



**CITY OF LODI
COUNCIL COMMUNICATION**

AGENDA TITLE: Adopt Resolution Awarding Contract for Lighted Crosswalk System Project at Lockeford Street and Calaveras Street to Collins Electrical Company, of Stockton (\$41,380); and Appropriate Funds (\$45,500)

MEETING DATE: January 5, 2005

PREPARED BY: Public Works Director

RECOMMENDED ACTION: That the City Council adopt a resolution awarding the contract for the above project to Collins Electrical Company, of Stockton, in the amount of \$41,382; and appropriate funds in accordance with the recommendation shown below.

BACKGROUND INFORMATION: The project consists of installing a lighted crosswalk system on Lockeford Street at Calaveras Street. The system includes Light Emitting Diode (LED) in-ground devices, advance lighted LED crosswalk signage, and pedestrian push buttons, as shown in the attached exhibit. When a pedestrian pushes the button, the in-ground devices and advance lighted signs are activated. The road surface-mounted LEDs flash in both directions of traffic, indicating the presence of the crosswalk and pedestrian. The advance lighted pedestrian signs provide another level of awareness and earlier warning.

At the October 20, 2004, City Council meeting, plans and specifications for this project were approved. However, at the meeting, several comments were raised about how the project location was determined, the project costs, and effectiveness of the system. The attachments provide responses to these comments. The City would follow the guidelines included in the Manual on Uniform Traffic Control Devices in evaluating any future requests.

Bids for this project were opened on Wednesday, December 1, 2004. The City received the following nine bids:

Bidder	Location	Bid
Engineer's Estimate		\$26,900
Collins Electrical	Stockton	\$41,382
Northern Electric	Lodi	\$45,589
W. Bradley Electric	Novato	\$46,400
Clayborn Contracting	Auburn	\$50,198
Columbia Electric	San Leandro	\$50,483
Richard Heaps	Sacramento	\$52,473
Pacific Excavation	Elk Grove	\$58,760
Steiny & Company	Vallejo	\$59,312
Tennyson Electric	Livermore	\$59,361

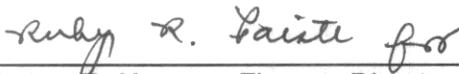
APPROVED: 
Janet Keeter, Interim City Manager

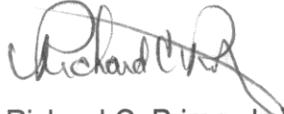
According to the contractor, equipment and labor costs have increased. Since the project had insufficient funds, Caltrans Local Assistance approved an additional \$18,000 from the Suggested Route to School Program for the project. The requested appropriation for this project includes \$4,120 in contingencies.

FUNDING:

Requested Appropriation:	Suggested Route to School Program	\$37,800
	Transportation Development Act	\$7,700
Project Estimate:	\$45,500	
Bid Opening Date:	December 1, 2004	

Funding Available:


