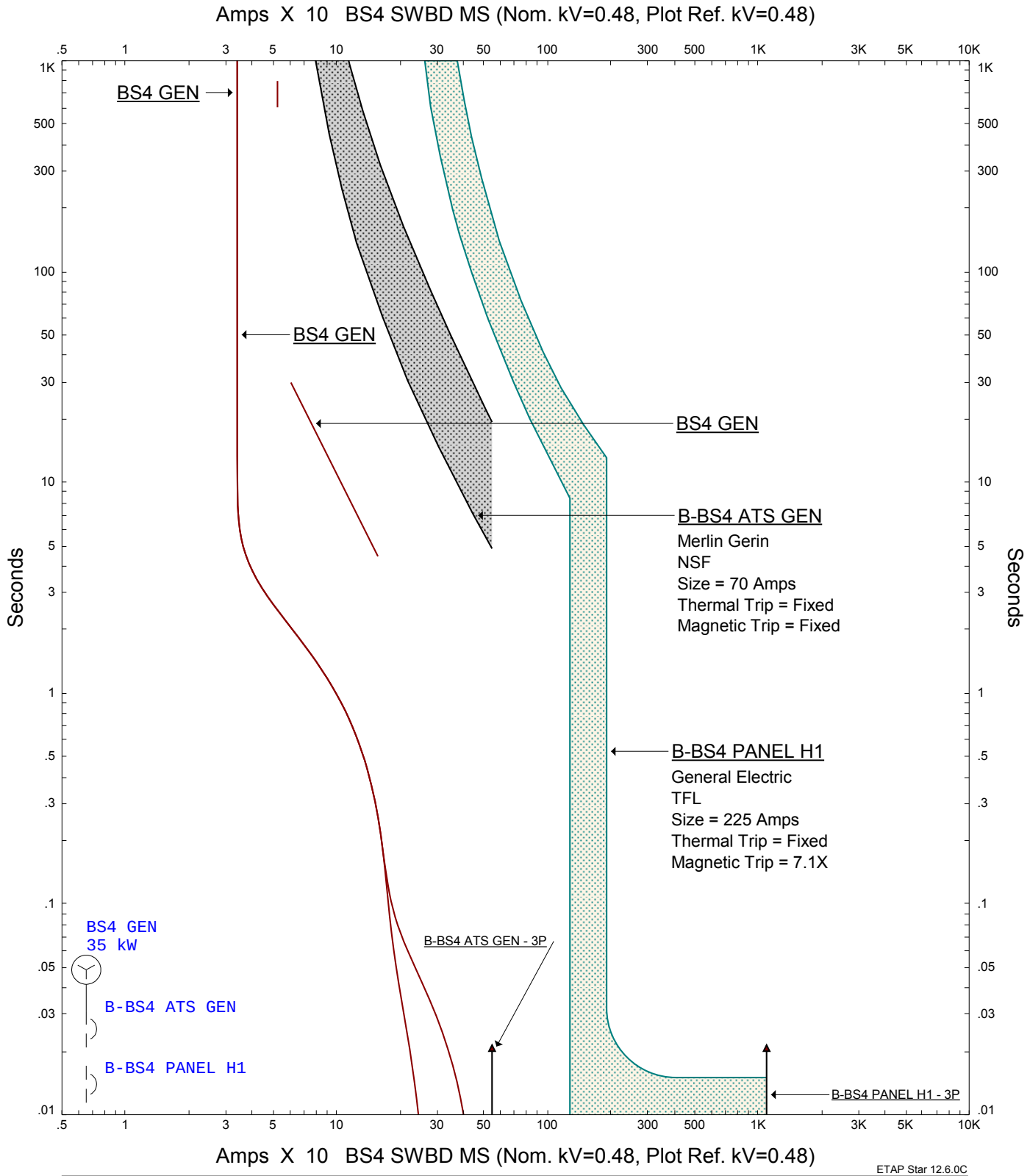
ETAP Star 12.6.0C

TCC 40: BS4 SWBD MS UTIL

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base



Amps X 10 BS4 SWBD MS (Nom. kV=0.48, Plot Ref. kV=0.48)

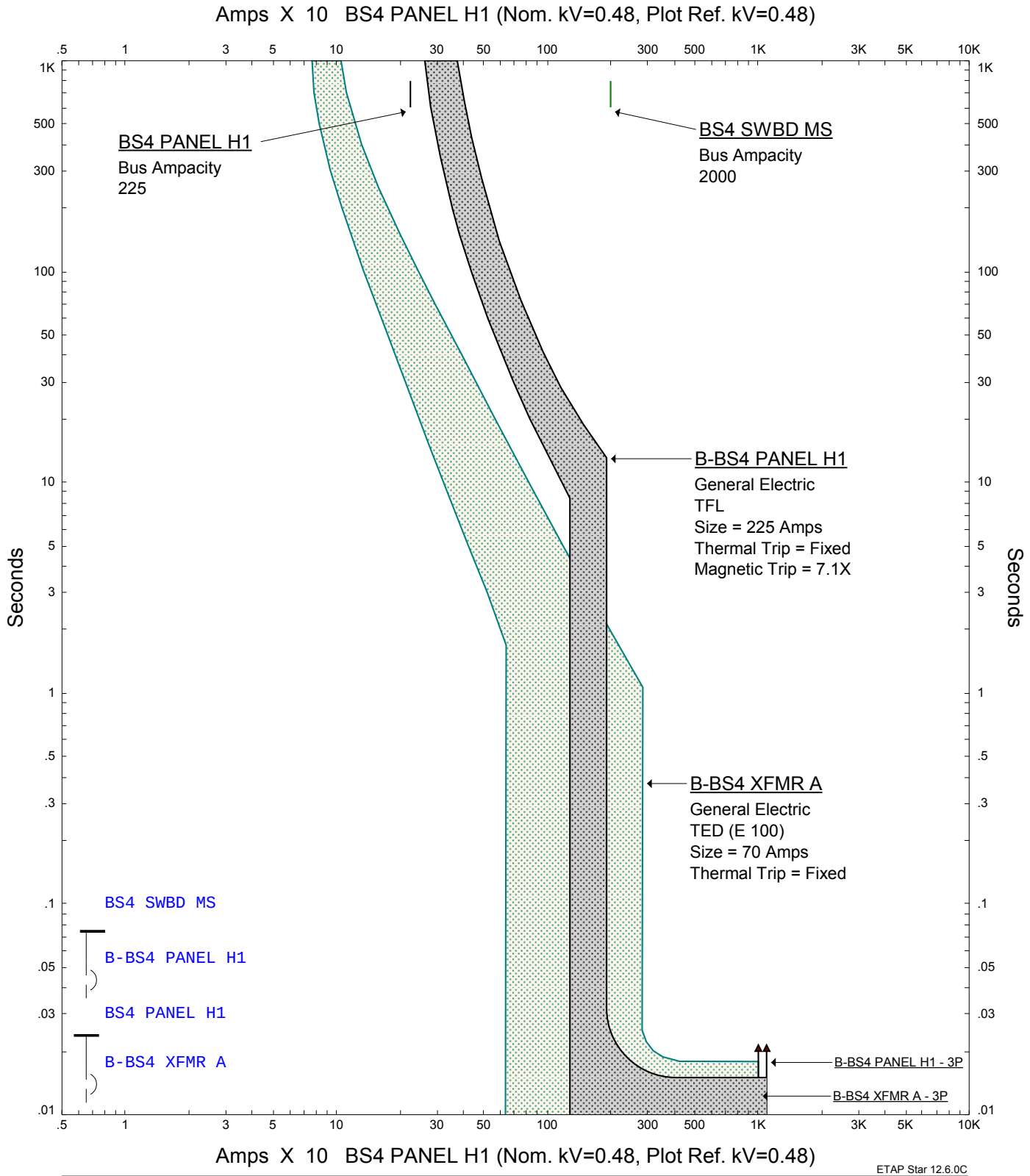
ETAP Star 12.6.0C

TCC 41: BS4 SWBD MS GEN

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base



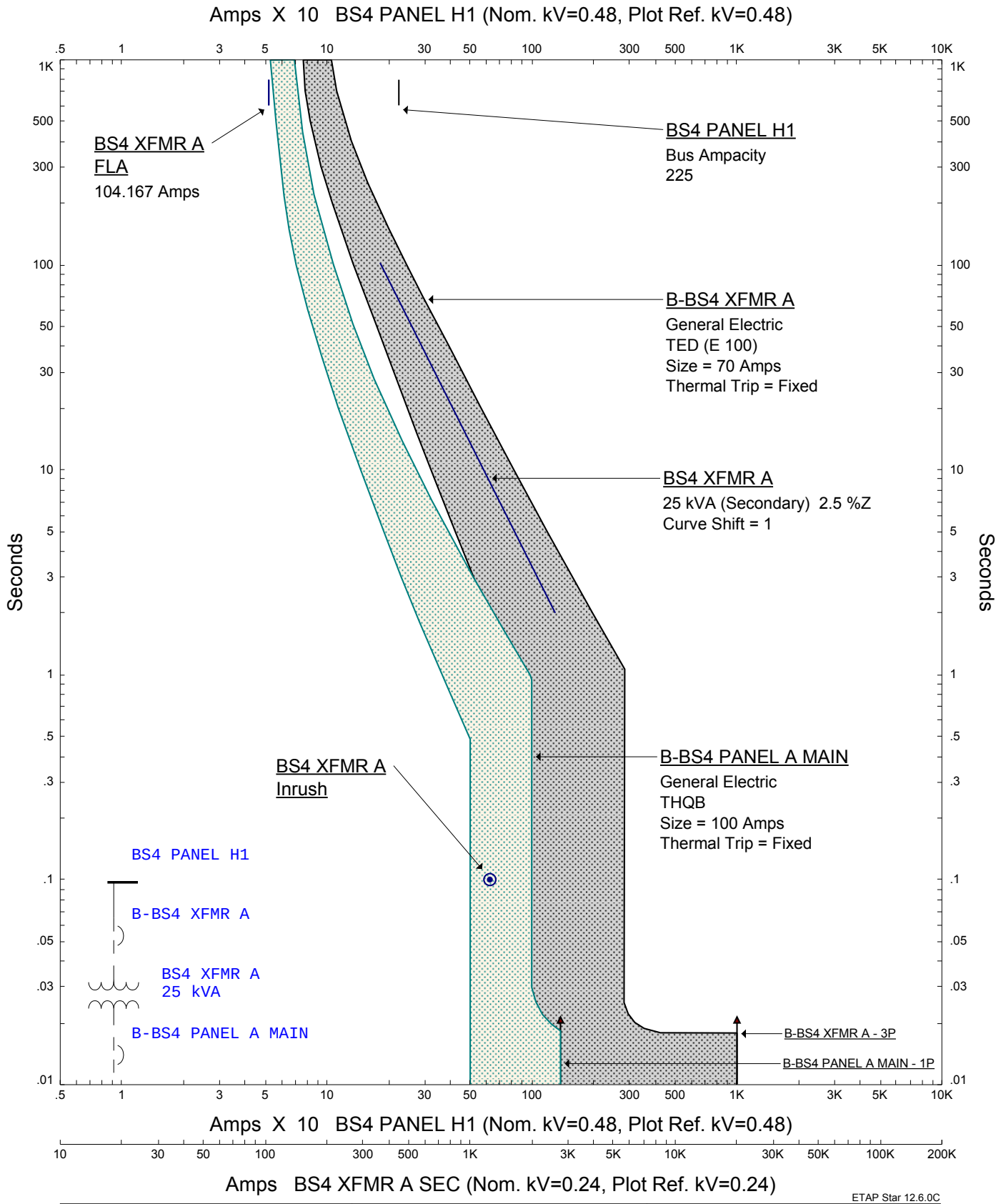
ETAP Star 12.6.0C

TCC 42: BS4 PANEL H1

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base



Amps X 10 BS4 PANEL H1 (Nom. kV=0.48, Plot Ref. kV=0.48)

Amps BS4 XFMR A SEC (Nom. kV=0.24, Plot Ref. kV=0.24)

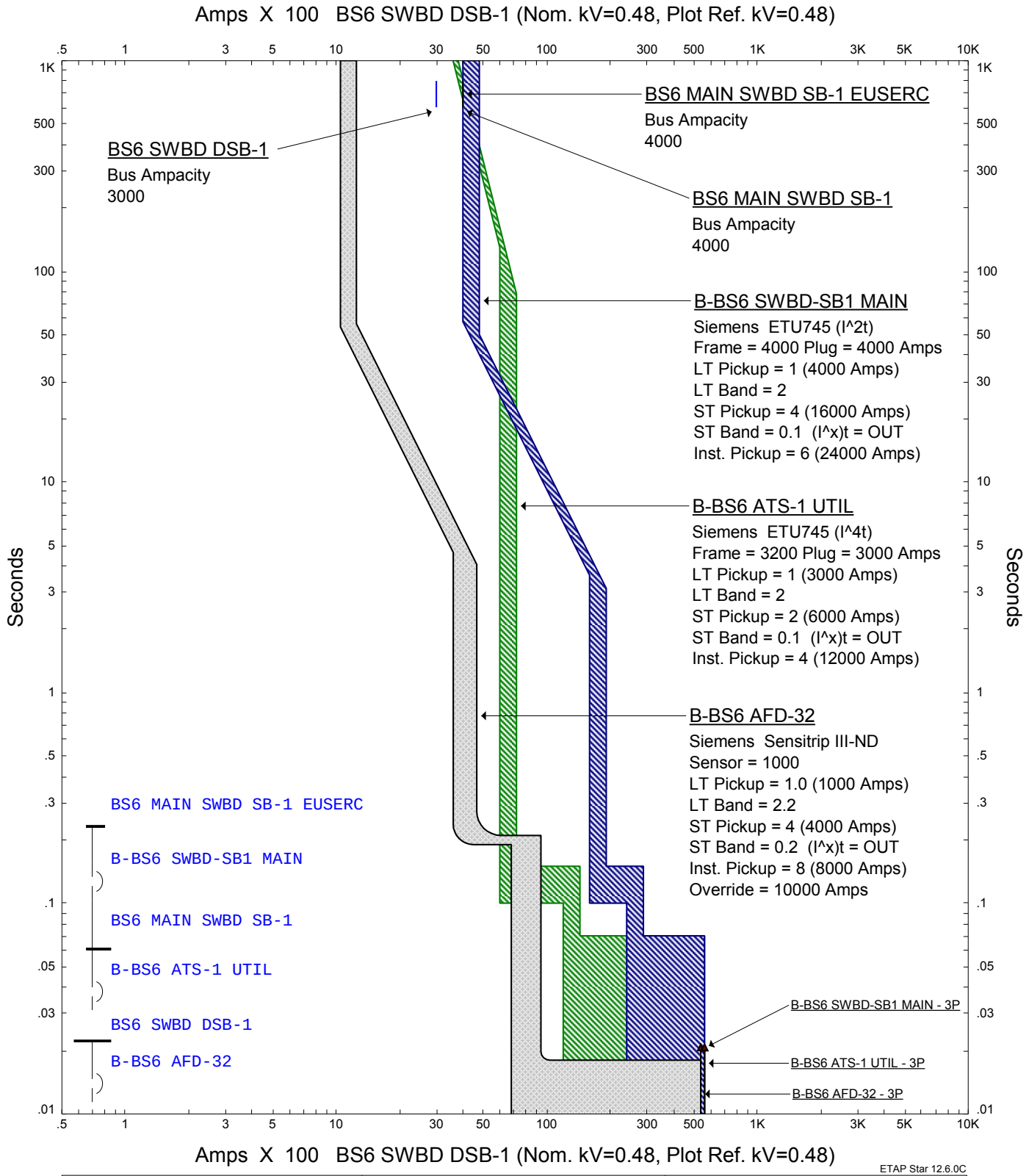
ETAP Star 12.6.0C

TCC 43: BS4 XFMR A

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-29-2015
Rev: Base



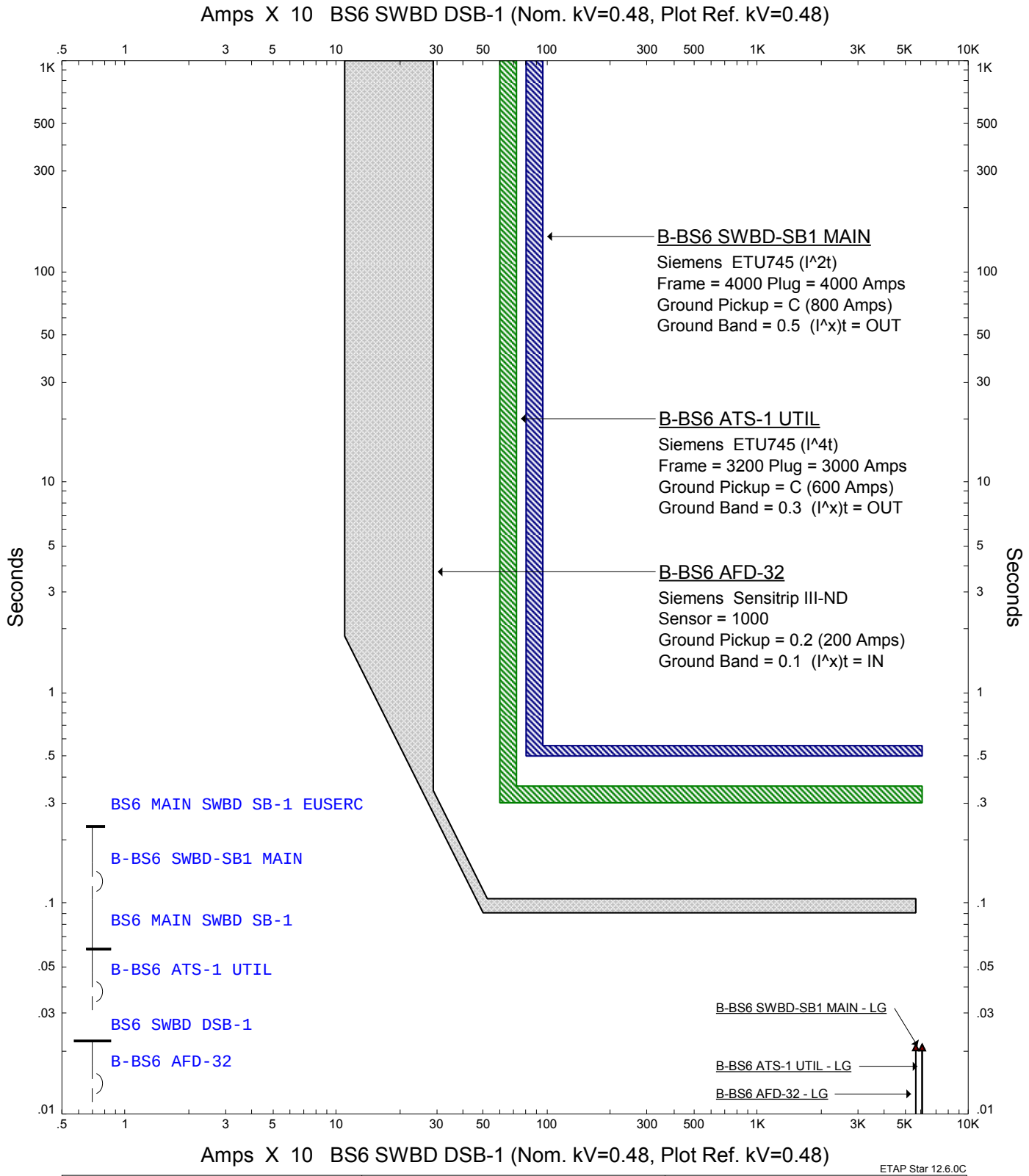
ETAP Star 12.6.0C

TCC 44: BS6 SB-1 TO DSB-1

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-27-2015
Rev: Base
Fault: Phase



