

Lightning and Surge Protection for Lantana Oceanfront Condominiums ~ Information and Quotes ~

September 23, 2023

On three occasions in the past two years Lantana has had lightning activity, either direct strikes or secondary/residual surges that have destroyed our elevator electronic control boards in buildings 1 and 4.

An inoperable elevator is not only an inconvenience but also a health and safety concern.

Electronic part supplies are not always available and the cost of repairs is considerable. Our insurance deductible is \$10,000 and submitting a claim adds to our "frequency of claims" profile which can affect our future insurance premiums. In 2023, to date, we've paid \$20,000 in insurance deductibles.

While our elevators are currently our primary concern, our buildings have also been struck. In 2019 the east roof parapet in building 2 required a concrete stucco repair.

In June 2023 the board set out to explore lightning protection systems.

For full building lightning protection and elevator surge protection, quotes were requested and received from three companies:

Total Power Systems, Inc.
Longwood, FL
Contact: Andy Miner 321-693-4775

Bonded Lightning Protection, Inc.
Jupiter, FL
Contact: Cole Newman 561-746-4336

Jasper Thompson Lightning Protection, Inc.
Kissimmee, FL
Contact: Ken Friend 407-383-3830

Surge protection only for elevator disconnect controls and the main electrical panels were requested from three companies:

Pingston Electric
Melbourne, FL Contact: John Pingston 321-773-4651

Brevard Electric
Melbourne, FL 321-729-0203 [Did not return calls]

Grand Electric
Melbourne, FL Contact: Carrie 321-773-2535 [Said surge protection is not in their scope of work; suggested contacting our elevator company to get their recommendation]

Contacted Michael Moore, our TKE elevator service rep, who sent info to Advanced Electrical Innovations (Jose Barroso) who emailed to say they do elevator surge protection for TKE but only on new elevator installations. Subsequently, Mr. Moore recommended contact with Royale Towers Condo in Cocca Beach and sent pics of the surge devise they used and their installation locations. Surge devise (Zeus Ditek D100 Series) is the same as that quoted for use by Pingston Electric.

Building protection systems overview:

For a building lightning protection system (LPS), various options exist. Conventional LPSs are of the longstanding Franklin Rod/Faraday (FR) type. Nonconventional and more recent innovations are Early Streamer Emitter (ESE) and a different type of system, somewhat controversial, called a Charge Transfer System (CTS). FR and ESE collect the electrical surges and ground them while the CTS system intends to dissipate the ionization that causes lightning strikes. [The link in the reference section describes these types]. None of the systems demonstrate 100% total reliability/efficacy in achieving the intended outcome. However, it is always difficult to ascertain effectiveness when prevention is the objective.

Conventional systems consist of three components: air terminal(s) bonded to a copper or aluminum conductor cable that is bonded to a set of buried copper grounding rods.

For Lantana, a Franklin Rod system would have 10" sharp pointed air terminals bonded to the conductor cable running every 20' along the top of the full perimeter of the parapet and down the side of the building in several places. Each AC condenser on the roof would be attached to the system and would require an air terminal. Periodically, the contractor would replace the air terminals on any new condensers at a cost that was not specified. A Faraday system is a type of Franklin Rod approach but instead uses a cage-type pattern of conductors.

An ESE system would have an approximate 10 - 20' mast at the top of which is a conducting mechanism. The mast would be placed at the highest point on the roof bonded to two conductor cables which would run along the top of the parapet to points where they would drop down the side of the building into a buried containment compartment where several ground copper rods are buried at a depth of 10' or more. The downside cables will be enclosed in PVC, clamped every 36" and are paintable. The ESE sends up streamers of positive charges (protons) to engage negative charged electrons from the thunder cloud with the purpose of grounding them before they find other streamer sources (buildings, trees, etc.) that causes the lightning strike, thus the term "early streamer emitter."

In addition to employing a protection system for our buildings, each company recommended surge protection devises for both our main electric distribution panels and the elevator disconnect control panels that house the electronic boards.