James R. Krueger, Finance Director


Richard C. Prima, Jr.
Public Works Director

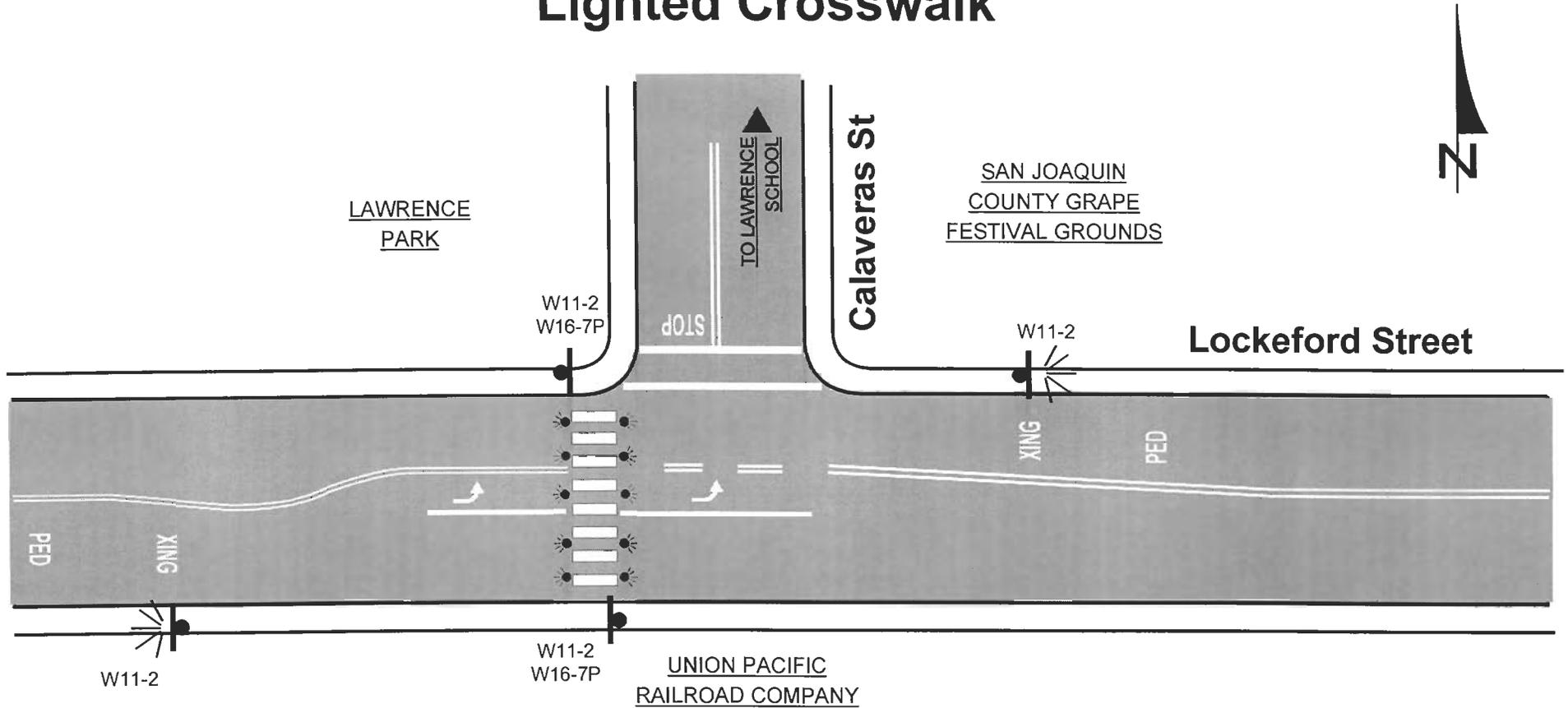
Prepared by Paula J. Fernandez, Sr. Traffic Engineer

RCP/PJF/pmf

Attachments

cc: City Attorney
Purchasing Officer
Street Superintendent
Senior Traffic Engineer
Senior Civil Engineer Fujitani

Lockeford Street at Calaveras St Lighted Crosswalk



OPERATION:

1. Pedestrian activates flashing warning light via push button.
2. In ground flashing yellow warning lights and lighted signs begin to flash.

EQUIPMENT:



W11-2



W16-7P



In Ground Light
Assembly

Response to City Council Comments from October 20, 2004, Meeting

How was the project location determined?

City staff received several requests for multi-way stop control at Lockeford Street and Calaveras Street. All the requests were related to concerns for school-aged pedestrians crossing Lockeford Street at Calaveras Street. The intersection was evaluated for multi-way stops, and it did not meet the guidelines. Recently, the state and federal agencies approved guidelines for the in-roadway lights. These guidelines are presented in the attachments. The in-roadway lighted crosswalk provides an additional safety improvement tool. Although the crossing had pedestrian signage and an adult crossing guard, staff felt it would be a good candidate for in-roadway lighted crosswalk and it met the guidelines.

This crossing is unique in that it is the farthest uncontrolled crossing (without signal or stop sign) from a school site with high pedestrian use. Motorists traveling on Lockeford Street may be unaware school-aged pedestrian are present given the land use near the crossing, such as the festival grounds and railroad tracks/businesses. The Grape Festival and Lawrence Park are also pedestrian-generating facilities, making this a good candidate for pedestrian improvements.

With support from LUSD and the Lawrence School principal, City staff applied for Suggested Route to School (SR2S) program funds for project construction and the Caltrans' SR2S Program scoring committee felt this location was a good candidate for improvements. Funds were approved for the project.