Amps X 10 BS6 SWBD DSB-1 (Nom. kV=0.48, Plot Ref. kV=0.48)

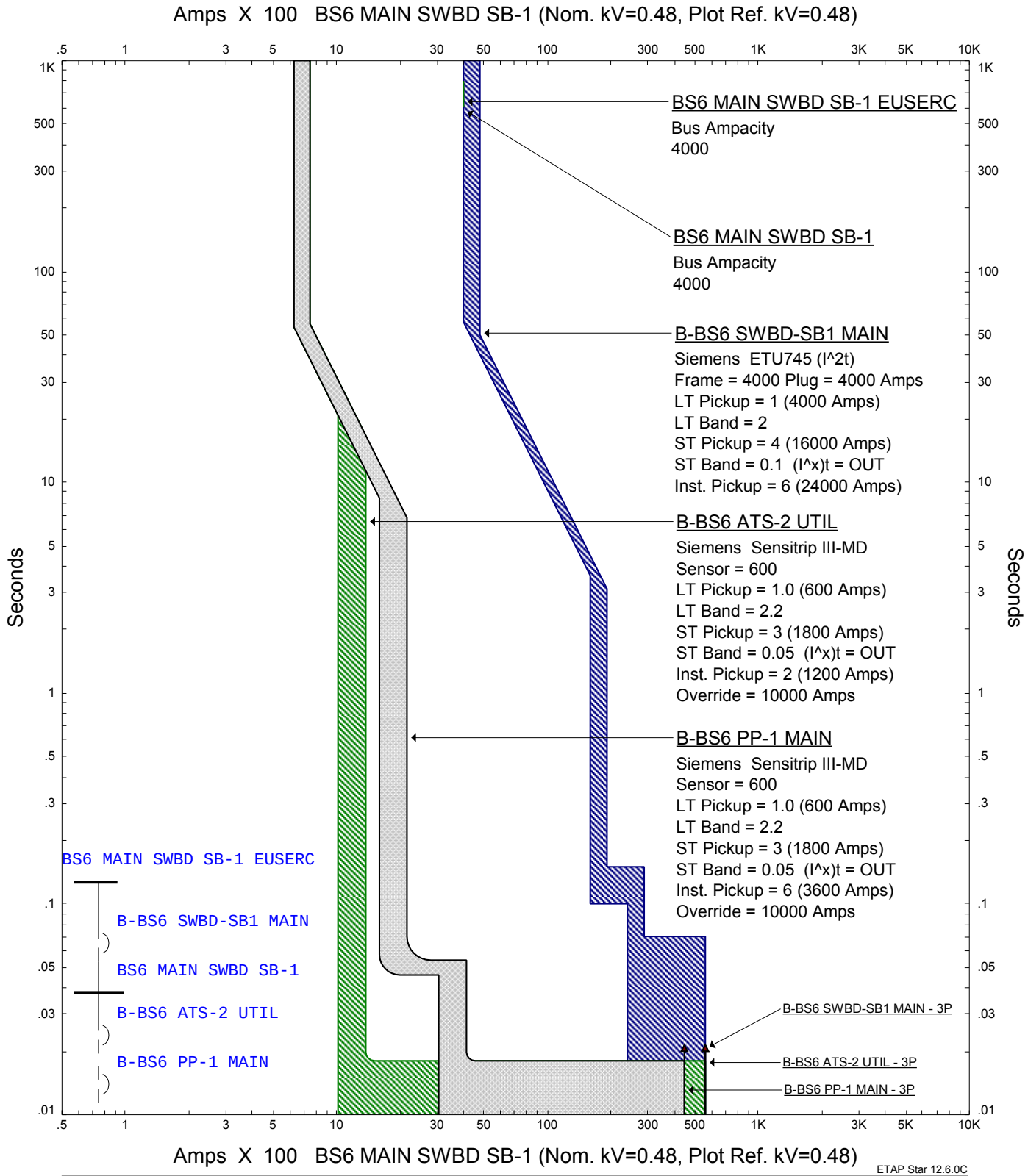
ETAP Star 12.6.0C

TCC 44: BS6 SB-1 TO DSB-1

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-27-2015
Rev: Base
Fault: Ground



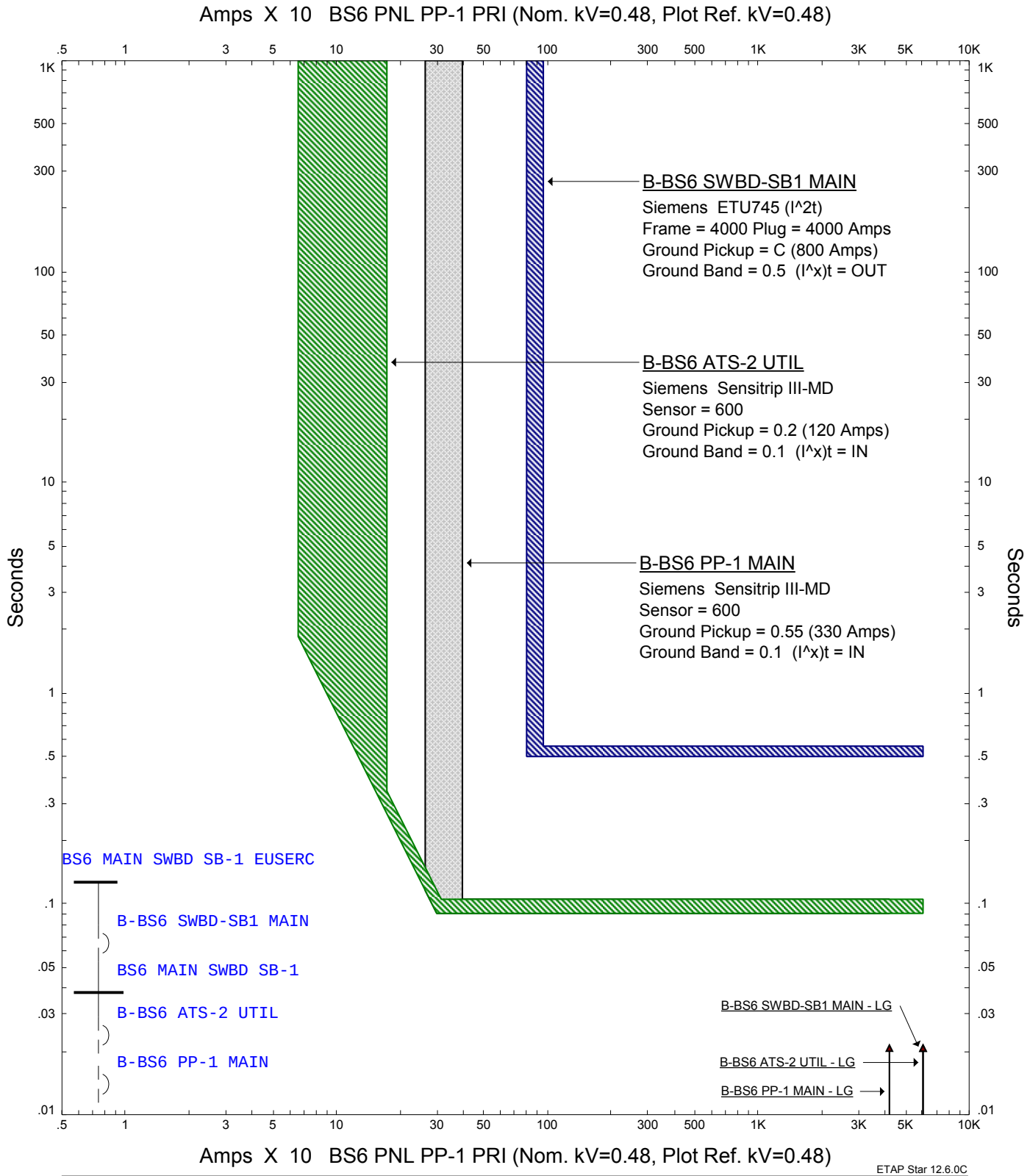
ETAP Star 12.6.0C

TCC 45: BS6 SB-1 TO PP-1

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-30-2015
Rev: Base
Fault: Phase



Amps X 10 BS6 PNL PP-1 PRI (Nom. kV=0.48, Plot Ref. kV=0.48)

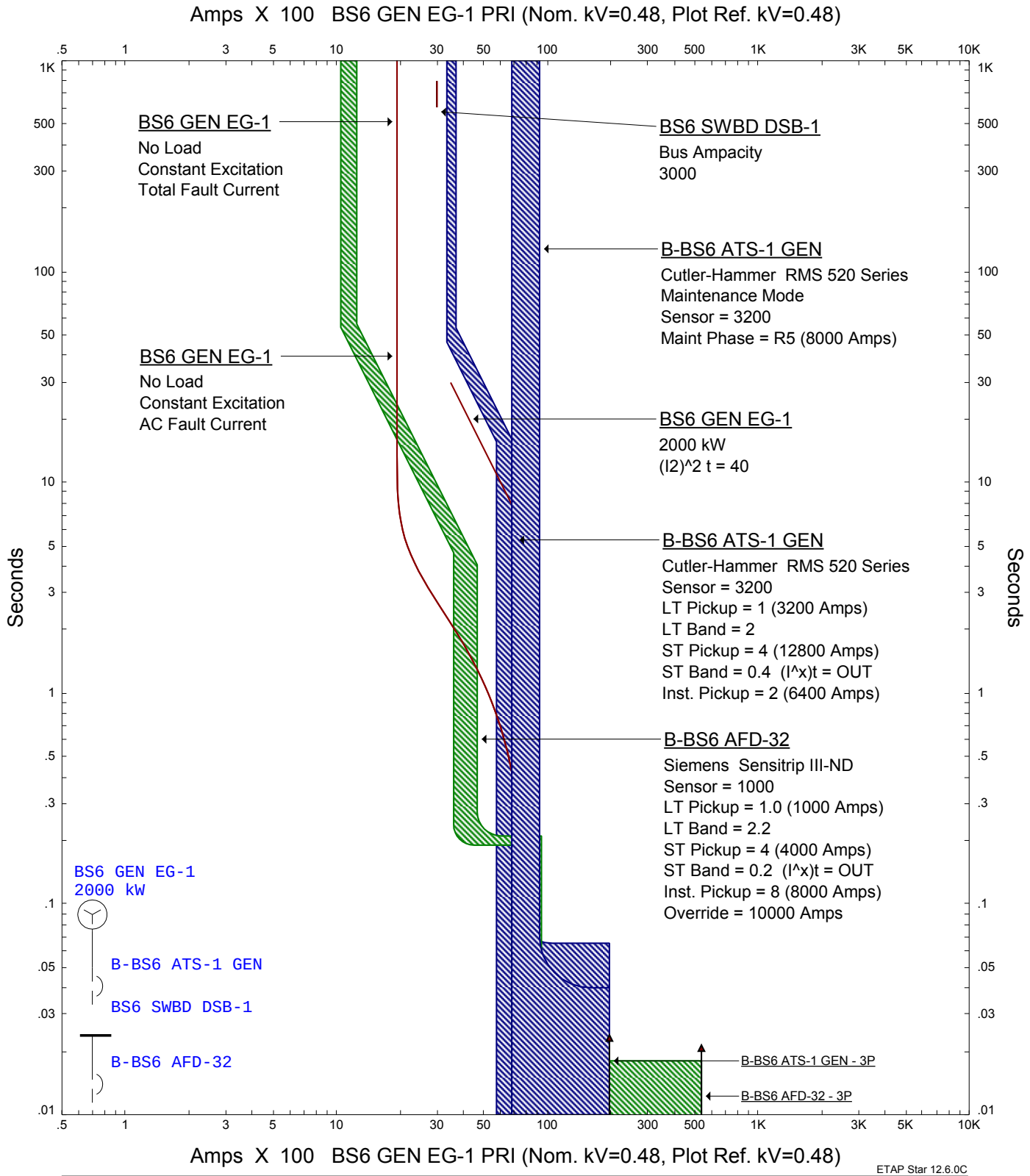
ETAP Star 12.6.0C

TCC 45: BS6 SB-1 TO PP-1

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-30-2015
Rev: Base
Fault: Ground



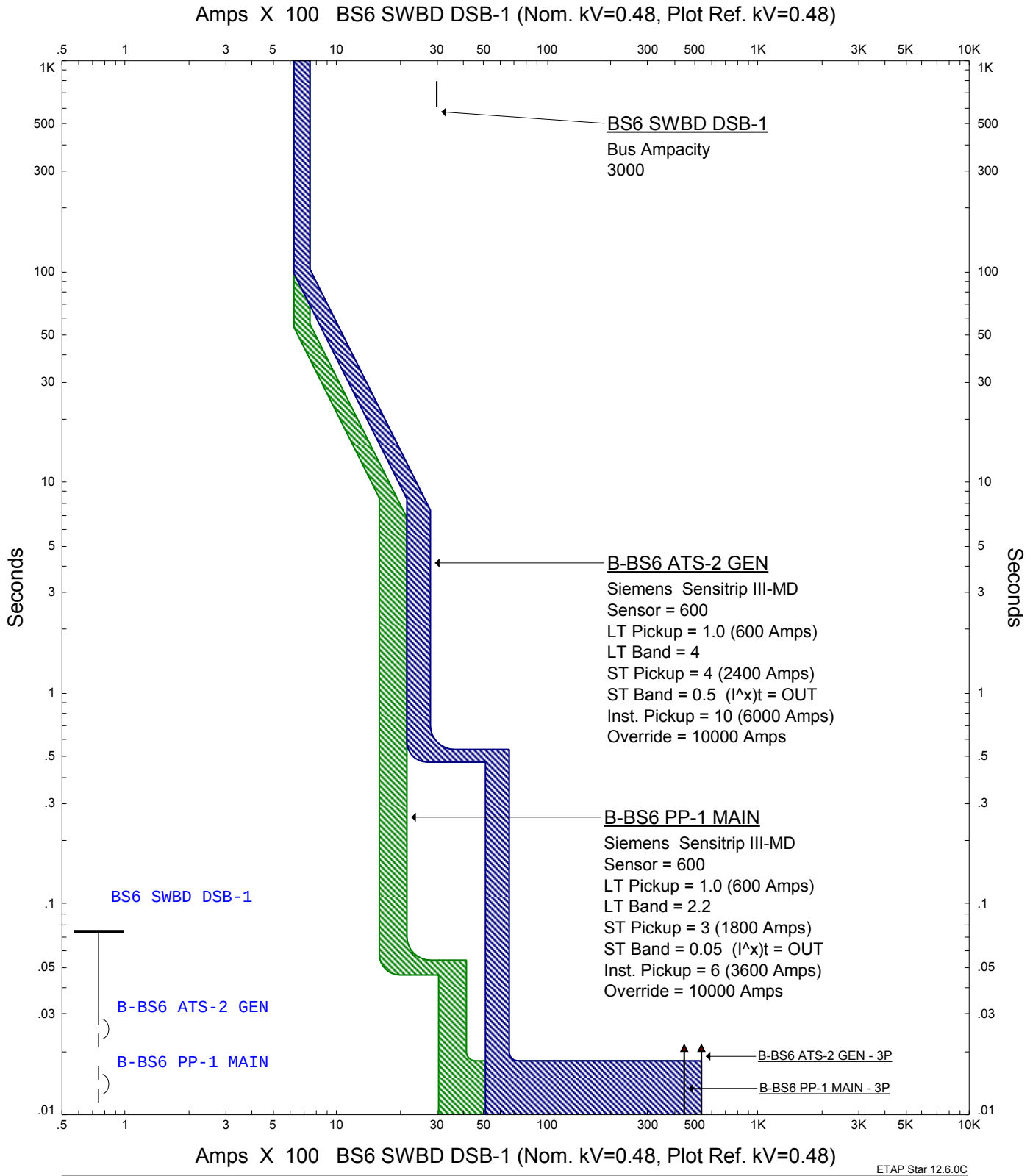
ETAP Star 12.6.0C

TCC 46: BS6 GEN EG-1

carollo
Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-30-2015
Rev: Base
Fault: Phase



