

# PROJECT REPORT

Date: October 8, 2014

**Proposed Electrical Projects for  
Summer 2015 at Irving, Lincoln,  
Longfellow, and Whittier Schools**  
Oak Park, IL

**STR**



Prepared for:

**Board of Education of  
Oak Park Elementary School  
District 97**

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Prepared by:

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## 001 INTRODUCTION

### **Proposed Electrical Projects for Summer 2015 at Irving, Lincoln, Longfellow, and Whittier Schools**

CS2 Design Group was asked to evaluate the current capitol expenses proposed for projects at Irving, Lincoln, Longfellow, and Whittier Schools in Oak Park School District 97. CS2 Design Group reviewed the list of electrical improvement projects consisting of: fire alarm replacement, intercom replacement, clock replacement, and security upgrades. We reviewed the budgeted construction costs, visited the building sites, investigated the scope of work, and developed a cost estimate. We created a report which describes the issues, offers recommendations and compares the existing budgeted amount to the revised estimate. We generated this report with input from the school district's personnel, existing documentation and by surveying the buildings.

**END OF INTRODUCTION**

# Oak Park Elementary School District 97

## Summer 2015 - Project Cost Summary

Project	School	Original Budget	Revised Estimate
Upgrade Fire Alarm System	Irving	\$29,794	\$117,000
	Lincoln	\$29,961	\$136,000
	Longfellow	\$335,711	\$140,000
	Whittier	\$33,214	\$144,000
Replace Intercom System	Irving	\$109,743	\$95,000
	Lincoln	\$128,357	\$102,000
	Longfellow	\$148,559	\$110,000
	Whittier	\$136,690	\$103,000
Replace Master Clock System	Irving	\$30,561	\$18,000
	Lincoln	\$36,465	\$19,000
	Longfellow	\$41,352	\$19,000
	Whittier	\$35,379	\$18,000
Replace Security Alarm System	Irving	\$33,340	\$26,000
	Lincoln	\$8,752	\$19,000
	Longfellow	\$30,631	\$29,000
	Whittier	\$36,987	\$30,000
Door Security Modifications	Irving	\$81,034	\$81,034*
	Lincoln	\$109,396	\$109,396*
	Longfellow	\$117,418	\$117,418*
	Whittier	\$91,127	\$91,127*
Total		\$1,604,471.00	\$1,523,975.00

\* Our estimator is on jury duty and I do not have finalized numbers. However, during our discussion earlier this week, we are confident that the amounts identified in the DLA Capital Plan dates 2012 will cover the scope as we understand it.

# Oak Park Elementary School District 97

**Schools:** Irving, Lincoln, Longfellow, and Whittier

**Project Name:** Upgrade fire alarm system in totality at Longfellow School; replace fire alarm panels at Irving, Lincoln, and Whittier Schools. Upgrade fire alarm systems in assembly areas.

**Existing Conditions:** The existing FCI fire alarm control panels are old and obsolete. Replacement parts are becoming difficult to find. Even though the existing panels can communicate with new field devices, new panels will not communicate with the existing field devices. The compatibility of the addressable detection devices that are attached to the current systems (which are also obsolete) did not get carried over to the newer models due to UL 864 9<sup>th</sup> edition requirements. With the exception of the newer additions and remodeled areas (work completed within the last 3-5 years) the detection devices will require replacement. The systems have a variety of conventional devices being monitored by addressable devices, as well as addressable devices themselves. Unfortunately, we are unable to replace only the control panel. The older model signaling devices which do not meet current ADA standards shall be replaced. The majority of notification alarm circuit (NAC) panels that are not capable of being synchronized shall also be replaced.

Much of the open cable and conduit is not properly supported. Affiliated Fire Systems, the districts fire alarm maintenance company informed me of countless issues with cable having open splices, incredible tangles in Hoffman box enclosures, splices in junction boxes, up to seven conductors under a single wire nut, as well as unsupervised T-taps.

**Recommendations:** Replace the fire alarm control panels with the latest version FCI addressable fire alarm control panel. Maintain all NAC panels, wiring, indicating and initiating devices which are compatible with the new control panel. The remainder of the fire alarm system to be replaced. Provide a mass notification system utilizing speakers and speaker/strobes. System shall be capable of annunciating amber alerts, severe weather alarms, and distribute lock-down instructions.

School	Original Budget	Revised Estimate
Irving	\$29,794	\$117,000
Lincoln	\$29,961	\$136,000
Longfellow	\$335,711	\$140,000
Whittier	\$33,214	\$144,000
Total	\$428,680	\$537,000

# Oak Park Elementary School District 97

**Schools:** Irving, Lincoln, Longfellow, and Whittier

**Project Name:** Replace Intercom System

**Existing Conditions:** The existing Telecor intercom headend units are old and obsolete. Replacement parts are becoming difficult to find. The systems utilize both wall and ceiling mounted speakers. Various styles of classroom call switches are used. The office personnel mentioned that announcements intermittently are not received. The system is very difficult to program, especially the bell schedule. The system has only one control console at the main reception desk.