Project Costs

The cost of a lighted crosswalk is considerably less than the cost to install a traffic signal (\$150,000 to \$200,000). The installation cost for an overhead flashing beacon system (with advance lighted warning signage) is similar to the cost of the lighted crosswalk system. This intersection is not a good candidate for a multi-way stop, given the high volumes on Lockeford Street (8,300 vehicles per day) as compared to Calaveras Street (900 vehicles per day). At multi-way stop controlled intersections, it is preferred to have about equal approach volumes on both the major and minor streets. Other than the lighted crosswalk system, other improvements to consider are a traffic signal or flashing beacon.

Effectiveness of the System

In 1993, in response to an unusually high number of pedestrian/vehicle collisions, the City of Santa Rosa introduced the new concept for In-Pavement Flashing Light Crosswalk Warning System. In 1998, a study funded by the Federal Highway Administration through the University of North Carolina Highway Safety Research Center presented, "An Evaluation of a Crosswalk Warning System Utilizing In-Pavement Flashing Lights".

The evaluation determined the flashing embedded pavement lights at uncontrolled crosswalks had a positive effect, enhancing driver awareness of crosswalks and modifying drivers' habits towards pedestrians. The warning system was more effective enhancing driver awareness at crosswalks during adverse weather conditions such as darkness, fog and rain.

A before-and-after study was included in the evaluation. A staged "test" pedestrian was used to ensure consistency with four variables evaluated: speeds at varying distances from the crosswalk, travel time and deceleration rates, braking distances, and driver reaction. In all cases, the study showed that at the crossing when the flashing lights were activated, brakes were applied farther from the crossing and drivers yielded to the pedestrian more often.

Another study, prepared in 2004, "The Effects on Safety of In-Roadway Warning Lights at Crosswalks: Novelty or Longevity?" questioned whether the effects of in-roadway warning lights were stable over time. The study results were mixed, and it questioned whether the devices will be as effective over time. However, the evaluation did conclude the in-roadway lighting systems do increase the likelihood of drivers yielding to pedestrians.

Additional In-roadway lighted crosswalk studies:

“Kirkland’s Experience with In-Pavement Flashing Lights At Crosswalks” February 1999

www.ci.kirkland.wa.us/depart/pw/transportation/flscrswk.htm

City of Fountain Valley, “Illuminated Crosswalks An Evaluation Study and Policy Recommendations”, October 2000

www.katzokitsu.com/companyinfo/articles& studies/studies/crosswalks/ftnvllly.pdf

City of Manhattan Beach, “Smart Crosswalk Pilot Program”, August 2004

www.ci.manhattan-beach.ca.us/.../2003-2004/04aug26/Smart%20Crosswalks.pdf

“Seeing Crosswalks in a New Light”, January/February 2004

www.tfhrc.gov/pubrds/04jan/03.htm

“The Effect on Safety of In-Roadway Warning Lights at Crosswalks: Novelty or Longevity?”, 2004

www.itemltd.com/products/lanelight/resources/ll_xw_ITE2004-InRoadwayLightingPaper.pdf

See References in the above report for additional material on lighted crosswalks.

CHAPTER 4L. IN-ROADWAY LIGHTS

Section 4L.01 Application of In-Roadway Lights

Support:

In-Roadway Lights are special types of highway traffic signals installed in the roadway surface to warn road users that they are approaching a condition on or adjacent to the roadway that might not be readily apparent and might require the road users to slow down and/or come to a stop. This includes, but is not necessarily limited to, situations warning of marked school crosswalks, marked midblock crosswalks, marked crosswalks on uncontrolled approaches, marked crosswalks in advance of roundabout intersections as described in Sections 3B.24 and 3B.25, and other roadway situations involving pedestrian crossings.

Standard:

If used, In-Roadway Lights shall not exceed a height of 19 mm (0.75 in) above the roadway surface.

Option:

The flash rate for In-Roadway Lights may be different from the flash rate of standard beacons.

Section 4L.02 In-Roadway Warning Lights at Crosswalks

Standard:

If used, In-Roadway Warning Lights at crosswalks shall be installed only at marked crosswalks with applicable warning signs. They shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic control signals.

If used, In-Roadway Warning Lights at crosswalks shall be installed along both sides of the crosswalk and shall span its entire length.

If used, In-Roadway Warning Lights at crosswalks shall initiate operation based on pedestrian actuation and shall cease operation at a predetermined time after the pedestrian actuation or, with passive detection, after the pedestrian clears the crosswalk.