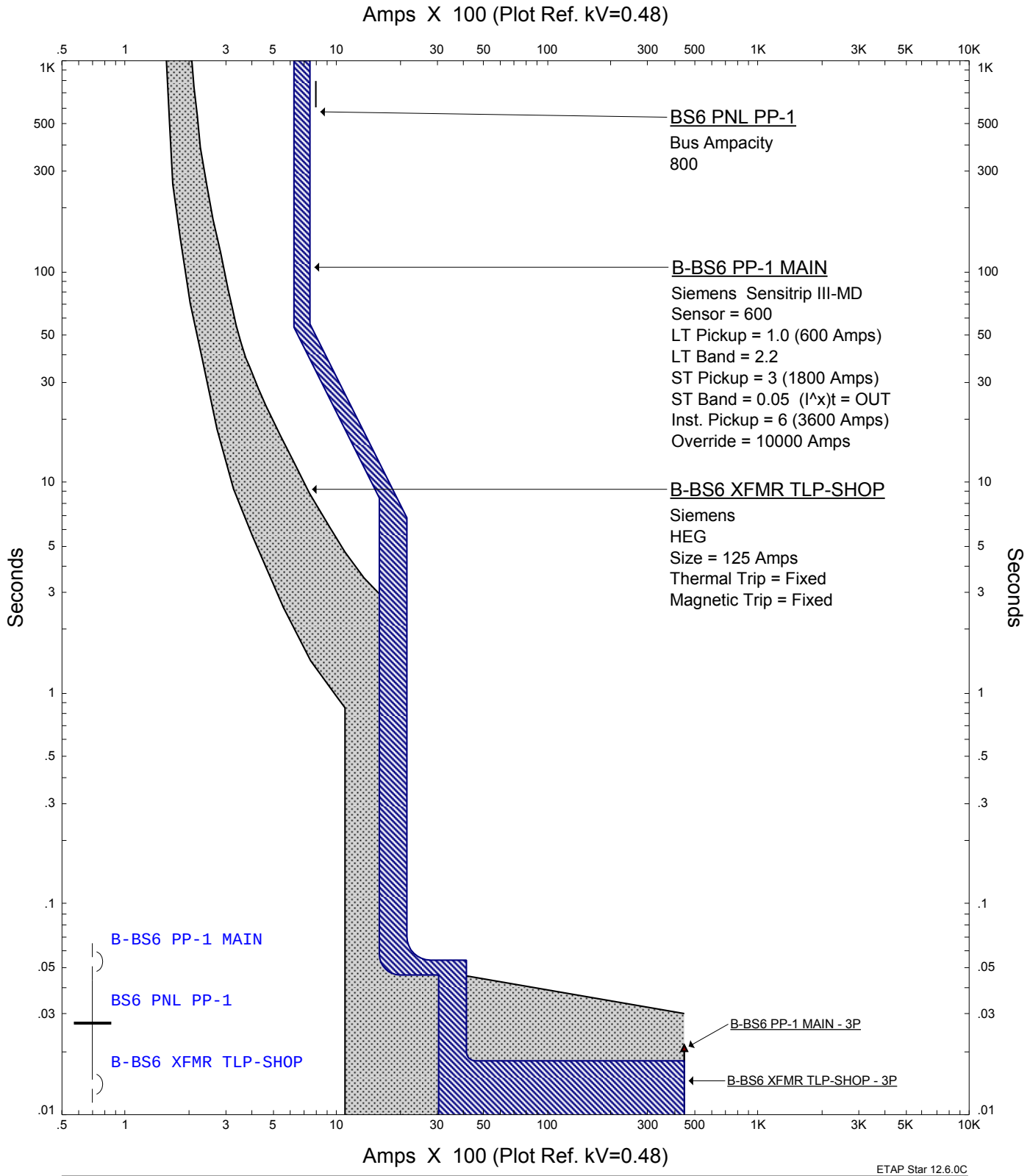
ETAP Star 12.6.0C

TCC 47: BS6 DSB-1 TO PP-1

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-30-2015
Rev: Base
Fault: Phase



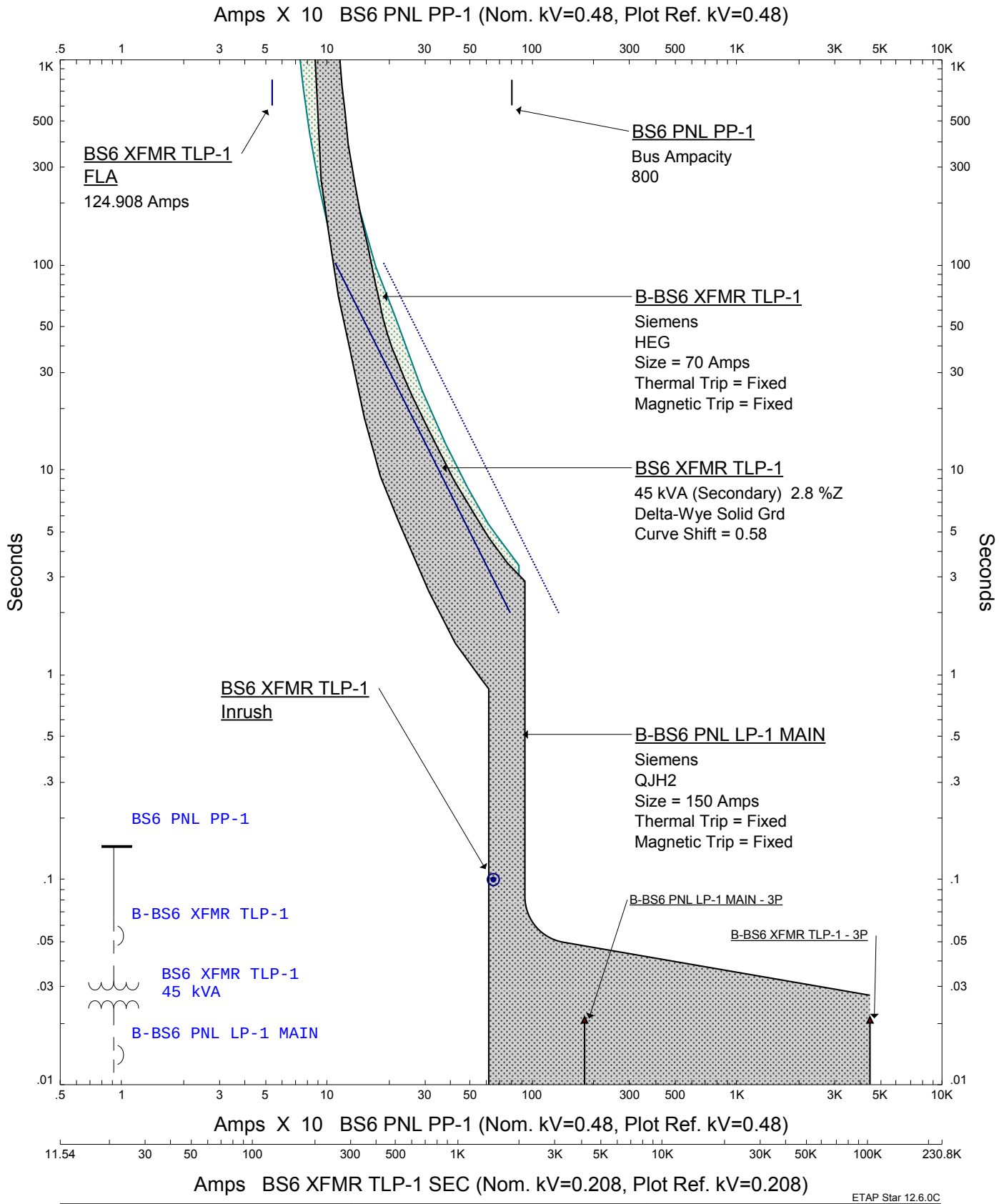
ETAP Star 12.6.0C

TCC 48: BS6 PANEL PP-1

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-30-2015
Rev: Base
Fault: Phase



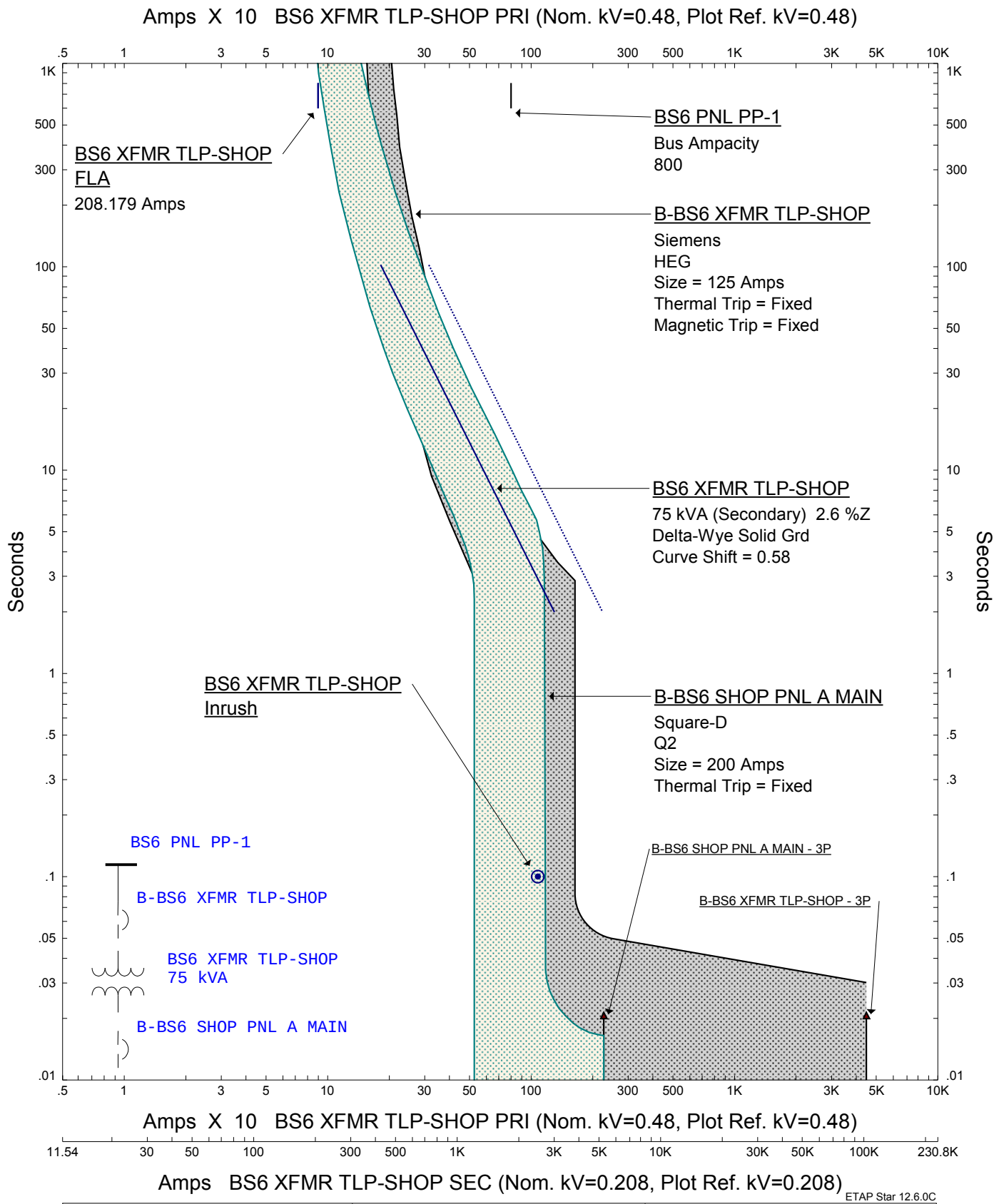
ETAP Star 12.6.0C

TCC 49: BS6 XFMR TLP-1

carollo Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-30-2015
Rev: Base



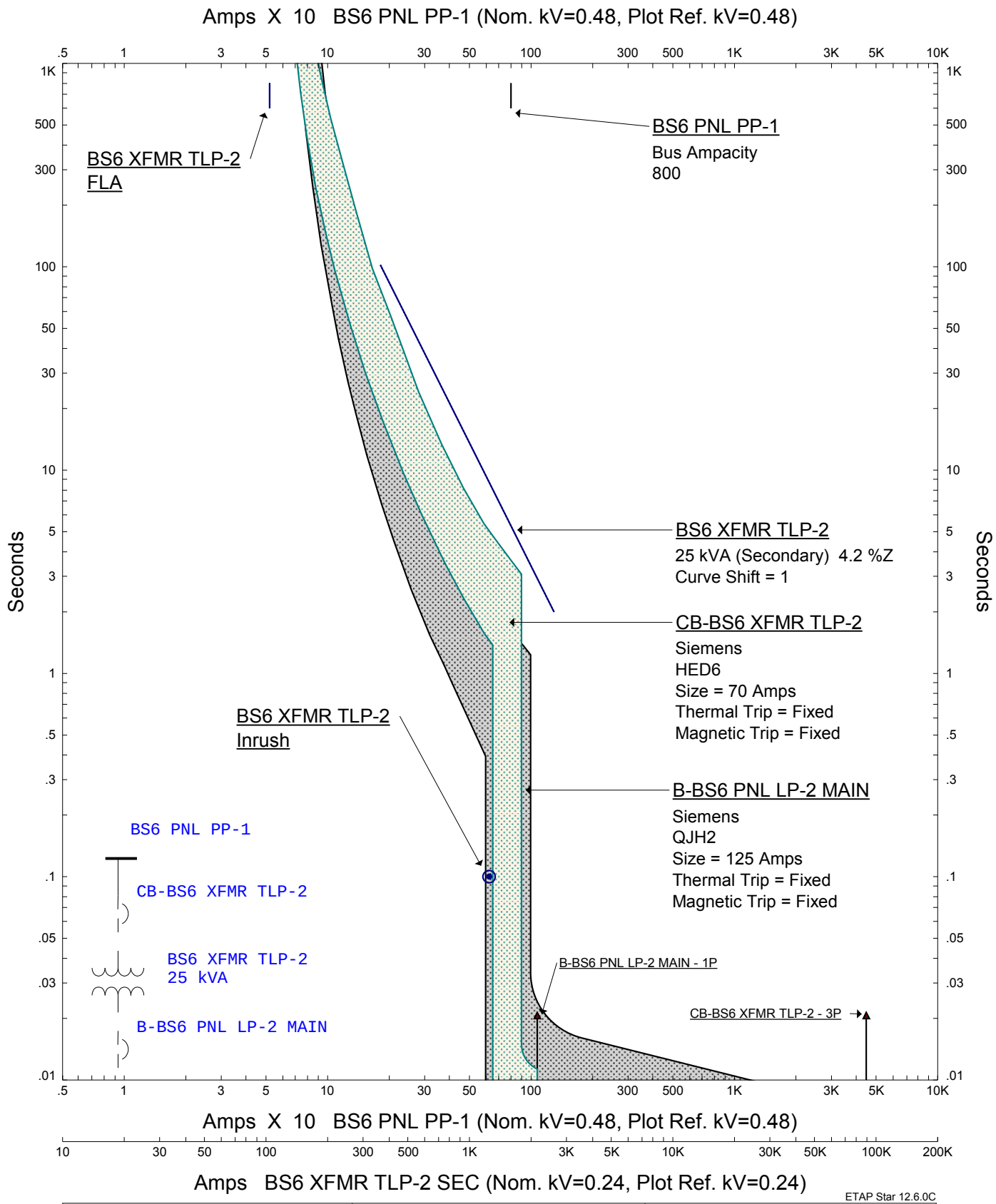
ETAP Star 12.6.0C

TCC 50: BS6 XFMR TLP-SHOP

carollo
Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-30-2015
Rev: Base



ETAP Star 12.6.0C

TCC 51: BS6 XFMR TLP-2

carollo
Engineers...Working Wonders With Water™

Project: Oxnard Blending Stations
Location: City of Oxnard, CA
Contract: 9587A.00
Engineer: SKB

