



Florida Department of Transportation

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605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAUT, P.E.
SECRETARY

August 10, 2020

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
3500 Financial Plaza, Suite 400
Tallahassee, Florida 32312

Re: State Specifications Office
Section: **620**
Proposed Specification: **6200207 Grounding and Lightning Protection.**

Dear Mr. Nguyen:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

The changes are proposed by Derek Vollmer by the Traffic Engineering and Operations Office to provide a higher power rated surge protection device for Power-Over-Ethernet applications. Language is modified to clarify the fall of potential test that verify ground resistance.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to daniel.strickland@dot.state.fl.us

If you have any questions relating to this specification change, please call me at 414-4130.

Sincerely,

Signature on file

Daniel Strickland, P.E.
State Specifications Engineer

DS/rf

Attachment

cc: Florida Transportation Builders' Assoc.
State Construction Engineer

**GROUNDING AND LIGHTNING PROTECTION
(REV 5-27-20)**

SUBARTICLE 620-2.7.3 is deleted and the following substituted:

620-2.7.3 SPDs for Low-Voltage Power, Control, Data and Signal Systems:

Install a specialized SPD on all conductive circuits including, but not limited to, data communication cables, coaxial video cables, and low-voltage power cables. Ensure that these devices comply with the minimum functional requirements shown in Table 1 for all available modes (i.e. power L-N, N-G; L-G, data and signal center pin-to-shield, L-L, L-G, and shield-G where appropriate).

Table 620-1				
SPD Minimum Requirements				
Circuit Description	Clamping Voltage	Data Rate	Surge Capacity	Maximum Let-Through Voltage
12 V _{DC}	15-20 volts	N/A	5kA per mode (8x20 μs)	<150 Vpk
24 V _{AC}	30-55 volts	N/A	5kA per mode (8x20 μs)	<175 Vpk
48 V _{DC}	60-85 volts	N/A	5kA per mode (8x20 μs)	<200 Vpk
120 V _{AC} at POU	150-200 volts	N/A	20kA per mode (8x20 μs)	<550 Vpk
Coaxial Composite Video	4-8 volts	N/A	10kA per mode (8x20 μs)	<65 Vpk (8x20 μs/1.2x50μs; 6kV, 3kA)
RS422/RS485	8-15 volts	Up to 10 Mbps	10kA per mode (8x20 μs)	<30 Vpk
T1	13-30 volts	Up to 10 Mbps	10kA per mode (8x20 μs)	<30 Vpk
Ethernet Data	7-12 volts	Up to 1 Gbps	1kA per mode (10x1000 μs)	<30 Vpk
POE	60-70 volts	Up to 1 Gbps	5kA per mode (8x20 μs)	<200Vpk (100kHz 0.5μs; 6kV, 500A)

Ensure that SPDs meet the requirements of UL 497B or UL 497C, as applicable, and are listed by a NRTL.

SUBARTICLE 620-4.1 is deleted and the following substituted:

620-4 Ground Resistance Testing and Inspection.

620-4.1 Testing: Measure the ground resistance with an instrument designed specifically to measure and document earth/ground resistance, soil resistivity, and current flow. Conduct the test by using the fall-of-potential method as described in the Institute of Electronic and Electrical Engineers (IEEE) Standard 81. The fall-of-potential test is used to verify the minimum resistance required in 620-3.2.1. If fall-of-potential tests cannot be performed, it is acceptable to measure resistance at each accessible ground rod using a clamp-on ground resistance tester. Submit to the Engineer certified test results for each testing location. Submit the following information on the test results:

1. The formal name or ID for the location where the test was performed
2. The GPS latitude and longitude for the location where the test was performed
3. The date on which the test was performed
4. The make and model number, serial number, and last date of calibration (by an independent testing facility within the previous 12 months) for the grounding resistance testing device used
5. Contact information (including name, signature, and employer name) for each person conducting, witnessing, or certifying the test
6. Description of the local environmental and soil conditions at the time of testing
7. A rough sketch of the site grounding system; along with the corresponding measured data points
8. Page numbering showing the current page number and total page count (e.g.,

Page 1 of 3)

Only clamp-on ground resistance testing is required for roadway lighting installations.

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