References:

- 1) Experimental performance analysis of 1) conventional and non-conventional lightning protection systems – preliminary results
<https://www.sciencedirect.com/science/article/abs/pii/S0378779622011294>
- 2) Early Streamer Emission (ESE) Air Terminal System Section 26 41 19 Lightning Protection Systems
https://floridabuilding.org/fbc/commission/FBC_0218/Lightning_WG/Master_Spec_ESE_12-20-17.pdf

QUOTES:

| <i>Contractor</i> | <i>Type</i> | <i>Price</i> | <i>Comment</i> |
|--------------------------------------|------------------|--------------|--|
| Bonded Lightning Protection | Franklin Rod | \$84,600 | [See note 1] |
| | ESE | \$114,000 | Installed at Somerset Condos in IHB [See note 2] |
| Total Power Systems | ESE | \$80,500 | [See notes 3 & 4] |
| Jasper Thompson Lightning Protection | ESE | \$58,210 | Installed and recommended by Royale Towers Condo [See note 5] |
| Bonded Lightning | Surge Protection | \$15,000 | Poor communications |
| Total Power Systems | Surge Protection | \$22,670 | [See notes 6 & 7] |
| Jasper Thompson | Surge Protection | Not quoted | Does not offer. |
| Brevard Electric | Surge Protection | Not quoted | Did not return calls. |
| Pingston Electric | Surge Protection | \$5,806 | [See notes 8 & 9] |
| Grand Electric | Surge Protection | Not quoted | Not in scope of work. |

NOTES:

- 1) Franklin system at \$84,600 (aluminum conductors); copper add 8-10%. Franklin Rod and Faraday systems are not practical for Lantana due to their designs. A Franklin Rod system would require each roof top AC condenser to have a 10" rod that would have to periodically be replaced when owners change out condensers.
- 2) Somerset has an ESE system, installed 6-7 years ago (contact: Sean Connor, LCAM, Vesta PM, who said that on two occasions over this period two of their buildings were struck requiring stucco repair).
- 3) ESE manufacturer is Heary Brothers using their LPA-2005 model. 23' mast attached to back of lobby high point with two ground leads traversing the roof west to east and grounded in rear of each building. When informing them that this back-of-the-building design would be problematic with our drain systems, they stated that an alternative option to attach to the sides of the buildings was possible.
- 4) Total Power Systems wants to provide an ESE system and full surge protection with an annual service cost of \$1,930/yr. They state that their product offers \$10 million of insured protection. (See PDF of Andy Miner Email August 23, 2023)

- 5) Jasper Thompson ESE manufacturer is France Partonnerres supplied through Robbins Lightning Inc. of Maryville, MO. Jasper also does two conducting down leads. Service cost is \$300 every 3 years to inspect and ensure that ground resistance is low, the system remains correctly grounded and has not been damaged. The \$10 million insurance protection stated by a competitor is a selling feature used when the ESE systems were first developed, cover the product only as a warranty and not a guarantee on damage, and have not been upheld. (See PDF of Ken Friend Email September 5, 2023)
- 6) Total Power Systems recommends changing out to a wireless emergency call line system offered by King III with whom they state having an affiliation. Other vendors made no mention or were dubious about the need. Our present emergency call line goes to a TKE dispatcher at no added service cost who can assess, send a tech, and/or contact the fire department in order to avoid unnecessary damages.
- 7) King III (contact Lee Falcon 972-906-7038) is \$61/month/building = \$3,660/yr. which is \$931/yr. more than we are currently paying Spectrum for our hard-wired phone lines.
- 8) Michael Moore, our service representative for our TKE elevators suggested contacting Royale Towers Condominiums in Cocoa Beach (contact: Leon McCrary 718-588-33740) to see what surge protectors they are using. Contact and visit made with Mr. McCrary who shared quotes they received for an ESE LPS system. They used and recommend Jasper Thompson who installed their LPS in 2022. A roof parapet corner of one of their three buildings was struck earlier this year. Jasper Thompson does not do surge protection.
- 9) While there are many surge protectors on the market, the surge protectors quoted by Pingston Electric, before visiting Royale Towers, are Ditek Zeus which are the same ones used by Royale Towers.

Preliminary Recommendations:

- 1) Contract with Pingston Electric to install surge protection for the main distribution panels and the elevator disconnect controls in all five buildings at the quoted cost of \$5,806.
- 2) Consider the future installation of an ESE system on each of our four residential buildings.

Regarding recommendation 2, Jasper Thompson Lightning Protection System should be strongly considered based upon price, design, responsiveness, and a recommendation.

However, at least several factors should be considered:

- Presently, we have two remaining buildings (3 and 4) that likely require over the next two years new mansard roofs where the workers will need to affix safety harnesses and carry materials over the parapets where the LPS conductors will be attached.
- An ESE system is an expense that requires budget planning.
- If this board or a future board proposes to install an ESE system, it's likely a material architectural change that would require owner notification and the necessary approval process.

Owners that may wish to request further information or clarification may do so by contacting Tony Falco (unit 2102) at tonyjfalco@gmail.com.