Date: 07-30-2015
Rev: Base

APPENDIX D – ARC FLASH STUDY

ID	kV (kV)	Configuration	otal Energy (cal/cm	AFB (ft)	Energy Levels	Final FCT (sec)	Ia at FCT (kA)	Source PD ID	% Ia Variation
S1 RO UNIT #1 TERI	0.48	Normal	0.037114	0.3	Level A	0.01	1.219	BS1 RO UNIT	
BS6 PCV-33 DISC	0.48	Generator	0.037276	0.3	Level A	0.047	0.673	S6 PCV-32, 33	
BS1 SF-301 TERM	0.48	Normal	0.041265	0.3	Level A	0.01	1.344	BS1 SF-301 DI	
BS1 SF-301 DISC	0.48	Normal	0.045247	0.2	Level A	0.01	1.566	BS1 SF-301 DI	
S1 RO UNIT #2 TERI	0.48	Normal	0.046	0.3	Level A	0.01	1.486	BS1 RO UNIT	
BS3 AC-101 TERM	0.48	Normal	0.047776	0.2	Level A	0.01	1.664	F-BS3 AC-101	
BS1 SF-303 TERM	0.48	Normal	0.052459	0.3	Level A	0.01	1.678	BS1 SF-303 DI	
S1 RO UNIT #3 TERI	0.48	Normal	0.056096	0.3	Level A	0.01	1.786	BS1 RO UNIT	
BS1 SF-303 DISC	0.48	Normal	0.059969	0.2	Level A	0.01	2.032	BS1 SF-303 DI	
S1 NAOH PUMP TER	0.48	Normal	0.067909	0.4	Level A	0.014	1.575	BS1 NAOH PUI	
BS3 AIR COMP TERM	0.48	Normal	0.070802	0.4	Level A	0.01	2.237	-BS3 AIR COM	
S3 AIR HANDLER TEF	0.48	Normal	0.074476	0.3	Level A	0.01	2.509	S3 AIR HANDL	
1 COMPRESSOR TE	0.48	Normal	0.085685	0.4	Level A	0.016	1.73	COMPRESSO	
S1 COMPRESSOR PI	0.48	Normal	0.088287	0.4	Level A	0.016	1.8	COMPRESSO	
BS1 SF-302 TERM	0.48	Normal	0.094842	0.4	Level A	0.01	2.902	BS1 SF-302 DI	
BS1 AC-1 DISC	0.48	Normal	0.09929	0.3	Level A	0.016	2.106	S1 PANEL HB N	
BS1 AC-2 DISC	0.48	Normal	0.09929	0.3	Level A	0.016	2.106	S1 PANEL HB N	
BS1 AC-3 DISC	0.48	Normal	0.09929	0.3	Level A	0.016	2.106	S1 PANEL HB N	
BS1 AC-4 DISC	0.48	Normal	0.09929	0.3	Level A	0.016	2.106	S1 PANEL HB N	
BS1 AC-5 DISC	0.48	Normal	0.09929	0.3	Level A	0.016	2.106	S1 PANEL HB N	
BS1 BFV-07 TERM	0.48	Normal	0.099455	0.4	Level A	0.01	3.033	BS1 BFV-07 DI	
BS1 FV-116 TERM	0.48	Normal	0.099455	0.4	Level A	0.01	3.033	BS1 FV-116 DI	
BS1 BFV-07 DISC	0.48	Normal	0.101188	0.3	Level A	0.01	3.298	BS1 BFV-07 DI	
BS1 FV-116 DISC	0.48	Normal	0.101188	0.3	Level A	0.01	3.298	BS1 FV-116 DI	
BS6 PCV-34 DISC	0.48	Normal	0.104175	0.3	Level A	0.043	0.883	S6 PCV-32, 33	
BS1 IRR PUMP TERM	0.48	Normal	0.106413	0.4	Level A	0.013	2.508	S1 IRR PUMP	
BS3 AC-101 DISC	0.48	Normal	0.106689	0.3	Level A	0.022	1.703	BS3 AC-101 DI	
BS3 AIR COMP DISC	0.48	Normal	0.11969	0.4	Level A	0.018	2.259	S3 AIR COMP D	
BS3 AC-102 TERM	0.48	Normal	0.123402	0.4	Level A	0.01	4.002	F-BS3 AC-102	
BS1 SF-302 DISC	0.48	Normal	0.128652	0.4	Level A	0.01	4.118	BS1 SF-302 DI	
S3 AIR HANDLER DIS	0.48	Normal	0.137332	0.4	Level A	0.016	2.786	AIR HANDLEF	
S3 GEN RM EF TERI	0.48	Normal	0.138098	0.5	Level A	0.01	4.151	BS3 GEN RM E	
BS1 XFMR A PRI	0.48	Normal	0.155056	0.5	Level A	0.006	7.587	B-BS1 XFMR A	
METER SHOP XFMR	0.48	Generator	0.158071	0.5	Level A	0.017	2.929	METER SHOP	15%
1 DESALTER ELEV D	0.48	Normal	0.164947	0.4	Level A	0.009	5.633	BS1 PANEL DI	
S1 IRR PUMP PNL IPF	0.48	Normal	0.165763	0.6	Level A	0.012	4.275	S1 IRR PUMP	
BS1 PANEL DP2	0.48	Normal	0.170141	0.5	Level A	0.009	5.937	BS1 PANEL DI	
BS1 PANEL DP2 PRI	0.48	Normal	0.170141	0.5	Level A	0.009	5.937	BS1 PANEL DI	
BS1 PANEL DP1	0.48	Normal	0.171363	0.5	Level A	0.009	6.071	BS1 PANEL DI	
BS1 PANEL DP1 PRI	0.48	Normal	0.171363	0.5	Level A	0.009	6.071	BS1 PANEL DI	
BS1 XFMR C PRI	0.48	Normal	0.185514	0.6	Level A	0.009	6.071	BS1 PANEL DI	
BS1 XFMR B PRI	0.48	Normal	0.188277	0.6	Level A	0.009	6.288	BS1 PANEL DI	
BS1 MPC1 XFMR PR	0.48	Normal	0.200265	0.6	Level A	0.017	3.551	BS1 MPC1 MA	
S1 CIP PUMP VFD PI	0.48	Normal	0.207389	0.6	Level A	0.01	5.802	S1 CIP PUMP	
BS1 PANEL HA PRI	0.48	Normal	0.207543	0.5	Level A	0.018	3.719	-BS1 PANEL H	
BS1 MPC1 PRI	0.48	Normal	0.212537	0.6	Level A	0.018	3.551	B-BS1 MPC1	
BS3 AC-102 DISC	0.48	Normal	0.215288	0.5	Level A	0.016	4.28	BS3 AC-102 DI	
S1 CIP HEATER TER	0.48	Normal	0.23376	0.6	Level A	0.011	6.454	1 CIP HEATER	
BS1 XFMR T1 PRI	0.48	Normal	0.239059	0.7	Level A	0.018	3.963	3-BS1 XFMR T	
BS1 XFMR P PRI	0.48	Normal	0.242426	0.7	Level A	0.01	6.986	F-BS1 XFMR P	
PROP FAN PF-101 D	0.48	Generator	0.244811	0.6	Level A	0.037	2.262	6 PROP FAN P	
PROP FAN PF-101 T	0.48	Generator	0.24911	0.7	Level A	0.037	2.127	6 PROP FAN P	
S6 WTR HTR-1 TERI	0.48	Generator	0.271379	0.7	Level A	0.037	2.334	BS6 WTR HTR	
BS1 PANEL HB	0.48	Normal	0.289353	0.6	Level A	0.016	5.7	S1 PANEL HB N	
S1 METER SHOP DIS	0.48	Normal	0.29251	0.6	Level A	0.018	5.044	METER SHOF	
BS3 GEN RM EF DISC	0.48	Normal	0.292576	0.6	Level A	0.014	6.574	3 GEN RM EF	
BS3 PANEL H2	0.48	Normal	0.297361	0.6	Level A	0.014	6.406	S3 PANEL H2 N	
BS3 XFMR L2A PRI	0.48	Normal	0.299876	0.7	Level A	0.015	5.994	-BS3 XFMR L2	
BS3 XFMR L2B PRI	0.48	Normal	0.319464	0.8	Level A	0.014	6.41	-BS3 XFMR L2	
BS2 XFMR PRI	0.48	Generator	0.329605	0.7	Level A	0.017	6.18	B-BS2 XFMR	
BS3 PANEL H2 PRI	0.48	Normal	0.348816	0.7	Level A	0.017	6.406	-BS3 PANEL H	
S4 ENTRY GATE PN	0.48	Generator	0.361631	0.8	Level A	2	0.131	4 ENTRY GATE	
BS4 AH-1 TERM	0.48	Generator	0.376825	0.8	Level A	2	0.133	-BS4 AH-1 DIS	
BS4 AH-1 DISC	0.48	Generator	0.377263	0.8	Level A	2	0.133	-BS4 AH-1 DIS	
4 BRIDGE CRANE TE	0.48	Generator	0.3777	0.8	Level A	2	0.133	BRIDGE CRAN	
BS4 CU-1 TERM	0.48	Generator	0.378455	0.8	Level A	2	0.134	-BS4 CU-1 DIS	
BS4 CU-1 DISC	0.48	Generator	0.378808	0.8	Level A	2	0.134	-BS4 CU-1 DIS	
4 BRIDGE CRANE DI	0.48	Generator	0.379082	0.8	Level A	2	0.134	BRIDGE CRAN	
BS4 PANEL H1	0.48	Generator	0.379869	0.8	Level A	2	0.134	3-BS4 ATS GEI	

ID	kV (kV)	Configuration	otal Energy (cal/cm	AFB (ft)	Energy Levels	Final FCT (sec)	Ia at FCT (kA)	Source PD ID	% Ia Variation
BS4 ATS GEN	0.48	Generator	0.380167	0.8	Level A	2	0.134	3-BS4 ATS GEI	
BS4 GEN PRI	0.48	Generator	0.380897	0.8	Level A	2	0.134	3-BS4 ATS GEI	
S1 ADMIN ELEV DIS	0.48	Normal	0.382097	0.7	Level A	0.019	6.405	L ADMIN ELEV	
S4 ENTRY GATE TER	0.48	Normal	0.396495	0.9	Level A	0.219	0.632	4 ENTRY GATE	15%
BS1 PANEL HB PRI	0.48	Normal	0.424987	0.8	Level A	0.023	5.7	-BS1 PANEL H	
S1 ADMIN AIR COMI	0.48	Normal	0.439873	0.9	Level A	0.019	6.819	1 ADMIN AIR C	
BS6 HP-101 DISC	0.48	Normal	0.443202	0.8	Level A	0.018	7.583	-BS6 PP-1 MAI	
BS6 AH-101 TERM	0.48	Normal	0.450561	0.9	Level A	0.018	7.196	-BS6 PP-1 MAI	
BS2 B-XFMR SEC	0.48	Generator	0.455204	0.8	Level A	0.017	8.331	B-BS2 XFMR	
BS6 HP-101 TERM	0.48	Normal	0.471968	0.9	Level A	0.018	7.511	-BS6 PP-1 MAI	
BS1 PANEL L	0.48	Normal	0.480997	0.9	Level A	0.023	6.392	3-BS1 PANEL L	
BS6 AH-101 DISC	0.48	Normal	0.48299	0.9	Level A	0.018	8.211	-BS6 PP-1 MAI	
PERMEATE PMP1 VF	0.48	Normal	0.488314	1	Level A	0.017	8.173	PERMEATE PM	
PERMEATE PMP2 VF	0.48	Normal	0.488314	1	Level A	0.017	8.173	PERMEATE PM	
PERMEATE PMP3 VF	0.48	Normal	0.488314	1	Level A	0.017	8.173	PERMEATE PM	
BS6 PAH-101 DISC	0.48	Generator	0.492748	0.9	Level A	0.038	4.173	3-BS6 PAH-10	
BS6 PAH-101 TERM	0.48	Generator	0.535435	1	Level A	0.038	4.218	3-BS6 PAH-10	
BS3 XFMR L1A PRI	0.48	Normal	0.577001	1	Level A	0.013	12.128	-BS3 XFMR L1	
BS1 XFMR LA PRI	0.48	Normal	0.608646	1.1	Level A	0.023	7.426	3-BS1 XFMR LA	
6 XFMR TLP-SHOP F	0.48	Generator	0.622272	1.1	Level A	0.046	4.113	6 XFMR TLP-S	
BS3 PANEL H1	0.48	Normal	0.687033	1.1	Level A	0.017	11.993	-BS3 PANEL H	
BS3 VFD 310 PRI	0.48	Normal	0.883806	1.3	Level A	0.017	14.148	3-BS3 VFD 310	
BS3 VFD 300 PRI	0.48	Normal	0.889235	1.3	Level A	0.017	14.229	3-BS3 VFD 300	
BS3 VFD 280 PRI	0.48	Normal	0.900192	1.3	Level A	0.017	14.391	3-BS3 VFD 280	
BS6 CU-101 DISC	0.48	Normal	0.934284	1.3	Level A	0.018	15.117	-BS6 PP-1 MAI	
BS6 PCV-32 DISC	0.48	Normal	1.04	1.4	Level A	1.917	0.46	S6 PCV-32, 33	
BS6 CU-101 TERM	0.48	Normal	1.07	1.4	Level A	0.018	16.059	-BS6 PP-1 MAI	
BS6 FCV-400 TERM	0.48	Normal	1.07	1.4	Level A	1.853	0.493	3-BS6 FCV-400	
BS6 FCV-400 DISC	0.48	Normal	1.08	1.4	Level A	1.837	0.502	3-BS6 FCV-400	
BS1 NPB ATS-2 UTIL	0.48	Normal	1.12	1.4	Level A	0.026	12.008	1 NPB ATS-2	
BS6 PNL PP-1	0.48	Normal	1.25	1.5	Level B	0.018	19.831	-BS6 PP-1 MAI	
BS6 XFMR TLP-1 PR	0.48	Normal	1.31	1.6	Level B	0.018	19.329	-BS6 PP-1 MAI	
BS6 ATS-2 GEN	0.48	Normal	1.49	1.7	Level B	0.018	21.735	-BS6 ATS-2 GE	
BS6 PCV-32, 33, 34	0.48	Normal	1.53	1.7	Level B	0.018	22.286	-BS6 PP-1 MAI	
BS6 ATS-2 SEC	0.48	Normal	1.57	1.7	Level B	0.018	22.84	-BS6 ATS-2 UT	
BS6 ATS-2 UTIL	0.48	Normal	1.57	1.7	Level B	0.018	22.84	-BS6 ATS-2 UT	
6 B-AFD-401, 402 SE	0.48	Normal	1.73	1.8	Level B	0.018	25.022	3S6 AFD-401, 4	
METER SHOP XFMR	0.208	Generator	4	2.7	Level B		1.826		
3S1 MPC1 XFMR SEC	0.208	Generator	4	2.7	Level B		1.457		
BS1 PANEL A	0.208	Generator	4	3.1	Level B		1.373		
BS1 PANEL A PRI	0.208	Generator	4	3.1	Level B		1.373		
BS1 PANEL A2 PRI	0.208	Generator	4	3.1	Level B		1.158		
BS1 PANEL LA	0.208	Generator	4	3.1	Level B		1.772		
BS1 PANEL LA PRI	0.208	Generator	4	3.1	Level B		1.772		
BS1 PANEL LAA PRI	0.208	Generator	4	3.1	Level B		1.654		
BS1 PANEL LB PRI	0.208	Generator	4	3.1	Level B		1.654		
BS1 PANEL LPB PRI	0.208	Generator	4	3.1	Level B		1.468		
BS1 PANEL LPC PRI	0.208	Generator	4	3.1	Level B		1.464		
BS1 PANEL P PRI	0.208	Generator	4	3.1	Level B		1.348		
BS1 PANEL P1	0.208	Generator	4	3.1	Level B		1.749		
BS1 PANEL P1 DISC	0.208	Generator	4	3.1	Level B		1.768		
BS1 PNL P PRI	0.208	Generator	4	3.1	Level B		1.102		
BS1 XFMR A SEC	0.208	Generator	4	2.7	Level B		1.399		
BS1 XFMR B SEC	0.208	Generator	4	2.7	Level B		1.512		
BS1 XFMR C SEC	0.208	Generator	4	2.7	Level B		1.509		
BS1 XFMR LA SEC	0.208	Generator	4	2.7	Level B		1.962		
BS1 XFMR P SEC	0.208	Generator	4	2.7	Level B		1.111		
BS1 XFMR T1 SEC	0.208	Generator	4	2.7	Level B		1.478		
BS2 PNL PRI	0.208	Generator	4	3.1	Level B		0.864		
BS2 XFMR SEC	0.208	Generator	4	2.7	Level B		0.863		
BS3 PANEL L1A PRI	0.208	Generator	4	3.1	Level B		1.526		
BS3 PANEL L2A PRI	0.208	Generator	4	3.1	Level B		1.962		
BS3 PANEL L2B PRI	0.208	Generator	4	3.1	Level B		1.94		
BS3 XFMR L1A SEC	0.208	Generator	4	2.7	Level B		1.565		
BS3 XFMR L2A SEC	0.208	Generator	4	2.7	Level B		2.062		
BS3 XFMR L2B SEC	0.208	Generator	4	2.7	Level B		2.078		
BS6 27, 29, 31 PRI	0.208	Generator	4	3.1	Level B		1.964		
BS6 28, 30, 32 PRI	0.208	Generator	4	3.1	Level B		1.427		
BS6 33, 35, 37 PRI	0.208	Generator	4	3.1	Level B		1.74		

ID	kV (kV)	Configuration	otal Energy (cal/cm	AFB (ft)	Energy Levels	Final FCT (sec)	Ia at FCT (kA)	Source PD ID	% Ia Variation
3S6 120/208V PNL PR	0.208	Generator	4	3.1	Level B		2.001		
3S6 NEW OFFICE PR	0.208	Generator	4	3.1	Level B		2.361		
BS6 PNL LP-1	0.208	Generator	4	3.1	Level B		2.189		
BS6 PNL LP-1 PRI	0.208	Generator	4	2.7	Level B		2.264		
BS6 SHOP PNL A	0.208	Generator	4	3.1	Level B		2.575		
BS6 SHOP PNL A PR	0.208	Generator	4	2.7	Level B		2.686		
3S6 XFMR TLP-1 SE(	0.208	Generator	4	2.7	Level B		2.305		
6 XFMR TLP-SHOP S	0.208	Generator	4	2.7	Level B		2.771		
BS6 AFD-33	0.48	Generator	4.81	3	Level B	0.211	5.689	B-BS6 AFD-33	
BS6 AFD-32	0.48	Generator	4.83	3	Level B	0.211	5.701	B-BS6 AFD-32	
BS6 AFD-34	0.48	Generator	4.83	3	Level B	0.211	5.701	B-BS6 AFD-34	
BS6 ATS-1 UTIL	0.48	Normal	6.83	3.6	Level B	0.07	25.152	-BS6 ATS-1 UT	
BS6 PNL PP-1 PRI	0.48	Generator	7.77	4.7	Level B	0.54	3.423	-BS6 ATS-2 GE	15%
S1 NPB MAIN SWBD	0.48	Generator	8.18	7.4	Level B	2	1.959	S1 NPB ATS-2	
BS3 ATS UTIL	0.48	Normal	8.46	4	Level B	0.15	15.203	3-BS3 ATS UTI	
BS3 SWBD DB	0.48	Generator	10.66	8.8	Level B	2	2.488	3-BS3 ATS GEI	
BS2 ATS PRI	0.48	Generator	11.04	4.5	Level B	0.394	7.985	F-BS2 ATS	15%
BS2 ATS SEC	0.48	Generator	11.04	4.5	Level B	0.394	7.985	F-BS2 ATS	15%
BS1 ADMIN SWBD	0.48	Generator	12.83	6.4	Level C	2	1.954	S1 ADMIN SW	
S1 ADMIN SWBD DIS	0.48	Generator	12.83	6.4	Level C	2	1.954	3S1 ADMIN BL	
BS1 MSB ATS EMER	0.48	Generator	14.41	5.2	Level C	2	2.037	BS1 CHEM BL	
3S1 WELL 23 VFD PR	0.48	Generator	14.77	5.3	Level C	2	2.075	3S1 WELL 23 V	
3S1 WELL 20 VFD PR	0.48	Generator	14.96	5.3	Level C	2	2.105	3S1 WELL 20 V	
3S1 WELL 22 VFD PR	0.48	Generator	14.98	5.3	Level C	2	2.107	3S1 WELL 22 V	
BS1 NPB ATS-1 GEN	0.48	Generator	15.17	5.3	Level C	2	2.117	S1 NPB ATS-1	
BS1 NPB ATS-2 GEN	0.48	Generator	15.19	5.3	Level C	2	2.129	S1 NPB ATS-2	
BS1 NPB ATS-2 SEC	0.48	Generator	15.19	5.3	Level C	2	2.129	S1 NPB ATS-2	
BS1 NPB GEN 1 PRI	0.48	Generator	15.28	5.4	Level C	2	2.129	S1 NPB ATS-1	
BS1 NPB GEN 2 PRI	0.48	Generator	15.32	5.4	Level C	2	2.143	S1 NPB ATS-2	
BS3 VFD 290 PRI	0.48	Generator	16.72	5.6	Level C	2	2.318	3-BS3 VFD 290	15%
BS6 SWBD DSB-1	0.48	Generator	16.99	12.1	Level C	2	3.93	-BS6 ATS-1 GE	
BS3 ATS GEN	0.48	Generator	20.12	6.1	Level C	2	2.748	3-BS3 ATS GEI	
BS3 ATS SEC	0.48	Generator	20.12	6.1	Level C	2	2.748	3-BS3 ATS GEI	
BS3 GEN PRI	0.48	Generator	20.24	6.2	Level C	2	2.76	3-BS3 ATS GEI	
BS6 AFD-402 PRI	0.48	Generator	24.89	6.8	Level C	2	3.5	3S6 AFD-401, 4	15%
BS4 SWBD MS	0.48	Normal	26	16.1	Level C	2	6.388	3-BS4 ATS UTI	
BS6 AFD-401 PRI	0.48	Generator	26.19	7	Level C	2	3.627	3S6 AFD-401, 4	15%
BS4 UTIL SWBD	0.48	Generator	26.49	16.3	Level C	2	6.506		
BS1 MSB	0.48	Normal	27.39	16.7	Level C	2	6.437		15%
BS6 ATS-1 GEN	0.48	Generator	27.7	7.2	Level C	2	3.789	-BS6 ATS-1 GE	15%
BS6 ATS-1 SEC	0.48	Generator	27.7	7.2	Level C	2	3.789	-BS6 ATS-1 GE	15%
BS6 GEN EG-1 PRI	0.48	Generator	27.82	7.2	Level C	2	3.802	-BS6 ATS-1 GE	15%
BS1 MSB EUSERC	0.48	Normal	32.65	18.8	Level C	2	7.573		
BS2 MAIN SWBD	0.48	Generator	34.66	19.6	Level C	2	8.344		
OLAR CONTROL CA	0.48	Normal	41.57	13	Level D	2	6.054		
S1 NPB MAIN SWBD	0.48	Normal	42.19	22.4	Level D	2	10.004	S1 NPB ATS-1	
N PWR BLDG MAIN S	0.48	Generator	45.57	23.6	Level D	2	10.748		
SOLAR INVERTER D	0.48	Normal	47.54	14.1	Level D	2	6.946		
BS1 XFMR P DISC	0.48	Normal	49.08	9.6	Level D	2	7.064	S1 NPB ATS-2	15%
BS4 ATS UTIL	0.48	Generator	49.77	9.7	Level D	2	7.157	3-BS4 ATS UTI	
BS3 SWBD MSB	0.48	Generator	56.86	27.4	Level D	2	13.189		
BS1 NPB ATS-1 SEC	0.48	Normal	72.87	11.7	Level D	2	10.18	S1 NPB ATS-1	15%
BS1 NPB ATS-1 UTIL	0.48	Generator	72.92	11.7	Level D	2	10.189	S1 NPB ATS-1	15%
3S6 MAIN SWBD SB-	0.48	Generator	78.48	34.2	Level D	2	17.769	6 SWBD-SB1	15%
MAIN SWBD SB-1 EU	0.48	Generator	93.55	38.5	Level D	2	20.905		

