SECTION 264313 (formerly SECTION 16289)

TRANSIENT VOLTAGE SURGE SUPPRESSION

DISTRIBUTION, LIGHTING, AND SUB PANEL PROTECTION

1. SPD(s) for this location shall be as indicated on project drawings. SPD shall be separate from panelboard. Integral SPD shall not be acceptable. SPD’s shall be certified to UL 1283 and UL1449 Fourth Ed. (cUL) Type 1 for use in Type 1 and Type 2 locations. All

2. Electrical panels shall be protected by a Transient Protection Solutions panel mounted SPD, model TPX3Y480-F-100 for 277/480 (4W+G) volt panels, TPX-3Y208-F-100 for 120/208 (4W+G) volt panels and TPX-1S240-F-100 for 120/240 (3W+G) volt split phase panels:

3. The manufacturer shall provide written specifications showing let-through voltage of the unit with six inches of lead length (at the module or at the lug data is not acceptable as it does not represent true "as installed" performance) pursuant to ANSI/IEEE C62.41 and C62.45, 1991, category A1 ring wave, 180 degree phase angle, category B3/C1 and C3 impulse and UL suppressed voltage ratings, 90 degree phase angle, positive polarity, measurements in peak voltage from the zero reference, all dynamic tests except N-G, which shall be no higher than:

ANSI/IEEE C62.41-1991 Measured Limiting Voltage

A1 Ring Wave (2kV, 67A) Tested at 180 degree phase angle

Voltage (Voltage Code) L-N

120/240 (1S240) 73V

120/208 (3Y208) 73V

277/480 (3Y480) 73V

A3 Ring wave (6kV, 200A) Tested at 180 degree phase angle

Voltage (Voltage Code) L-N

120/240 (1S240) 155V

120/208 (3Y208) 155V

277/480 (3Y480) 155V

B3/C1 Impulse (6kV, 3kA) Tested at 90 degree phase angle

Voltage (Voltage Code) L-N L-G L-L N-G

120/240 (1S240) 552V 531V 1150V 568V

120/208 (3Y208) 552V 531V 1150V 568V

277/480 (3Y480) 950V 950V 1860V 973V

UL Suppressed Voltage Ratings – UL Fourth Edition

Voltage (Voltage Code) L-N L-G L-L N-G

120/240 (1S240) 600V 600V 1200V 600V

120/208 (3Y208) 600V 600V 1200V 600V

277/480 (3Y480) 1000V 1000V 2000V 1000V

5. The SPD shall be capable of attenuating internally generated ringing type transients and noise, which are present in every facility and shall have an enhanced transient filter supported by a specification sheet which lists the former IEEE A1 Ring Wave let-through levels no higher than those set forth above.

6. The unit shall have a peak surge current of no less than 100kA/phase, 50kA/mode, 8 X 20 us waveform, single impulse, verified by third party test reports. National Electrical Manufacturer Association (prior to repeal NEMA LS-1 1992 Peak Current Testing)

7. The SPD shall have component level fusing intended for use without need for external or supplemental overcurrent controls. Every Metal Oxide Varistor suppression component of every mode, including N-G, shall be protected by internal thermal over temperature controls. Overcurrent fusing that limits the listed peak surge current of the SPD is not acceptable. SPDs relying upon external or supplementary installed safety disconnectors are not acceptable. Fusing shall be present in every mode, including Neutral-to-Ground. The fusing shall be capable of interrupting up to a 100kA symmetrical fault current with 600VAC applied, and the 100kA rating shall be on the listing label on the unit.

8. The TVSS shall protect all modes L-G, L-N, L-L, and N-G, for SPLIT PHASE and WYE systems have discrete suppression circuitry in L-G, L-N and N-G, and have bidirectional, positive and negative impulse protection. Line-to-neutral-to-ground protection is not acceptable where line-to-ground is specified, and accordingly reduced mode units with suppression circuitry built into only 4 modes are not acceptable.

9. The maximum continuous operating voltage (MCOV) of all components shall not be less than 125% for a 120V system and 120% for 220 and 240V systems, and 115% for 277 and 480V systems.

10. All SPD’s shall be equipped with a monitoring system which shall include a visual LCD panel display providing information on unit status and phase loss/protection loss.

11. The SPD shall come standard with not less than a Fifteen Year Warranty, and the warranty shall include unlimited free replacements of the unit if destroyed by lightning or other transients during the warranty period. Special or optional warranties in excess of the unit's standard warranty for purposes of this bid are not acceptable.

12. The suppressor shall have at minimum a Nema 4 enclosure.

13. Because of space limitation, the enclosure shall not exceed 2.9” D x 4.4” W x 8.7” H to allow close-to-the load installation on flush mount panels and between adjacent panelboard. For recessed panels, add “-FMP” to model number.

14. Follow the SPD manufacturer’s recommended installation practice as outlined in the equipment installation manual. The electrical contractor shall ensure that all neutral conductors are bonded to the system ground at the service entrance or the serving isolation transformer prior to installation of the associated SPD.

15. All lighting panel SPD’s shall be Transient Protection Design. No unit will be accepted as an “approved equal” unless it meets the warranty, strength, safety features, IEEE let-through levels, modes of discrete suppression circuitry, fusing, and all other requirements of this specification.

16. Submittals: Provide detailed specification sheets showing voltage, physical size, IEEE let through voltage for each waveform listed, UL1449 latest revision, latest edition, suppressed voltage ratings, dimensions showing construction, lifting and support points, enclosure details, per mode and per phase peak surge current, modes of discrete suppression circuitry, warranty period and replacement terms, conductor size, conductor type and lead length. Provide actual let through voltage test data in the form of oscillograph results for the ANSI/IEEE C62.41-1991 Category C1 (combination wave) and A1 (ringwave) tested in accordance with ANSI/IEEE C62.45.