



TOWER ENGINEERING

115 Evergreen Heights Drive – Suite 400 – Pittsburgh, Pennsylvania 15229
Tel: 412.931.8888 – Fax: 412.939.2525 – Email: tower@estower.com

March 24, 2014

Mr. Dennis Russo
Russo Construction Services
38 Boulder Drive
Pittsburgh, PA 15239

**Re: Plum School District
Holiday Park Elementary School Power System Study**

Dear Mr. Russo:

Thank you for the opportunity to submit this proposal for professional engineering services for a power system study of the existing electrical system at the above facility. This proposal is based upon the electrical single line of the facility, and includes the following scope of work:

- 1) Provide a short circuit study for the electrical system in the facility. The study will include all electrical equipment from the incoming services, to the line side of panels and disconnect switches listed below.
- 2) Provide an equipment evaluation study for the electrical system in the facility. The study will evaluate the ability of each piece of equipment to withstand the available fault current at its location on the distribution system. This will include all the equipment on the low voltage power system, where the nameplate information is available.
- 3) Provide a coordination study for all adjustable trip breakers and fuses on the project. Settings for breakers and fuses shall also include consideration for reducing arc flash levels on downstream distribution equipment.
- 4) Provide an arc flash study for all equipment included in the short circuit study. Study findings will be analyzed to reduce the arc flash levels where possible within the constraints of the existing distribution system.
- 5) Provide three bound copies of power system study for Owner records.
- 6) Provide one set of arc flash labels for all switchboards, panelboards, motor control centers, switches, and disconnects that are part of the study. All labels will be installed on the corresponding equipment once the study is completed.
- 7) Provide CD with all data files from the study for Owner use in future revisions to the study. The data files will be in SKM format for use with this software.

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The following is the list of equipment that we have assumed that will be included in the study for our pricing purposes:

- 1 - Incoming 480V Service
- 1 - Main 480V Switchboard
- 1 - Main 208V Switchboard
- 2 - Distribution Panelboards
- 27 - Panelboards
- 3 - Low Voltage Transformers
- 16 - 3-Phase, Equipment Disconnect Switches/Combination Starters
- 1 - Emergency Generator
- 2 - Automatic Transfer Switches
- 1 - Fire Pump Controller

In addition, we have assumed that we will be provided all the necessary equipment and feeder information needed for this project. We can use copies of the approved equipment submittals for all switchboard, panelboard, disconnect, transformer, transfer switch, and generator data. Feeder lengths and wiring size and lengths to the mechanical equipment combination starters from the panels will need to be provided by the Owner or contractor.

All modeling and analysis will be done using the latest version of SKM Analysis Software. All services provided will be performed in accordance with engineering methods, practices, and principles accepted by the industry as standard for similar work. We will provide the power system study of the above facility for the lump sum fee of \$7,819.00 (Seven Thousand, Eight Hundred Nineteen Dollars).

The final report will include a complete listing of available short circuit current at each equipment location, in addition to a pass/fail analysis of the equipment's ability to interrupt that fault current. TCC curves and breaker setting charts will be provided for all adjustable trip circuit breakers and fuses on the project. A complete listing of available arc flash hazard energy and required PPE will be included in the study, along with the corresponding labels. All labels will be self-adhesive Brady polyester arc flash labels with thermal transfer printing.

In addition, since there is an emergency generator at the facility, we will run the above analysis and reports under both utility power and generator power scenarios. Separate short circuit and arc flash listings will be provided, as will separate arc flash labels for panel/equipment powered by both systems.

As part of the study, we will also make recommendations for breaker settings and fuse settings to provide coordination on the distribution system in order to limit the effects of faults on the system. Where applicable, we will look at providing settings that will reduce the arc flash hazard at points on the distribution system.

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The limits of the study are based on the equipment quantities that are listed above. This list is based upon the electrical single line for the facility dated 08/05/13, and represents the equipment that is intended to be included in the study. The study will start at the incoming services, and will extend down the distribution system to line side of branch circuit panels on the system. Any small branch circuit loads (lighting, small equipment, heaters, etc.) will not be included in the study. Any equipment quantities or services beyond those specifically listed above would be considered additional services, and would be billed at our hourly rates after prior approval from the Owner.

If this proposal meets with your approval, please sign (1) copy of this document and return it to us for our file. We look forward to working with you on this project. Please feel free to call me should you have any questions or comments.

Very truly yours,
TOWER ENGINEERING



Stephen J. Kisak, P.E.
Principal

M2014089

ACCEPTED BY

Russo Construction Services

DATE