ID	kV (kV)	Configuration	otal Energy (cal/cm	AFB (ft)	Energy Levels	Final FCT (sec)	Ia at FCT (kA)	Source PD ID	% Ia Variation

ID	kV (kV)	Configuration	otal Energy (cal/cm	AFB (ft)	Energy Levels	Final FCT (sec)	Ia at FCT (kA)	Source PD ID	% Ia Variation

ID	kV (kV)	Configuration	otal Energy (cal/cm	AFB (ft)	Energy Levels	Final FCT (sec)	Ia at FCT (kA)	Source PD ID	% Ia Variation

ID	kV (kV)	Configuration	otal Energy (cal/cm	AFB (ft)	Energy Levels	Final FCT (sec)	Ia at FCT (kA)	Source PD ID	% Ia Variation

ID	kV (kV)	Configuration	otal Energy (cal/cm	AFB (ft)	Energy Levels	Final FCT (sec)	Ia at FCT (kA)	Source PD ID	% Ia Variation

APPENDIX E – PROTECTION SETTINGS

Protective Device Settings

Fuse: F-BS1 ADMIN ELEV

MFR:	Littelfuse	Tag #:		3-Phase kA:	9.78	Asym. (Calc.)
Model:	FLSR	kV:	0.600	LG kA:	7.17	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	60A	Cont. Amp:	60.000			

Fuse: F-BS1 ADMIN SWBD

MFR:	Gould Shawmut (Ferraz)	Tag #:		3-Phase kA:	15.58	Asym. (Calc.)
Model:	TRS	kV:	0.600	LG kA:	13.35	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	400R	Cont. Amp:	400.000			

Fuse: F-BS1 DESALTER ELEV

MFR:	Bussmann	Tag #:		3-Phase kA:	8.49	Asym. (Calc.)
Model:	FRS-R	kV:	0.600	LG kA:	6.99	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	100A	Cont. Amp:	100.000			

Fuse: F-BS1 METER SHOP XFMR

MFR:	Gould Shawmut (Ferraz)	Tag #:		3-Phase kA:	7.36	Asym. (Calc.)
Model:	TRS	kV:	0.600	LG kA:	4.95	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	100R	Cont. Amp:	100.000			

Fuse: F-BS1 PANEL P1

MFR:	Gould Shawmut (Ferraz)	Tag #:		3-Phase kA:	3.18	Asym. (Calc.)
Model:	TR	kV:	0.250	LG kA:	3.36	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.208	(Calc.)
Size:	225R	Cont. Amp:	225.000			

Fuse: F-BS1 PERMEATE PMP1 VFD

MFR:	Bussmann	Tag #:		3-Phase kA:	13.22	Asym. (Calc.)
Model:	LPJ_SP	kV:	0.600	LG kA:	13.58	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	300.000	Base kV:	0.480	(Calc.)
Size:	225A	Cont. Amp:	225.000			

Fuse: F-BS1 PERMEATE PMP2 VFD

MFR:	Bussmann	Tag #:		3-Phase kA:	13.22	Asym. (Calc.)
Model:	LPJ_SP	kV:	0.600	LG kA:	13.58	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	300.000	Base kV:	0.480	(Calc.)
Size:	225A	Cont. Amp:	225.000			

Fuse: F-BS1 PERMEATE PMP3 VFD

MFR:	Bussmann	Tag #:		3-Phase kA:	13.22	Asym. (Calc.)
Model:	LPJ_SP	kV:	0.600	LG kA:	13.58	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	300.000	Base kV:	0.480	(Calc.)
Size:	225A	Cont. Amp:	225.000			

Protective Device Settings

Fuse:	F-BS1 WELL 23 VFD MAIN					
MFR:	Bussmann	Tag #:		3-Phase kA:	17.54	Asym. (Calc.)
Model:	LPJ_SP	kV:	0.600	LG kA:	15.71	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	300.000	Base kV:	0.480	(Calc.)
Size:	400A	Cont. Amp:	400.000			

Fuse:	F-BS1 XFMR P					
MFR:	Littelfuse	Tag #:		3-Phase kA:	12.15	Asym. (Calc.)
Model:	FLSR (01/05)	kV:	0.600	LG kA:	9.16	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	45A	Cont. Amp:	45.000			

Fuse:	F-BS1XFMR MULTIPURPOSE RM					
MFR:	Bussmann	Tag #:		3-Phase kA:	4.99	Asym. (Calc.)
Model:	LPJ_SP	kV:	0.600	LG kA:	0.00	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	300.000	Base kV:	0.480	(Calc.)
Size:	125A	Cont. Amp:	125.000			

Fuse:	F-BS2 ATS					
MFR:	Gould Shawmut (Ferraz)	Tag #:		3-Phase kA:	14.96	Asym. (Calc.)
Model:	TRS	kV:	0.600	LG kA:	15.97	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	600R	Cont. Amp:	600.000			

Fuse:	F-BS3 AC-101					
MFR:	Littelfuse	Tag #:		3-Phase kA:	2.04	Asym. (Calc.)
Model:	FLSR (01/05)	kV:	0.600	LG kA:	1.21	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	35A	Cont. Amp:	35.000			

Fuse:	F-BS3 AC-102					
MFR:	Littelfuse	Tag #:		3-Phase kA:	5.77	Asym. (Calc.)
Model:	FLSR (01/05)	kV:	0.600	LG kA:	3.67	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	35A	Cont. Amp:	35.000			

Fuse:	F-BS3 AIR COMP					
MFR:	Littelfuse	Tag #:		3-Phase kA:	2.81	Asym. (Calc.)
Model:	FLSR (01/05)	kV:	0.600	LG kA:	1.69	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	45A	Cont. Amp:	45.000			

Fuse:	F-BS3 AIR HANDLER					
MFR:	Littelfuse	Tag #:		3-Phase kA:	3.58	Asym. (Calc.)
Model:	FLSR (01/05)	kV:	0.600	LG kA:	2.17	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	15A	Cont. Amp:	15.000			

Protective Device Settings

Fuse: F-BS3 GEN RM EF

MFR:	Littelfuse	Tag #:		3-Phase kA:	9.07	Asym. (Calc.)
Model:	FLSR (01/05)	kV:	0.600	LG kA:	6.36	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	200.000	Base kV:	0.480	(Calc.)
Size:	15A	Cont. Amp:	15.000			

Fuse: F-BS6 AFD-401 MAIN

MFR:	Bussmann	Tag #:		3-Phase kA:	29.95	Asym. (Calc.)
Model:	LPJ_SP	kV:	0.600	LG kA:	24.67	Asym. (Calc.)
Speed:	Time Delay	Int. kA:	300.000	Base kV:	0.480	(Calc.)
Size:	250A	Cont. Amp:	250.000			

CB: B-BS1 AC-1

MFR:	Square-D	Tag #:		3-Phase kA:	8.53	Asym. (Calc.)
Model:	EGB	Rating:	35 kA, 0.48 kV	LG kA:	6.16	Asym. (Calc.)
Size:	25	Cont. Amp:	25.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	EGB	Magnetic Trip:	FIXED
ID:	25		

CB: B-BS1 AC-2

MFR:	Square-D	Tag #:		3-Phase kA:	8.53	Asym. (Calc.)
Model:	EGB	Rating:	35 kA, 0.48 kV	LG kA:	6.16	Asym. (Calc.)
Size:	25	Cont. Amp:	25.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	EGB	Magnetic Trip:	FIXED
ID:	25		

CB: B-BS1 AC-3

MFR:	Square-D	Tag #:		3-Phase kA:	8.53	Asym. (Calc.)
Model:	EGB	Rating:	35 kA, 0.48 kV	LG kA:	6.16	Asym. (Calc.)
Size:	25	Cont. Amp:	25.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	EGB	Magnetic Trip:	FIXED
ID:	25		

CB: B-BS1 AC-4

MFR:	Square-D	Tag #:		3-Phase kA:	8.53	Asym. (Calc.)
Model:	EGB	Rating:	35 kA, 0.48 kV	LG kA:	6.16	Asym. (Calc.)
Size:	25	Cont. Amp:	25.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	EGB	Magnetic Trip:	FIXED
ID:	25		

Protective Device Settings

CB: B-BS1 AC-5

MFR:	Square-D	Tag #:		3-Phase kA:	8.53	Asym. (Calc.)
Model:	EGB	Rating:	35 kA, 0.48 kV	LG kA:	6.16	Asym. (Calc.)
Size:	25	Cont. Amp:	25.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	EGB	Magnetic Trip:	FIXED
ID:	25		

CB: B-BS1 ADMIN AIR COMP

MFR:	General Electric	Tag #:		3-Phase kA:	15.58	Asym. (Calc.)
Model:	THED (15-100A)	Rating:	25 kA, 0.48 kV	LG kA:	13.35	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	THED (E 150)	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS1 ADMIN BLDG

MFR:	General Electric	Tag #:		3-Phase kA:	20.53	Asym. (Calc.)
Model:	TJK6	Rating:	30 kA, 0.48 kV	LG kA:	19.69	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TJK6	Magnetic Trip:	8.000
ID:	600		

CB: B-BS1 ADMIN ELEV DISC

MFR:	General Electric	Tag #:		3-Phase kA:	15.58	Asym. (Calc.)
Model:	THED (15-100A)	Rating:	25 kA, 0.48 kV	LG kA:	13.35	Asym. (Calc.)
Size:	90	Cont. Amp:	90.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	THED (E 150)	Magnetic Trip:	FIXED
ID:	90		

CB: B-BS1 BFV-07 DISC

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	20		

Protective Device Settings

CB: B-BS1 CHEM BLDG

MFR:	General Electric	Tag #:		3-Phase kA:	20.53	Asym. (Calc.)
Model:	TJK6	Rating:	30 kA, 0.48 kV	LG kA:	19.69	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TJK6	Magnetic Trip:	10.000
ID:	600		

CB: B-BS1 CIP HEATER

MFR:	Square-D	Tag #:		3-Phase kA:	10.57	Asym. (Calc.)
Model:	LHL	Rating:	35 kA, 0.48 kV	LG kA:	9.67	Asym. (Calc.)
Size:	400	Cont. Amp:	400.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	LHL	Magnetic Trip:	5.000
ID:	400		

CB: B-BS1 CIP HEATER PNL

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HFD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	250	Cont. Amp:	250.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HFD6	Magnetic Trip:	HI
ID:	250 (0.6kV)		

CB: B-BS1 CIP PUMP VFD

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HFD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	200	Cont. Amp:	200.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HFD6	Magnetic Trip:	HI
ID:	200 (0.48kV)		

CB: B-BS1 CIP PUMP VFD MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	8.16	Asym. (Calc.)
Model:	HMCP-F	Rating:	100 kA, 0.48 kV	LG kA:	6.69	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR:	Cutler-Hammer
Model:	HMCP
ID:	150T4
Pick up:	A

Protective Device Settings

CB: B-BS1 COMPRESSOR PNL

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HHED6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	30	Cont. Amp:	30.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HED6	Magnetic Trip:	FIXED
ID:	30 (0.6kV)		

CB: B-BS1 DESALTER ELEV DISC

MFR:	Siemens	Tag #:		3-Phase kA:	9.09	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	7.71	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS1 FV-116 DISC

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS1 IRR PUMP

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	5.72	Asym. (Calc.)
Model:	HMCP-F	Rating:	100 kA, 0.48 kV	LG kA:	3.88	Asym. (Calc.)
Size:	7	Cont. Amp:	7.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR:	Cutler-Hammer
Model:	HMCP
ID:	007C0
Pick up:	B

CB: B-BS1 IRR PUMP PNL

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HHED6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	15	Cont. Amp:	15.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HED6	Magnetic Trip:	FIXED
ID:	15 (0.48kV)		

Protective Device Settings

CB: B-BS1 M PURPOSE RM PNL MB

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	2.33	Asym. (Calc.)
Model:	BW	Rating:	10 kA, 0.24 kV	LG kA:	0.00	Asym. (Calc.)
Size:	225	Cont. Amp:	225.000	Base kV:	0.240	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	CSR	Magnetic Trip:	FIXED
ID:	225 A		

CB: B-BS1 METER SHOP DISC

MFR:	General Electric	Tag #:		3-Phase kA:	20.53	Asym. (Calc.)
Model:	TED	Rating:	18 kA, 0.48 kV	LG kA:	19.69	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TED (E 100)	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS1 MPC1

MFR:	General Electric	Tag #:		3-Phase kA:	9.88	Asym. (Calc.)
Model:	TED	Rating:	18 kA, 0.48 kV	LG kA:	7.48	Asym. (Calc.)
Size:	60	Cont. Amp:	60.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TED (E 150)	Magnetic Trip:	FIXED
ID:	60		

CB: B-BS1 MPC1 MAIN

MFR:	Square-D	Tag #:		3-Phase kA:	4.65	Asym. (Calc.)
Model:	FAL 480V	Rating:	18 kA, 0.48 kV	LG kA:	2.96	Asym. (Calc.)
Size:	90	Cont. Amp:	90.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	FAL	Magnetic Trip:	FIXED
ID:	90		

CB: B-BS1 MPC1 PNL MAIN

MFR:	Square-D	Tag #:		3-Phase kA:	2.27	Asym. (Calc.)
Model:	QO	Rating:	10 kA, 0.24 kV	LG kA:	2.43	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	QO	Magnetic Trip:	FIXED
ID:	100		

Protective Device Settings

CB: B-BS1 MULTIPURPOSE RM

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HFD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	125	Cont. Amp:	125.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HFD6	Magnetic Trip:	LO
ID:	125 (0.48kV)		

CB: B-BS1 NAOH PUMP

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HHED6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HED6	Magnetic Trip:	FIXED
ID:	20 (0.6kV)		

CB: B-BS1 NPB ATS-1 GEN

MFR:	Merlin Gerin	Tag #:		3-Phase kA:	9.54	Asym. (Calc.)
Model:	CK 1200N	Rating:	50 kA, 0.48 kV	LG kA:	11.50	Asym. (Calc.)
Size:	1200	Cont. Amp:	1200.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR:	Merlin Gerin
Model:	STR 55UP
Sensor:	1200
Rating Plug:	1200.00

		Phase Setting
Long-Time	LT Pickup	1.0
	LT Band	480
INST	Inst. Pickup	10

CB: B-BS1 NPB ATS-1 UTIL

MFR:	General Electric	Tag #:		3-Phase kA:	23.84	Asym. (Calc.)
Model:	THKM12	Rating:	35 kA, 0.48 kV	LG kA:	25.13	Asym. (Calc.)
Size:	1000	Cont. Amp:	1000.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	THKM12	Magnetic Trip:	10.000
ID:	1000		

Protective Device Settings

CB: B-BS1 NPB ATS-2 GEN

MFR:	ABB	Tag #:		3-Phase kA:	9.25	Asym. (Calc.)
Model:	NSB	Rating:	35 kA, 0.48 kV	LG kA:	11.17	Asym. (Calc.)
Size:	1200	Cont. Amp:	1200.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	ABB	Thermal Trip:	Fixed
Model:	NS	Magnetic Trip:	5.000
ID:	1200		

CB: B-BS1 NPB ATS-2 UTIL

MFR:	General Electric	Tag #:		3-Phase kA:	23.84	Asym. (Calc.)
Model:	TKM8	Rating:	30 kA, 0.48 kV	LG kA:	25.13	Asym. (Calc.)
Size:	800	Cont. Amp:	800.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TKM8	Magnetic Trip:	8.000
ID:	800		

CB: B-BS1 PANEL A MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	2.14	Asym. (Calc.)
Model:	QJ2	Rating:	10 kA, 0.24 kV	LG kA:	2.18	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	QJ2	Magnetic Trip:	FIXED
ID:	150		

CB: B-BS1 PANEL A2

MFR:	Siemens	Tag #:		3-Phase kA:	2.14	Asym. (Calc.)
Model:	BL	Rating:	10 kA, 0.24 kV	LG kA:	2.18	Asym. (Calc.)
Size:	50	Cont. Amp:	50.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	BL (2,3P)	Magnetic Trip:	FIXED
ID:	50		

CB: B-BS1 PANEL A2 MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	1.60	Asym. (Calc.)
Model:	BL	Rating:	10 kA, 0.24 kV	LG kA:	1.35	Asym. (Calc.)
Size:	50	Cont. Amp:	50.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	BL (2,3P)	Magnetic Trip:	FIXED
ID:	50		

Protective Device Settings

CB: B-BS1 PANEL DP1

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HFD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HFD6	Magnetic Trip:	HI
ID:	150 (0.48kV)		

CB: B-BS1 PANEL DP1 MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	FD6-A	Rating:	35 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	225	Cont. Amp:	225.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	FD6-A	Magnetic Trip:	HI
ID:	225 (0.48kV)		

CB: B-BS1 PANEL DP2

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HFD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HFD6	Magnetic Trip:	HI
ID:	150 (0.48kV)		