**Recommendations:** Replace the intercom head unit, speakers, and call switches. The existing wiring can be reused. Review the current floor plan and install new devices in rooms which have changed occupancy. Utilize one style of call switch to simplify the use. Call switches to be clearly identified with a normal and an emergency pushbutton. Provide a system with simple to use web based scheduling software which will permit remote scheduling and district wide paging. Provide additional control consoles for reception, principal, and assistant principal. Provide a district wide intercom administrative console at the district offices as well as the buildings and grounds facility for district wide paging. Provide additional outdoor speakers for bell tones and emergency announcements.

School	Original Budget	Revised Estimate
Irving	\$109,743	\$95,000
Lincoln	\$128,357	\$102,000
Longfellow	\$148,559	\$110,000
Whittier	\$136,690	\$103,000
Total	\$523,349	\$410,000

# Oak Park Elementary School District 97

**Schools:** Irving, Lincoln, Longfellow, and Whittier

**Project Name:** Replace Master Clock System

**Existing Conditions:** The existing master clock system is old and obsolete. Replacement parts are becoming difficult to find. The clocks which have failed have been replaced with non-synchronizing battery clocks. Improving the accuracy of clocks school wide should improve time management for both students and teachers.

**Recommendations:** Replace the master clock controller with a wireless, synchronized, control unit which is compatible with the school intercom system. The master clock shall interface with the intercom to provide accurate time based tones. The wireless signal shall be FCC licensed and capable of penetrating the thick walls associated with the building construction. Clocks shall be installed over existing openings where applicable. Battery life shall be estimated at 5 years average.

School	Original Budget	Revised Estimate
Irving	\$30,561	\$18,000
Lincoln	\$36,465	\$19,000
Longfellow	\$41,352	\$19,000
Whittier	\$35,379	\$18,000
Total	\$143,757	\$74,000

# Oak Park Elementary School District 97

**Schools:** Irving, Lincoln, Longfellow, and Whittier

**Project Name:** Alarm System (Media Center, Administration Area, & Exterior Doors)

**Existing Conditions:** The existing buildings do not have an intrusion detection system except for the classroom addition at Lincoln School. The buildings are equipped with door access controls at the main entrances. Exterior cameras are installed at each point of entry into the building.

**Recommendations:** Provide an intrusion detection system consisting of a main control panel with alarm radio transmitter, magnetic alarm contacts (Media Center, Computer Lab, and all exterior doors), motion detectors (monitoring first floor corridors), alarm signal, interface with access control system, and keypads to arm and disarm system. The system shall be addressable and remote monitored. Remote monitoring will require a monitoring cost from a central station of approximately \$50.00 per building, per month.

The system shall be partitioned to allow for after hour use of the gymnasium. A separate key pad will be provided that will shunt the security alarm only in spaces occupied during after hour events.

School	Original Budget	Revised Estimate
Irving	\$33,340	\$26,000
Lincoln	\$8,752*	\$19,000
Longfellow	\$30,631	\$29,000
Whittier	\$36,987	\$30,000
Total	\$109,710	\$104,000

*\*Lincoln School has a security system serving the building addition with door contacts at the Main Office and Media Center.*

# Oak Park Elementary School District 97

**Schools:** Irving, Lincoln, Longfellow, and Whittier

**Project Name:** Replace rusted or damaged doors and frames at gymnasiums; provide system to control access to gymnasiums during after-school hours.

**Existing Conditions:** Currently D97 does not have the ability to separate the school facilities to allow after-hour access to the gymnasiums without also allowing access to the remainder of the school. The goal is to provide secured access to the gymnasiums without allowing access to the entire school. We also understand that some doors and frames need to be replaced due to rusting and/or damage. These locations are yet to be identified.

**Recommendations:** In each of the four school locations, STR and D97 has identified the exterior doors which will be open to after-hours events. Following the path of travel from this exterior door to the gymnasium, specific doors will be locked to prevent access other than to the gymnasium – this occurs at the pull side of door swings. Additionally, a Delayed Egress Magnetic Lock will be installed to secure doors on the push side – this typically happens at one or more of the gymnasium egress doors and potentially at doors in a corridor space.

The Delayed Action Magnetic Lock will be engaged only during after-school hours by a key. During school, the doors will open and close normally. Once engaged, the mag locks will secure the doors. If an occupant pushes against the push bar, an alarm will sound. If the person moves away from the door, it will remain locked. If pressure is continuous on the panic bar for 10 seconds  $\pm$  the mag lock will release. Additionally, the mag locks will be tied to the fire alarm system so that the lock will release in the event of a fire alarm. Signage would be provided to indicate the door is alarmed during certain hours to notify the occupants.

The intrusion detection system budget accommodates the necessary adjustment of the system for this after-hours use of the building.



Accessibility is an issue, however. At both Irving and Whittier, the elevators are located remotely from the gymnasium. Further investigation with D97 will be required to determine how to manage access for wheelchair users. This is also true for access to toilet rooms. In all cases, the secure path allows access to toilet rooms of both genders. However, these toilet rooms are not accessible in all cases.

<b>School</b>	<b>Original Budget</b>	<b>Revised Estimate</b>
Irving	\$81,034	*
Lincoln	\$109,396	*
Longfellow	\$117,418	*
Whittier	\$91,127	*
Total	\$398,975.00	\$398,975.00

\* Our estimator is on jury duty and I do not have finalized numbers. However, during our discussion earlier this week, we are confident that the amounts identified in the DLA Capital Plan dates 2012 will cover the scope as we understand it.