CB: B-BS1 PANEL DP2 MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	9.09	Asym. (Calc.)
Model:	FD6-A	Rating:	35 kA, 0.48 kV	LG kA:	7.71	Asym. (Calc.)
Size:	225	Cont. Amp:	225.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	FD6-A	Magnetic Trip:	HI
ID:	225 (0.48kV)		

CB: B-BS1 PANEL HA

MFR:	General Electric	Tag #:		3-Phase kA:	15.58	Asym. (Calc.)
Model:	TED	Rating:	18 kA, 0.48 kV	LG kA:	13.35	Asym. (Calc.)
Size:	60	Cont. Amp:	60.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TED (E 150)	Magnetic Trip:	FIXED
ID:	60		

Protective Device Settings

CB: B-BS1 PANEL HA MAIN

MFR:	Square-D	Tag #:		3-Phase kA:	5.15	Asym. (Calc.)
Model:	EGB	Rating:	35 kA, 0.48 kV	LG kA:	3.25	Asym. (Calc.)
Size:	60	Cont. Amp:	60.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	EGB	Magnetic Trip:	FIXED
ID:	60		

CB: B-BS1 PANEL HB

MFR:	General Electric	Tag #:		3-Phase kA:	15.58	Asym. (Calc.)
Model:	TFK	Rating:	22 kA, 0.48 kV	LG kA:	13.35	Asym. (Calc.)
Size:	225	Cont. Amp:	225.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TFK	Magnetic Trip:	10.000
ID:	225		

CB: B-BS1 PANEL HB MAIN

MFR:	Square-D	Tag #:		3-Phase kA:	8.53	Asym. (Calc.)
Model:	KHL	Rating:	35 kA, 0.48 kV	LG kA:	6.16	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	KHL	Magnetic Trip:	5.000
ID:	150		

CB: B-BS1 PANEL L

MFR:	General Electric	Tag #:		3-Phase kA:	15.58	Asym. (Calc.)
Model:	TFJ	Rating:	22 kA, 0.48 kV	LG kA:	13.35	Asym. (Calc.)
Size:	175	Cont. Amp:	175.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TFJ	Magnetic Trip:	10.000
ID:	175		

CB: B-BS1 PANEL LA MAIN

MFR:	Square-D	Tag #:		3-Phase kA:	3.22	Asym. (Calc.)
Model:	QB	Rating:	10 kA, 0.24 kV	LG kA:	3.11	Asym. (Calc.)
Size:	225	Cont. Amp:	225.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	QB (60Hz)	Magnetic Trip:	FIXED
ID:	225		

Protective Device Settings

CB: B-BS1 PANEL LAA

MFR:	Square-D	Tag #:		3-Phase kA:	3.22	Asym. (Calc.)
Model:	QOB	Rating:	10 kA, 0.24 kV	LG kA:	3.11	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	QO	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS1 PANEL LB

MFR:	Square-D	Tag #:		3-Phase kA:	3.22	Asym. (Calc.)
Model:	QOB	Rating:	10 kA, 0.24 kV	LG kA:	3.11	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	QO	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS1 PANEL LPB MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	2.36	Asym. (Calc.)
Model:	QJ2	Rating:	10 kA, 0.24 kV	LG kA:	2.40	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	QJ2	Magnetic Trip:	FIXED
ID:	150		

CB: B-BS1 PANEL LPC MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	2.35	Asym. (Calc.)
Model:	QJ2	Rating:	10 kA, 0.24 kV	LG kA:	2.40	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	QJ2	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS1 PANEL P MAIN

MFR:	General Electric	Tag #:		3-Phase kA:	2.04	Asym. (Calc.)
Model:	TQD	Rating:	10 kA, 0.24 kV	LG kA:	1.99	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TQD	Magnetic Trip:	FIXED
ID:	150		

Protective Device Settings

CB: B-BS1 PERMEATE PMP1 VFD

MFR:	Siemens	Tag #:		3-Phase kA:	14.12 Asym. (Calc.)
Model:	SHJD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18 Asym. (Calc.)
Size:	300	Cont. Amp:	300.000	Base kV:	0.480 (Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-JD
Sensor: 300

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	1.0		Ground Pickup	0.3	
	LT Band	25		Ground Band	0.1	I^xt=IN
Short-Time	ST Pickup	1.5				
	ST Band	0.05s	I^xt=OUT			
INST	Inst. Pickup	2				

CB: B-BS1 PERMEATE PMP2 VFD

MFR:	Siemens	Tag #:		3-Phase kA:	14.12 Asym. (Calc.)
Model:	SHJD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18 Asym. (Calc.)
Size:	300	Cont. Amp:	300.000	Base kV:	0.480 (Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-JD
Sensor: 300

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	1.0		Ground Pickup	0.2	
	LT Band	25		Ground Band	0.1	I^xt=IN
Short-Time	ST Pickup	10				
	ST Band	0.05s	I^xt=OUT			
INST	Inst. Pickup	2				

CB: B-BS1 PERMEATE PMP3 VFD

MFR:	Siemens	Tag #:		3-Phase kA:	14.12 Asym. (Calc.)
Model:	SHJD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18 Asym. (Calc.)
Size:	300	Cont. Amp:	300.000	Base kV:	0.480 (Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-JD
Sensor: 300

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	1.0		Ground Pickup	0.2	
	LT Band	25		Ground Band	0.1	I^xt=IN
Short-Time	ST Pickup	10				
	ST Band	0.05s	I^xt=OUT			
INST	Inst. Pickup	2				

Protective Device Settings

CB: B-BS1 PNL P MAIN

MFR:	Square-D	Tag #:		3-Phase kA:	1.53	Asym. (Calc.)
Model:	QOB	Rating:	10 kA, 0.24 kV	LG kA:	1.55	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	QO	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS1 RO UNIT #1

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS1 RO UNIT #2

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS1 RO UNIT #3

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS1 SF-301

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	1.87	Asym. (Calc.)
Model:	HMCP-F	Rating:	100 kA, 0.48 kV	LG kA:	1.12	Asym. (Calc.)
Size:	7	Cont. Amp:	7.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR:	Cutler-Hammer
Model:	HMCP
ID:	007C0
Pick up:	C

Protective Device Settings

CB: B-BS1 SF-301 DISC

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS1 SF-302

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	5.80	Asym. (Calc.)
Model:	HMCP-F	Rating:	100 kA, 0.48 kV	LG kA:	4.03	Asym. (Calc.)
Size:	7	Cont. Amp:	7.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR:	Cutler-Hammer
Model:	HMCP
ID:	007C0
Pick up:	C

CB: B-BS1 SF-302 DISC

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS1 SF-303

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	2.54	Asym. (Calc.)
Model:	HMCP-F	Rating:	100 kA, 0.48 kV	LG kA:	1.55	Asym. (Calc.)
Size:	7	Cont. Amp:	7.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR:	Cutler-Hammer
Model:	HMCP
ID:	007C0
Pick up:	C

CB: B-BS1 SF-303 DISC

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	20		

Protective Device Settings

CB: B-BS1 SOLAR INVERTER

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HFD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	200	Cont. Amp:	200.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HFD6	Magnetic Trip:	HI
ID:	200 (0.48kV)		

CB: B-BS1 SWBD-MSB

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	WL-S-2000	Rating:	65 kA, 0.508 kV	LG kA:	15.18	Asym. (Calc.)
Size:	2000	Cont. Amp:	2000.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR:	Siemens
Model:	ETU745 (I^2t)
Sensor:	Frame Size II - 2000
Rating Plug:	1600.00

		Phase Setting		Ground Setting		
Long-Time	LT Pickup	1		Ground Pickup	A	
	LT Band	2		Ground Band	0.2	I^xt=IN
Short-Time	ST Pickup	1.25				
	ST Band	0.2	I^xt=IN			
INST	Inst. Pickup	1.5				

CB: B-BS1 WELL 20 VFD

MFR:	General Electric	Tag #:		3-Phase kA:	20.14	Asym. (Calc.)
Model:	TJK6	Rating:	30 kA, 0.48 kV	LG kA:	19.18	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TJK6	Magnetic Trip:	10.000
ID:	600		

CB: B-BS1 WELL 20 VFD MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	18.34	Asym. (Calc.)
Model:	HMCP-L	Rating:	100 kA, 0.48 kV	LG kA:	16.76	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR:	Cutler-Hammer
Model:	HMCP
ID:	600L6W
Pick up:	F

Protective Device Settings

CB: B-BS1 WELL 22 VFD

MFR:	General Electric	Tag #:		3-Phase kA:	20.14	Asym. (Calc.)
Model:	TJK6	Rating:	30 kA, 0.48 kV	LG kA:	19.18	Asym. (Calc.)
Size:	500	Cont. Amp:	500.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TJK6	Magnetic Trip:	10.000
ID:	500		

CB: B-BS1 WELL 22 VFD MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	18.61	Asym. (Calc.)
Model:	HMCP-L	Rating:	100 kA, 0.48 kV	LG kA:	17.11	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR:	Cutler-Hammer
Model:	HMCP
ID:	600L6W
Pick up:	F

CB: B-BS1 WELL 23 VFD

MFR:	General Electric	Tag #:		3-Phase kA:	20.53	Asym. (Calc.)
Model:	TJK6	Rating:	30 kA, 0.48 kV	LG kA:	19.69	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TJK6	Magnetic Trip:	10.000
ID:	600		

CB: B-BS1 WELL 23 VFD MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	17.54	Asym. (Calc.)
Model:	HMCP-K	Rating:	100 kA, 0.48 kV	LG kA:	15.71	Asym. (Calc.)
Size:	400	Cont. Amp:	400.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR:	Cutler-Hammer
Model:	HMCP
ID:	400W5
Pick up:	F

CB: B-BS1 XFMR A

MFR:	Siemens	Tag #:		3-Phase kA:	14.12	Asym. (Calc.)
Model:	HFD6	Rating:	65 kA, 0.48 kV	LG kA:	15.18	Asym. (Calc.)
Size:	80	Cont. Amp:	80.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HFD6	Magnetic Trip:	LO
ID:	80 (0.48kV)		

Protective Device Settings

CB: B-BS1 XFMR B

MFR:	Siemens	Tag #:		3-Phase kA:	9.35	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	8.07	Asym. (Calc.)
Size:	60	Cont. Amp:	60.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	60		

CB: B-BS1 XFMR C

MFR:	Siemens	Tag #:		3-Phase kA:	9.09	Asym. (Calc.)
Model:	NGB	Rating:	25 kA, 0.48 kV	LG kA:	7.71	Asym. (Calc.)
Size:	60	Cont. Amp:	60.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	NGB	Magnetic Trip:	FIXED
ID:	60		

CB: B-BS1 XFMR EM

MFR:	General Electric	Tag #:		3-Phase kA:	20.14	Asym. (Calc.)
Model:	THED	Rating:	25 kA, 0.48 kV	LG kA:	19.18	Asym. (Calc.)
Size:	30	Cont. Amp:	30.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	THED (E 150)	Magnetic Trip:	FIXED
ID:	30		

CB: B-BS1 XFMR LA

MFR:	General Electric	Tag #:		3-Phase kA:	15.58	Asym. (Calc.)
Model:	TFK	Rating:	22 kA, 0.48 kV	LG kA:	13.35	Asym. (Calc.)
Size:	225	Cont. Amp:	225.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TFK	Magnetic Trip:	10.000
ID:	225		

CB: B-BS1 XFMR T1

MFR:	General Electric	Tag #:		3-Phase kA:	9.88	Asym. (Calc.)
Model:	TED	Rating:	18 kA, 0.48 kV	LG kA:	7.48	Asym. (Calc.)
Size:	60	Cont. Amp:	60.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TED (E 150)	Magnetic Trip:	FIXED
ID:	60		

Protective Device Settings

CB: B-BS2 PNL MAIN

MFR:	Challenger	Tag #:		3-Phase kA:	1.02	Asym. (Calc.)
Model:	CD	Rating:	10 kA, 0.24 kV	LG kA:	1.02	Asym. (Calc.)
Size:	125	Cont. Amp:	125.000	Base kV:	0.208	(Calc.)

CB: B-BS2 XFMR

MFR:	Square-D	Tag #:		3-Phase kA:	13.78	Asym. (Calc.)
Model:	FAL 600V	Rating:	18 kA, 0.48 kV	LG kA:	13.89	Asym. (Calc.)
Size:	50	Cont. Amp:	50.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	FAL	Magnetic Trip:	FIXED
ID:	50		

CB: B-BS3 AC-101 DISC

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	8.81	Asym. (Calc.)
Model:	FD	Rating:	35 kA, 0.48 kV	LG kA:	6.77	Asym. (Calc.)
Size:	35	Cont. Amp:	35.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	FD (2,3,4P)	Magnetic Trip:	FIXED
ID:	35		

CB: B-BS3 AC-102 DISC

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	17.96	Asym. (Calc.)
Model:	FD	Rating:	35 kA, 0.48 kV	LG kA:	17.90	Asym. (Calc.)
Size:	35	Cont. Amp:	35.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	FD (2,3,4P)	Magnetic Trip:	FIXED
ID:	35		

CB: B-BS3 AIR COMP DISC

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	8.81	Asym. (Calc.)
Model:	FD	Rating:	35 kA, 0.48 kV	LG kA:	6.77	Asym. (Calc.)
Size:	40	Cont. Amp:	40.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	FD (2,3,4P)	Magnetic Trip:	FIXED
ID:	40		

Protective Device Settings

CB: B-BS3 AIR HANDLER DISC

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	17.96	Asym. (Calc.)
Model:	FD	Rating:	35 kA, 0.48 kV	LG kA:	17.90	Asym. (Calc.)
Size:	15	Cont. Amp:	15.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	FD (2,3,4P)	Magnetic Trip:	FIXED
ID:	15		

CB: B-BS3 ATS GEN

MFR:	Square-D	Tag #:		3-Phase kA:	12.47	Asym. (Calc.)
Model:	RLF	Rating:	100 kA, 0.48 kV	LG kA:	15.06	Asym. (Calc.)
Size:	1600	Cont. Amp:	1600.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR:	Square-D
Model:	ET1.0I (RL)
Sensor:	1600

		Phase Setting		
Long-Time	LT Pickup	fixed	LT Band	Fixed
INST	Inst. Pickup	12		

CB: B-BS3 ATS UTIL

MFR:	Siemens*	Tag #:		3-Phase kA:	22.44	Asym. (Calc.)
Model:	WL-L-2000	Rating:	50 kA, 0.48 kV	LG kA:	26.17	Asym. (Calc.)
Size:	2000	Cont. Amp:	2000.000	Base kV:	0.480	(Calc.)

* The retrieved library data is modified by user.

LV Solid State Trip Device

MFR:	Siemens
Model:	ETU727
Sensor:	2000
Rating Plug:	2000.00

		Phase Setting		Ground Setting
Long-Time	I.R	1	I.g	C
	t.R	10s Fixed	t.g	0.5
Short-Time	I.sd	2.5		
	t.sd	0.1		

CB: B-BS3 GEN RM EF DISC

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	17.96	Asym. (Calc.)
Model:	FD	Rating:	35 kA, 0.48 kV	LG kA:	17.90	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	FD (2,3,4P)	Magnetic Trip:	FIXED
ID:	20		

Protective Device Settings

CB: B-BS3 PANEL H1

MFR:	Siemens	Tag #:		3-Phase kA:	21.51	Asym. (Calc.)
Model:	SHLD6	Rating:	65 kA, 0.48 kV	LG kA:	24.19	Asym. (Calc.)
Size:	500	Cont. Amp:	500.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-LD
Sensor: 500

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	0.5	Ground Pickup	0.7		
	LT Band	25	Ground Band	0.2	I^xt=IN	
INST	Inst. Pickup	10				

CB: B-BS3 PANEL H2

MFR:	Siemens	Tag #:		3-Phase kA:	21.51	Asym. (Calc.)
Model:	SHLD6	Rating:	65 kA, 0.48 kV	LG kA:	24.19	Asym. (Calc.)
Size:	500	Cont. Amp:	500.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-LD
Sensor: 500

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	0.5	Ground Pickup	0.7		
	LT Band	25	Ground Band	0.2	I^xt=IN	
INST	Inst. Pickup	10				

CB: B-BS3 PANEL H2 MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	8.81	Asym. (Calc.)
Model:	JD	Rating:	35 kA, 0.48 kV	LG kA:	6.77	Asym. (Calc.)
Size:	250	Cont. Amp:	250.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	JD	Magnetic Trip:	10
ID:	250		

CB: B-BS3 PANEL L1A MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	2.44	Asym. (Calc.)
Model:	ED	Rating:	65 kA, 0.24 kV	LG kA:	2.47	Asym. (Calc.)
Size:	225	Cont. Amp:	225.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	ED	Magnetic Trip:	FIXED
ID:	225		

Protective Device Settings

CB: B-BS3 PANEL L2A MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	3.55	Asym. (Calc.)
Model:	ED	Rating:	65 kA, 0.24 kV	LG kA:	3.71	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	ED	Magnetic Trip:	FIXED
ID:	150		

CB: B-BS3 PANEL L2B MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	3.46	Asym. (Calc.)
Model:	ED	Rating:	65 kA, 0.24 kV	LG kA:	3.51	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	ED	Magnetic Trip:	FIXED
ID:	150		

CB: B-BS3 VFD 280

MFR:	Siemens	Tag #:		3-Phase kA:	21.51	Asym. (Calc.)
Model:	SHLD6	Rating:	65 kA, 0.48 kV	LG kA:	24.19	Asym. (Calc.)
Size:	500	Cont. Amp:	500.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR:	Siemens
Model:	Sensitrip III-LD
Sensor:	500

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	1.0		Ground Pickup	0.2	
	LT Band	25		Ground Band	0.1	I^xt=IN
INST	Inst. Pickup	6				

CB: B-BS3 VFD 280 MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	20.15	Asym. (Calc.)
Model:	HMCP-L	Rating:	100 kA, 0.48 kV	LG kA:	21.55	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR:	Cutler-Hammer
Model:	HMCP
ID:	600L6W
Pick up:	B

Protective Device Settings

CB: B-BS3 VFD 290

MFR:	Siemens	Tag #:		3-Phase kA:	21.51	Asym. (Calc.)
Model:	SHMD6	Rating:	65 kA, 0.48 kV	LG kA:	24.19	Asym. (Calc.)
Size:	800	Cont. Amp:	800.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-MD
Sensor: 800

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	0.9		Ground Pickup	0.2	
	LT Band	7		Ground Band	0.1	I^xt=IN
INST	Inst. Pickup	6				

CB: B-BS3 VFD 290 MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	20.57	Asym. (Calc.)
Model:	MDL	Rating:	50 kA, 0.48 kV	LG kA:	22.34	Asym. (Calc.)
Size:	800	Cont. Amp:	800.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR: Cutler-Hammer
Model: MDL
ID: 800

Thermal Trip: Fixed
Magnetic Trip: 4

CB: B-BS3 VFD 300

MFR:	Siemens	Tag #:		3-Phase kA:	21.51	Asym. (Calc.)
Model:	SHLD6	Rating:	65 kA, 0.48 kV	LG kA:	24.19	Asym. (Calc.)
Size:	500	Cont. Amp:	500.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-LD
Sensor: 500

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	1.0		Ground Pickup	0.2	
	LT Band	25		Ground Band	0.1	I^xt=IN
INST	Inst. Pickup	6				

CB: B-BS3 VFD 300 MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	19.83	Asym. (Calc.)
Model:	HMCP-L	Rating:	100 kA, 0.48 kV	LG kA:	21.00	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR: Cutler-Hammer
Model: HMCP
ID: 600L6W
Pick up: B

Protective Device Settings

CB: B-BS3 VFD 310

MFR:	Siemens	Tag #:		3-Phase kA:	21.51	Asym. (Calc.)
Model:	SHLD6	Rating:	65 kA, 0.48 kV	LG kA:	24.19	Asym. (Calc.)
Size:	400	Cont. Amp:	400.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-LD
Sensor: 400

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	1.0	Ground Pickup	0.2		
	LT Band	25	Ground Band	0.1	I^xt=IN	
INST	Inst. Pickup	6				

CB: B-BS3 VFD 310 MAIN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	19.41	Asym. (Calc.)
Model:	HMCP-K	Rating:	100 kA, 0.48 kV	LG kA:	20.25	Asym. (Calc.)
Size:	400	Cont. Amp:	400.000	Base kV:	0.480	(Calc.)

Motor Circuit Protector Trip Device

MFR: Cutler-Hammer
Model: HMCP
ID: 400X5
Pick up: I

CB: B-BS3 XFMR L1A

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	17.96	Asym. (Calc.)
Model:	FD	Rating:	35 kA, 0.48 kV	LG kA:	17.90	Asym. (Calc.)
Size:	70	Cont. Amp:	70.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	FD (2,3,4P)	Magnetic Trip:	FIXED
ID:	70		

CB: B-BS3 XFMR L2A

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	8.81	Asym. (Calc.)
Model:	FD	Rating:	35 kA, 0.48 kV	LG kA:	6.77	Asym. (Calc.)
Size:	70	Cont. Amp:	70.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	FD (2,3,4P)	Magnetic Trip:	FIXED
ID:	70		

Protective Device Settings

CB: B-BS3 XFMR L2B

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	8.81	Asym. (Calc.)
Model:	FD	Rating:	35 kA, 0.48 kV	LG kA:	6.77	Asym. (Calc.)
Size:	70	Cont. Amp:	70.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Cutler-Hammer	Thermal Trip:	Fixed
Model:	FD (2,3,4P)	Magnetic Trip:	FIXED
ID:	70		

CB: B-BS4 AH-1 DISC

MFR:	General Electric	Tag #:		3-Phase kA:	10.03	Asym. (Calc.)
Model:	TED	Rating:	18 kA, 0.48 kV	LG kA:	9.85	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TED (E 100)	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS4 ATS GEN

MFR:	Merlin Gerin	Tag #:		3-Phase kA:	0.55	Asym. (Calc.)
Model:	NSF150N	Rating:	35 kA, 0.48 kV	LG kA:	0.64	Asym. (Calc.)
Size:	70	Cont. Amp:	70.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Merlin Gerin	Thermal Trip:	Fixed
Model:	NSF	Magnetic Trip:	FIXED
ID:	70DP		

CB: B-BS4 ATS UTIL

MFR:	Square-D	Tag #:		3-Phase kA:	10.98	Asym. (Calc.)
Model:	PHF	Rating:	100 kA, 0.48 kV	LG kA:	11.42	Asym. (Calc.)
Size:	2000	Cont. Amp:	2000.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	PHF	Magnetic Trip:	4.000
ID:	2000		

CB: B-BS4 BRIDGE CRANE DISC

MFR:	General Electric	Tag #:		3-Phase kA:	10.03	Asym. (Calc.)
Model:	TED	Rating:	18 kA, 0.48 kV	LG kA:	9.85	Asym. (Calc.)
Size:	40	Cont. Amp:	40.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TED (E 100)	Magnetic Trip:	FIXED
ID:	40		

Protective Device Settings

CB: B-BS4 CU-1 DISC

MFR:	General Electric	Tag #:		3-Phase kA:	10.03	Asym. (Calc.)
Model:	TED	Rating:	18 kA, 0.48 kV	LG kA:	9.85	Asym. (Calc.)
Size:	30	Cont. Amp:	30.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TED (E 100)	Magnetic Trip:	FIXED
ID:	30		

CB: B-BS4 ENTRY GATE PNL

MFR:	General Electric	Tag #:		3-Phase kA:	10.03	Asym. (Calc.)
Model:	TED	Rating:	18 kA, 0.48 kV	LG kA:	9.85	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TED (E 100)	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS4 PANEL A MAIN

MFR:	General Electric	Tag #:		3-Phase kA:	2.76	Asym. (Calc.)
Model:	THQB	Rating:	10 kA, 0.24 kV	LG kA:	0.00	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.240	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	THQB	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS4 PANEL H1

MFR:	General Electric	Tag #:		3-Phase kA:	10.98	Asym. (Calc.)
Model:	TFL	Rating:	65 kA, 0.48 kV	LG kA:	11.42	Asym. (Calc.)
Size:	225	Cont. Amp:	225.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TFL	Magnetic Trip:	7.100
ID:	225		

CB: B-BS4 XFMR A

MFR:	General Electric	Tag #:		3-Phase kA:	10.03	Asym. (Calc.)
Model:	TED	Rating:	18 kA, 0.48 kV	LG kA:	9.85	Asym. (Calc.)
Size:	70	Cont. Amp:	70.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	TED (E 100)	Magnetic Trip:	FIXED
ID:	70		

Protective Device Settings

CB: B-BS5 ATS GEN

MFR:	Square-D	Tag #:		3-Phase kA:	0.00	Asym. (Calc.)
Model:	DG 400	Rating:	65 kA, 0.24 kV	LG kA:	0.00	Asym. (Calc.)
Size:	400	Cont. Amp:	400.000	Base kV:	0.000	(Calc.)

LV Solid State Trip Device

MFR: Merlin Gerin
Model: STR23SP
Sensor: 150
Rating Plug: 150.00

		Phase Setting
Long-Time	LT Pickup	1.0
	LT Band	Fixed
Short-Time	ST Pickup	6
	ST Band	Fixed
INST	Inst. Pickup	Fixed

CB: B-BS5 MAIN

MFR:	General Electric	Tag #:		3-Phase kA:	0.00	Asym. (Calc.)
Model:	THHQC	Rating:	22 kA, 0.24 kV	LG kA:	0.00	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.000	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	THHQC	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS5 PANEL A MAIN

MFR:	General Electric	Tag #:		3-Phase kA:	0.00	Asym. (Calc.)
Model:	THHQC	Rating:	22 kA, 0.24 kV	LG kA:	0.00	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.000	(Calc.)

Thermal Magnetic Trip Device

MFR:	General Electric	Thermal Trip:	Fixed
Model:	THHQC	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS6 120/208V PNL

MFR:	Siemens	Tag #:		3-Phase kA:	4.18	Asym. (Calc.)
Model:	BL	Rating:	10 kA, 0.24 kV	LG kA:	4.18	Asym. (Calc.)
Size:	60	Cont. Amp:	60.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	BL (2,3P)	Magnetic Trip:	FIXED
ID:	60		

Protective Device Settings

CB: B-BS6 27, 29, 31

MFR:	Square-D	Tag #:		3-Phase kA:	5.27	Asym. (Calc.)
Model:	QO	Rating:	10 kA, 0.24 kV	LG kA:	5.71	Asym. (Calc.)
Size:	50	Cont. Amp:	50.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	QO	Magnetic Trip:	FIXED
ID:	50		

CB: B-BS6 28, 30, 32

MFR:	Square-D	Tag #:		3-Phase kA:	5.27	Asym. (Calc.)
Model:	QO	Rating:	10 kA, 0.24 kV	LG kA:	5.71	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	QO	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS6 33, 35, 37

MFR:	Square-D	Tag #:		3-Phase kA:	5.27	Asym. (Calc.)
Model:	QO	Rating:	10 kA, 0.24 kV	LG kA:	5.71	Asym. (Calc.)
Size:	30	Cont. Amp:	30.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	QO	Magnetic Trip:	FIXED
ID:	30		

CB: B-BS6 AFD-32

MFR:	Siemens	Tag #:		3-Phase kA:	53.83	Asym. (Calc.)
Model:	SCND6	Rating:	100 kA, 0.48 kV	LG kA:	56.42	Asym. (Calc.)
Size:	1000	Cont. Amp:	1000.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR:	Siemens
Model:	Sensitrip III-ND
Sensor:	1000

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	1.0		Ground Pickup	0.2	
	LT Band	2.2		Ground Band	0.1	I^xt=IN
Short-Time	ST Pickup	4				
	ST Band	0.2	I^xt=OUT			
INST	Inst. Pickup	8				

Protective Device Settings

CB: B-BS6 AFD-33

MFR:	Siemens	Tag #:		3-Phase kA:	53.83 Asym. (Calc.)
Model:	SCND6	Rating:	100 kA, 0.48 kV	LG kA:	56.42 Asym. (Calc.)
Size:	1000	Cont. Amp:	1000.000	Base kV:	0.480 (Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-ND
Sensor: 1000

		Phase Setting		Ground Setting		
Long-Time	LT Pickup	1.0		Ground Pickup	0.2	
	LT Band	2.2		Ground Band	0.1	I^xt=IN
Short-Time	ST Pickup	4				
	ST Band	0.2	I^xt=OUT			
INST	Inst. Pickup	8				

CB: B-BS6 AFD-34

MFR:	Siemens	Tag #:		3-Phase kA:	53.83 Asym. (Calc.)
Model:	SCND6	Rating:	100 kA, 0.48 kV	LG kA:	56.42 Asym. (Calc.)
Size:	1000	Cont. Amp:	1000.000	Base kV:	0.480 (Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-ND
Sensor: 1000

		Phase Setting		Ground Setting		
Long-Time	LT Pickup	1.0		Ground Pickup	0.2	
	LT Band	2.2		Ground Band	0.1	I^xt=IN
Short-Time	ST Pickup	4				
	ST Band	0.2	I^xt=OUT			
INST	Inst. Pickup	8				

CB: B-BS6 AFD-401 MAIN

MFR:	Allen-Bradley	Tag #:		3-Phase kA:	29.95 Asym. (Calc.)
Model:	140U-L6	Rating:	65 kA, 0.48 kV	LG kA:	24.67 Asym. (Calc.)
Size:	300	Cont. Amp:	300.000	Base kV:	0.480 (Calc.)

Thermal Magnetic Trip Device

MFR:	Allen Bradley	Thermal Trip:	Fixed
Model:	140U-L	Magnetic Trip:	5x
ID:	300		

Protective Device Settings

CB: B-BS6 AFD-401, 402

MFR:	Siemens	Tag #:		3-Phase kA:	53.83	Asym. (Calc.)
Model:	SCMD6	Rating:	100 kA, 0.48 kV	LG kA:	56.42	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-MD
Sensor: 600

		Phase Setting			Ground Setting		
Long-Time	LT Pickup	1.0			Ground Pickup	0.7	
	LT Band	27			Ground Band	0.2	I^xt=IN
Short-Time	ST Pickup	10					
	ST Band	0.22	I^xt=IN				
INST	Inst. Pickup	40					

CB: B-BS6 AFD-402 MAIN

MFR:	Allen-Bradley	Tag #:		3-Phase kA:	17.07	Asym. (Calc.)
Model:	140U-J6C3	Rating:	65 kA, 0.48 kV	LG kA:	11.34	Asym. (Calc.)
Size:	175	Cont. Amp:	175.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR: Allen Bradley
Model: 140U-J
ID: D17

Thermal Trip: Fixed
Magnetic Trip: 5x

CB: B-BS6 AH-101

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	30	Cont. Amp:	30.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR: Siemens
Model: HEG
ID: 30

Thermal Trip: Fixed
Magnetic Trip: FIXED

Protective Device Settings

CB: B-BS6 ATS-1 GEN

MFR:	Cutler-Hammer	Tag #:		3-Phase kA:	19.73 Asym. (Calc.)
Model:	MDS-632 (2012)	Rating:	65 kA, 0.508 kV	LG kA:	27.23 Asym. (Calc.)
Size:	3200	Cont. Amp:	3200.000	Base kV:	0.480 (Calc.)

LV Solid State Trip Device

MFR: Cutler-Hammer
Model: RMS 520 Series
Sensor: 3200

		Phase Setting	
Long-Time	LT Pickup	1.000	
	LT Band	2	
Short-Time	ST Pickup	4	
	ST Band	0.4	I^xt=OUT
INST	Inst. Pickup	2	
Maintenance	Maint Phase	R5	

CB: B-BS6 ATS-1 UTIL

MFR:	Siemens	Tag #:		3-Phase kA:	56.07 Asym. (Calc.)
Model:	WL-L-3200	Rating:	100 kA, 0.508 kV	LG kA:	60.50 Asym. (Calc.)
Size:	3200	Cont. Amp:	3200.000	Base kV:	0.480 (Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: ETU745 (I^4t)
Sensor: Frame Size II - 3200
Rating Plug: 3000.00

		Phase Setting	
Long-Time	LT Pickup	1	
	LT Band	2	
Short-Time	ST Pickup	2	
	ST Band	0.1	I^xt=OUT
INST	Inst. Pickup	4	

Ground Setting		
Ground Pickup	C	
Ground Band	0.3	I^xt=OUT

CB: B-BS6 ATS-2 GEN

MFR:	Siemens	Tag #:		3-Phase kA:	53.83 Asym. (Calc.)
Model:	SCMD6	Rating:	100 kA, 0.48 kV	LG kA:	56.42 Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480 (Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-MD
Sensor: 600

		Phase Setting	
Long-Time	LT Pickup	1.0	
	LT Band	4	
Short-Time	ST Pickup	4	
	ST Band	0.5	I^xt=OUT
INST	Inst. Pickup	10	

Protective Device Settings

CB: B-BS6 ATS-2 UTIL

MFR:	Siemens	Tag #:		3-Phase kA:	56.07	Asym. (Calc.)
Model:	SCMD6	Rating:	100 kA, 0.48 kV	LG kA:	60.50	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-MD
Sensor: 600

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	1.0		Ground Pickup	0.2	
	LT Band	2.2		Ground Band	0.1	I^xt=IN
Short-Time	ST Pickup	3				
	ST Band	0.05	I^xt=OUT			
INST	Inst. Pickup	2				

CB: B-BS6 CU-101

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	70	Cont. Amp:	70.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HEG	Magnetic Trip:	FIXED
ID:	70		

CB: B-BS6 FCV-400

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HEG	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS6 HP-101

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	25	Cont. Amp:	25.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HEG	Magnetic Trip:	FIXED
ID:	25		

Protective Device Settings

CB: B-BS6 NEW OFFICE

MFR:	Square-D	Tag #:		3-Phase kA:	5.27	Asym. (Calc.)
Model:	QO	Rating:	10 kA, 0.24 kV	LG kA:	5.71	Asym. (Calc.)
Size:	100	Cont. Amp:	100.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	QO	Magnetic Trip:	FIXED
ID:	100		

CB: B-BS6 PAH-101

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	45	Cont. Amp:	45.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HEG	Magnetic Trip:	FIXED
ID:	45		

CB: B-BS6 PCV-32, 33, 34

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HEG	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS6 PNL LP-1 MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	4.18	Asym. (Calc.)
Model:	QJH2	Rating:	22 kA, 0.24 kV	LG kA:	4.18	Asym. (Calc.)
Size:	150	Cont. Amp:	150.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	QJH2	Magnetic Trip:	FIXED
ID:	150		

CB: B-BS6 PNL LP-2 MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	2.16	Asym. (Calc.)
Model:	QJH2	Rating:	22 kA, 0.24 kV	LG kA:	0.00	Asym. (Calc.)
Size:	125	Cont. Amp:	125.000	Base kV:	0.240	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	QJH2	Magnetic Trip:	FIXED
ID:	125		

Protective Device Settings

CB: B-BS6 PP-1 MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	SHMD6	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	600	Cont. Amp:	600.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: Sensitrip III-MD
Sensor: 600

		Phase Setting			Ground Setting	
Long-Time	LT Pickup	1.0		Ground Pickup	0.55	
	LT Band	2.2		Ground Band	0.1	I^xt=IN
Short-Time	ST Pickup	3				
	ST Band	0.05	I^xt=OUT			
INST	Inst. Pickup	6				

CB: B-BS6 PROP FAN PF-101

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HEG	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS6 SHOP PNL A MAIN

MFR:	Square-D	Tag #:		3-Phase kA:	5.27	Asym. (Calc.)
Model:	Q2	Rating:	10 kA, 0.24 kV	LG kA:	5.71	Asym. (Calc.)
Size:	200	Cont. Amp:	200.000	Base kV:	0.208	(Calc.)

Thermal Magnetic Trip Device

MFR:	Square-D	Thermal Trip:	Fixed
Model:	Q2	Magnetic Trip:	FIXED
ID:	200		

Protective Device Settings

CB: B-BS6 SWBD-SB1 MAIN

MFR:	Siemens	Tag #:		3-Phase kA:	56.07	Asym. (Calc.)
Model:	WL-L-4000	Rating:	100 kA, 0.508 kV	LG kA:	60.50	Asym. (Calc.)
Size:	4000	Cont. Amp:	4000.000	Base kV:	0.480	(Calc.)

LV Solid State Trip Device

MFR: Siemens
Model: ETU745 (I^2t)
Sensor: Frame Size III - 4000
Rating Plug: 4000.00

		Phase Setting		Ground Setting		
Long-Time	LT Pickup	1		Ground Pickup	C	
	LT Band	2		Ground Band	0.5	I^xt=OUT
Short-Time	ST Pickup	4				
	ST Band	0.1	I^xt=OUT			
INST	Inst. Pickup	6				

CB: B-BS6 WTR HTR-1

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	20	Cont. Amp:	20.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HEG	Magnetic Trip:	FIXED
ID:	20		

CB: B-BS6 XFMR TLP-1

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	70	Cont. Amp:	70.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HEG	Magnetic Trip:	FIXED
ID:	70		

CB: B-BS6 XFMR TLP-SHOP

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HEB	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	125	Cont. Amp:	125.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HEG	Magnetic Trip:	FIXED
ID:	125		

Protective Device Settings

CB: CB-BS6 XFMR TLP-2

MFR:	Siemens	Tag #:		3-Phase kA:	44.63	Asym. (Calc.)
Model:	HHED6	Rating:	65 kA, 0.48 kV	LG kA:	41.88	Asym. (Calc.)
Size:	70	Cont. Amp:	70.000	Base kV:	0.480	(Calc.)

Thermal Magnetic Trip Device

MFR:	Siemens	Thermal Trip:	Fixed
Model:	HED6	Magnetic Trip:	FIXED
ID:	70 (0.48kV)		

APPENDIX F – EQUIPMENT DATA

Transformer Schedule

2-Winding Transformer

		Rating						% Tap Setting	
Transformer ID	Status	kVA	Prim. kV	Sec. kV	% Z	X/R	% Tol.	Pri.	Sec.
BS1 METER SHOP XFMR	Energized	75.0	0.480	0.208	5.4	1.92	0.0	0.000	0.000
BS1 MPC1 XFMR	Energized	30.0	0.480	0.208	3.0	1.69	0.0	0.000	0.000
BS1 SCE XFMR P5197918	De-energized	1000	16.340	0.480	5.4	5.79	0.0	0.000	0.000
BS1 SCE XFMR P5600632	De-energized	500	16.340	0.480	4.0	3.09	0.0	0.000	0.000
BS1 XFMR A	Energized	45.0	0.480	0.208	5.4	1.69	0.0	0.000	0.000
BS1 XFMR B	Energized	30.0	0.480	0.208	3.1	1.69	0.0	0.000	0.000
BS1 XFMR C	Energized	30.0	0.480	0.208	3.1	1.69	0.0	0.000	0.000
BS1 XFMR EM	Energized	10.0	0.480	0.240	3.0	1.13	0.0	0.000	0.000
BS1 XFMR LA	Energized	75.0	0.480	0.208	5.0	1.92	0.0	0.000	0.000
BS1 XFMR M PURPOSE RM	Energized	50.0	0.480	0.240	6.1	1.69	0.0	0.000	0.000
BS1 XFMR P	Energized	30.0	0.480	0.208	5.1	1.69	0.0	0.000	0.000
BS1 XFMR T1	Energized	45.0	0.480	0.208	4.5	1.69	0.0	0.000	0.000
BS2 SCE XFMR 1257095E	De-energized	300	16.340	0.480	2.1	3.09	0.0	0.000	0.000
BS2 XFMR	Energized	30.0	0.480	0.208	7.8	1.69	0.0	0.000	0.000
BS3 SCE XFMR P5554088	De-energized	1500	16.340	0.480	5.9	7.10	0.0	0.000	0.000
BS3 XFMR L1A	Energized	45.0	0.480	0.208	4.8	1.69	0.0	0.000	0.000
BS3 XFMR L2A	Energized	45.0	0.480	0.208	2.8	1.69	0.0	0.000	0.000
BS3 XFMR L2B	Energized	45.0	0.480	0.208	2.8	1.69	0.0	0.000	0.000
BS4 SCE XFMR P5438424	De-energized	225	16.000	0.480	2.2	3.09	0.0	0.000	0.000
BS4 XFMR A	Energized	25.0	0.480	0.240	2.5	1.13	0.0	0.000	0.000
BS5 SCE XFMR 2234284E	De-energized	10.0	16.000	0.240	1.8	2.47	0.0	0.000	0.000
BS6 SCE XFMR 5560870	De-energized	2500	16.340	0.480	5.6	10.67	0.0	0.000	0.000
BS6 XFMR TLP-1	Energized	45.0	0.480	0.208	2.8	1.69	0.0	0.000	0.000
BS6 XFMR TLP-2	Energized	25.0	0.480	0.240	4.2	1.13	0.0	0.000	0.000
BS6 XFMR TLP-SHOP	Energized	75.0	0.480	0.208	2.6	1.92	0.0	0.000	0.000

Cable Data Schedule

Cable ID	Library	Status	Size	Length	#/ph	T (C)	R	X	Y	Impedance Unit
BS6 C-AH-101	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	5.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS1 AC-1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	40.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 AC-2	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	40.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 AC-3	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	40.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 AC-4	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	40.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 AC-5	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	40.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 ADMIN AIR COMP	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	60.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS1 ADMIN BLDG	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	350	130.00 ft	2	75	0.03900	0.05000	0	Ohms per 1,000 ft
C-BS1 ADMIN ELEV DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	60.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS1 BFV-07	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	5.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 BFV-07 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	20.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 CHEM BLDG	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	350	165.00 ft	2	75	0.03900	0.05000	0	Ohms per 1,000 ft
C-BS1 CIP HEATER PNL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	350	100.00 ft	1	75	0.03900	0.05000	0	Ohms per 1,000 ft
C-BS1 CIP PUMP VFD	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2/0	130.00 ft	1	75	0.10000	0.05400	0	Ohms per 1,000 ft
C-BS1 COMPRESSOR	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	5.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS1 COMPRESSOR PNL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	100.00 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS1 DESALTER ELEV DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1	15.000 ft	1	75	0.16000	0.05700	0	Ohms per 1,000 ft
C-BS1 FV-116	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	5.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 FV-116 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	20.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft

Cable Data Schedule

Cable ID	Library	Status	Size	Length	#/ph	T (C)	R	X	Y	Impedance Unit
C-BS1 IRR PUMP	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	35.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS1 IRR PUMP PNL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	30.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS1 MAIN SWBD MSB	NEC , Rubber 2, 0.6, 100, Aluminum, 1/C, Non-Mag., 75, 1000 ft,60, English, 20 90 90 40 90	De-energized	750	205.00 ft	2	75	0.02900	0.03800	0	Ohms per 1,000 ft
C-BS1 METER SHOP DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	130.00 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS1 METER SHOP XFMR	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	8.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS1 MPC1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	115.00 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS1 MULTIPURPOSE RM PNL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	3/0	55.000 ft	1	75	0.07900	0.05200	0	Ohms per 1,000 ft
C-BS1 NAOH PUMP	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	70.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 NPB ATS-1 GEN	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	De-energized	4/0	50.000 ft	4	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 NPB ATS-1 UTIL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4/0	40.000 ft	4	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 NPB ATS-2 GEN	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	De-energized	4/0	60.000 ft	4	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 NPB ATS-2 UTIL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4/0	45.000 ft	4	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 NPB MAIN SWBD	NEC , Rubber 2, 0.6, 100, Aluminum, 1/C, Non-Mag., 75, 1000 ft,60, English, 20 90 90 40 90	De-energized	750	95.000 ft	4	75	0.02900	0.03800	0	Ohms per 1,000 ft
C-BS1 NPB MAIN SWBD 1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4/0	40.000 ft	4	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 NPB MAIN SWBD 2	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4/0	45.000 ft	4	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 PANEL A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2/0	8.000 ft	1	75	0.10000	0.05400	0	Ohms per 1,000 ft
C-BS1 PANEL A2	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	6	50.000 ft	1	75	0.49000	0.06400	0	Ohms per 1,000 ft
C-BS1 PANEL DP1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2/0	90.000 ft	1	75	0.10000	0.05400	0	Ohms per 1,000 ft

Cable Data Schedule

Cable ID	Library	Status	Size	Length	#/ph	T (C)	R	X	Y	Impedance Unit
C-BS1 PANEL DP2	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2/0	100.00 ft	1	75	0.10000	0.05400	0	Ohms per 1,000 ft
C-BS1 PANEL HA	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	6	85.000 ft	1	75	0.49000	0.06400	0	Ohms per 1,000 ft
C-BS1 PANEL HB	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1/0	120.00 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS1 PANEL L	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	3/0	110.00 ft	1	75	0.07900	0.05200	0	Ohms per 1,000 ft
C-BS1 PANEL LA	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4/0	60.000 ft	1	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 PANEL LAA	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	30.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS1 PANEL LB	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	30.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS1 PANEL LPB	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1	10.000 ft	1	75	0.16000	0.05700	0	Ohms per 1,000 ft
C-BS1 PANEL LPC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1	10.000 ft	1	75	0.16000	0.05700	0	Ohms per 1,000 ft
C-BS1 PANEL P	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1/0	60.000 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS1 PANEL P1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	3/0	8.000 ft	1	75	0.07900	0.05200	0	Ohms per 1,000 ft
C-BS1 PANEL P1 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	250	8.000 ft	1	75	0.05400	0.05200	0	Ohms per 1,000 ft
C-BS1 PERMEATE PMP1 VFD	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	350	20.000 ft	1	75	0.03900	0.05000	0	Ohms per 1,000 ft
C-BS1 PERMEATE PMP2 VFD	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	350	20.000 ft	1	75	0.03900	0.05000	0	Ohms per 1,000 ft
C-BS1 PERMEATE PMP3 VFD	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	350	20.000 ft	1	75	0.03900	0.05000	0	Ohms per 1,000 ft
C-BS1 PNL EM	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	3.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS1 PNL P	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	8.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS1 RO UNIT #1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	90.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 RO UNIT #2	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	70.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft

Cable Data Schedule

Cable ID	Library	Status	Size	Length	#/ph	T (C)	R	X	Y	Impedance Unit
C-BS1 RO UNIT #3	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	55.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 SF-301	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	15.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 SF-301 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	65.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 SF-302	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	15.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 SF-303	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	15.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 SF-303 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	45.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS1 SOLAR INVERTER	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	30.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS1 SOLAR INVERTER DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	3	25.000 ft	1	75	0.25000	0.05900	0	Ohms per 1,000 ft
C-BS1 WELL 20 VFD	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4/0	30.000 ft	2	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 WELL 22 VFD	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4/0	25.000 ft	2	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 WELL 23 VFD	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	40.000 ft	1	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS1 XFMR A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	25.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS1 XFMR B	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	5.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS1 XFMR C	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	7.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS1 XFMR EM	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	5.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS1 XFMR LA	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4/0	90.000 ft	1	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS1 XFMR P	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	8.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS1 XFMR P DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	15.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS1 XFMR T1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	6	60.000 ft	1	75	0.49000	0.06400	0	Ohms per 1,000 ft

Cable Data Schedule

Cable ID	Library	Status	Size	Length	#/ph	T (C)	R	X	Y	Impedance Unit
C-BS1MULTIPURPOSE RM DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1	185.00 ft	1	75	0.16000	0.05700	0	Ohms per 1,000 ft
C-BS1XFMR MULTIPURPOSE RM	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1	8.000 ft	1	75	0.16000	0.05700	0	Ohms per 1,000 ft
C-BS2 ATS	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	350	8.000 ft	2	75	0.03900	0.05000	0	Ohms per 1,000 ft
C-BS2 MAIN SWBD	NEC , Rubber 2, 0.6, 100, Aluminum, 1/C, Non-Mag., 75, 1000 ft,60, English, 20 90 90 40 90	De-energized	750	60.000 ft	1	75	0.02900	0.03800	0	Ohms per 1,000 ft
C-BS2 PNL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	10.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS2 XFMR	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	6	25.000 ft	1	75	0.49000	0.06400	0	Ohms per 1,000 ft
C-BS2 XFMR BKR	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	5.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS3 AC-101	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	5.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS3 AC-101 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	150.00 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS3 AC-102	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	5.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS3 AC-102 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	50.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS3 AIR COMP	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	5.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS3 AIR COMP DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	100.00 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS3 AIR HANDLER	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	5.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS3 AIR HANDLER DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	35.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS3 ATS GEN	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	De-energized	400	40.000 ft	5	75	0.03500	0.04900	0	Ohms per 1,000 ft
C-BS3 ATS UTIL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	30.000 ft	6	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS3 GEN RM EF	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	12.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS3 GEN RM EF DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	10.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft

Cable Data Schedule

Cable ID	Library	Status	Size	Length	#/ph	T (C)	R	X	Y	Impedance Unit
C-BS3 PANEL H1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	250	30.000 ft	1	75	0.05400	0.05200	0	Ohms per 1,000 ft
C-BS3 PANEL H2	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	250	245.00 ft	1	75	0.05400	0.05200	0	Ohms per 1,000 ft
C-BS3 PANEL L1A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1/0	7.000 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS3 PANEL L2A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1/0	10.000 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS3 PANEL L2B	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	10.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS3 SWBD DB	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	25.000 ft	6	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS3 SWBD MSB	NEC , Rubber 2, 0.6, 100, Aluminum, 1/C, Non-Mag., 75, 1000 ft,60, English, 20 90 90 40 90	De-energized	750	40.000 ft	7	75	0.02900	0.03800	0	Ohms per 1,000 ft
C-BS3 VFD 280	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	250	20.000 ft	2	75	0.05400	0.05200	0	Ohms per 1,000 ft
C-BS3 VFD 290	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	20.000 ft	2	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS3 VFD 300	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	250	25.000 ft	2	75	0.05400	0.05200	0	Ohms per 1,000 ft
C-BS3 VFD 310	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	3/0	25.000 ft	2	75	0.07900	0.05200	0	Ohms per 1,000 ft
C-BS3 XFMR L1A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	8.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS3 XFMR L2A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	20.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS3 XFMR L2B	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	10.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS4 AH-1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	5.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS4 AH-1 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	35.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS4 ATS GEN	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	De-energized	2	65.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS4 ATS UTIL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	350	50.000 ft	6	75	0.03900	0.05000	0	Ohms per 1,000 ft
C-BS4 BRIDGE CRANE	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	40.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft

Cable Data Schedule

Cable ID	Library	Status	Size	Length	#/ph	T (C)	R	X	Y	Impedance Unit
C-BS4 BRIDGE CRANE DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	25.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS4 CU-1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	10.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS4 CU-1 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	35.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS4 ENTRY GATE	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	5.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS4 ENTRY GATE PNL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	160.00 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS4 PANEL A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	5.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS4 PANEL H1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4/0	30.000 ft	1	75	0.06300	0.05100	0	Ohms per 1,000 ft
C-BS4 UTIL SWBD	NEC , Rubber 2, 0.6, 100, Aluminum, 1/C, Non-Mag., 75, 1000 ft,60, English, 20 90 90 40 90	De-energized	750	30.000 ft	1	75	0.02900	0.03800	0	Ohms per 1,000 ft
C-BS4 XFMR A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	6	5.000 ft	1	75	0.49000	0.06400	0	Ohms per 1,000 ft
C-BS5 ATS GEN	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	De-energized	1/0	25.000 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS5 ATS UTIL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	De-energized	1/0	5.000 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS5 MAIN	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	De-energized	1/0	130.00 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS5 PANEL A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	De-energized	1/0	5.000 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS6 120/208V PNL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	20.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS6 27, 29, 31	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	8	20.000 ft	1	75	0.78000	0.06500	0	Ohms per 1,000 ft
C-BS6 28, 30, 32	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	20.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS6 33, 35, 37	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	20.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS6 AFD-32	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	30.000 ft	3	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS6 AFD-33	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	35.000 ft	3	75	0.02900	0.04800	0	Ohms per 1,000 ft

Cable Data Schedule

Cable ID	Library	Status	Size	Length	#/ph	T (C)	R	X	Y	Impedance Unit
C-BS6 AFD-34	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	30.000 ft	3	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS6 AFD-401	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	3/0	40.000 ft	1	75	0.07900	0.05200	0	Ohms per 1,000 ft
C-BS6 AFD-402	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	40.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS6 AH-101 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	15.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS6 ATS-1 GEN	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	De-energized	500	30.000 ft	8	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS6 ATS-1 UTIL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	12.000 ft	8	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS6 ATS-2 GEN	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	350	40.000 ft	2	75	0.03900	0.05000	0	Ohms per 1,000 ft
C-BS6 ATS-2 UTIL	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	35.000 ft	2	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS6 CU-101	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1/0	5.000 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS6 CU-101 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1/0	30.000 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS6 FCV-400	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	5.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS6 FCV-400 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	275.00 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS6 HP-101	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	6	5.000 ft	1	75	0.49000	0.06400	0	Ohms per 1,000 ft
C-BS6 HP-101 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	6	40.000 ft	1	75	0.49000	0.06400	0	Ohms per 1,000 ft
C-BS6 MAIN SWBD SB-1	NEC , Rubber 2, 0.6, 100, Aluminum, 1/C, Magnetic, 75, 1000 ft,60, English, 20 90 90 40 90	De-energized	750	20.000 ft	8	75	0.03100	0.04800	0	Ohms per 1,000 ft
C-BS6 NEW OFFICE	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2	20.000 ft	1	75	0.20000	0.05700	0	Ohms per 1,000 ft
C-BS6 PAH-101	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	6	5.000 ft	1	75	0.49000	0.06400	0	Ohms per 1,000 ft
C-BS6 PAH-101 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	6	75.000 ft	1	75	0.49000	0.06400	0	Ohms per 1,000 ft
C-BS6 PCV-32	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	500.00 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft

Cable Data Schedule

Cable ID	Library	Status	Size	Length	#/ph	T (C)	R	X	Y	Impedance Unit
C-BS6 PCV-33	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	340.00 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS6 PCV-34	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	240.00 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS6 PNL LP-1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	2/0	8.000 ft	1	75	0.10000	0.05400	0	Ohms per 1,000 ft
C-BS6 PNL LP-2	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1/0	8.000 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS6 PNL PP-1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	8.000 ft	2	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS6 PROP FAN PF-101	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	5.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft
C-BS6 SHOP PNL A	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	3/0	12.000 ft	1	75	0.07900	0.05200	0	Ohms per 1,000 ft
C-BS6 SWBD DSB-1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	500	15.000 ft	8	75	0.02900	0.04800	0	Ohms per 1,000 ft
C-BS6 WTR HTR-1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	75.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-BS6 XFMR TLP-1	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	8.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS6 XFMR TLP-2 PRI	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	4	75.000 ft	1	75	0.31000	0.06000	0	Ohms per 1,000 ft
C-BS6 XFMR TLP-SHOP	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	1/0	265.00 ft	1	75	0.12000	0.05500	0	Ohms per 1,000 ft
C-BS6PROP FAN PF-101 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	10	75.000 ft	1	75	1.20000	0.06300	0	Ohms per 1,000 ft
C-SBS1 F-302 DISC	NEC , XHHW2, 0.6, 100, Copper, 1/C, Magnetic, 75, 1000 ft,60, English, 30 90 90 30 90	Energized	12	12.000 ft	1	75	2.00000	0.06800	0	Ohms per 1,000 ft