If used, In-Roadway Warning Lights at crosswalks shall display a flashing yellow signal indication when actuated. The flash rate for In-Roadway Warning Lights at crosswalks shall be at least 50, but not more than 60, flash periods per minute. The flash rate shall not be between 5 and 30 flashes per second to avoid frequencies that might cause seizures.

If used on one-lane, one-way roadways, a minimum of two In-Roadway Warning Lights shall be installed on the approach side of the crosswalk. If used on two-lane roadways, a minimum of three In-Roadway Warning Lights shall be installed along both sides of the crosswalk. If used on roadways with more than two lanes, a minimum of one In-Roadway Warning Light per lane shall be installed along both sides of the crosswalk.

If used, In-Roadway Warning Lights shall be installed in the area between the outside edge of the crosswalk line and 3 m (10 ft) from the outside edge of the crosswalk. In-Roadway Warning Lights shall face away from the crosswalk if unidirectional, or shall face away from and across the crosswalk if bidirectional.

Guidance:

If used, the period of operation of the In-Roadway Warning Lights following each actuation should be sufficient to allow a pedestrian crossing in the crosswalk to leave the curb or shoulder and travel at a normal walking speed of 1.2 m (4 ft) per second to at least the far side of the traveled way or to a median of sufficient width for pedestrians to wait. Where pedestrians who walk slower than normal, or pedestrians who use wheelchairs, routinely use the crosswalk, a walking speed of less than 1.2 m (4 ft) per second should be considered in determining the period of operation. Where the period of operation is sufficient only for crossing from a curb or shoulder to a median of sufficient width for pedestrians to wait, additional measures should be considered, such as median-mounted pedestrian actuators.

If used, In-Roadway Warning Lights should be installed in the center of each travel lane, at the centerline of the roadway, at each edge of the roadway or parking lanes, or at other suitable locations away from the normal tire track paths.

The location of the In-Roadway Warning Lights within the lanes should be based on engineering judgment.

Option:

In-Roadway Warning Lights at crosswalks may use pedestrian detectors to determine the duration of the operation instead of ceasing operation after a predetermined time.

On one-way streets, In-Roadway Warning Lights may be omitted on the departure side of the crosswalk.

Based on engineering judgment, the In-Roadway Warning Lights on the departure side of the crosswalk on the left side of a median may be omitted.

Unidirectional In-Roadway Warning Lights installed at crosswalk locations may have an optional, additional yellow light indication in each unit that is visible to pedestrians in the crosswalk to indicate to pedestrians in the crosswalk that the In-Roadway Warning Lights are in fact flashing as they cross the street. These lights may flash with and at the same flash rate as the light module in which each is installed.

CHAPTER 4L. IN-ROADWAY LIGHTS

Section 4L.02 In-Roadway Warning Lights at Crosswalks

The following is added to this section:

Standard:

In-Roadway Warning Lights shall not be placed on or within the crosswalk markings. If the In-Roadway Warning Lights are activated by a push button, the CA Code R62E sign (PUSH BUTTON FOR PEDESTRIAN WARNING LIGHTS, CROSS WITH CAUTION) shall be used.

The following shall be considered when evaluating the need for In-Roadway Warning Lights:

- a. **Whether the crossing is controlled or uncontrolled.**
- b. **An engineering traffic study to determine if In-Roadway Warning Lights are compatible with the safety and operation of nearby intersections, which may or may not be, controlled by traffic signals or STOP/YIELD signs.**
- c. **Standard traffic signs for crossings and crosswalk pavement markings are provided.**
- d. **At least 40 pedestrians regularly use the crossing during each of any two hours (not necessarily consecutive) during a 24-hour period.**
- e. **The vehicular volume through the crossing exceeds 200 vehicles per hour in urban areas or 140 vehicles per hour in rural areas during peak-hour pedestrian usage.**
- f. **The critical approach speed (85th percentile) is 45 mph or less.**
- g. **In-Roadway Warning Lights are visible to drivers at the minimum stopping sight distance for the posted speed limit.**
- h. **Public education on In-Roadway Warning Lights is conducted for new installations.**

Option:

Overhead or roadside Flashing Yellow Beacons may be installed in conjunction with In-Roadway Warning Lights. In-Roadway Warning Lights may be installed independently, but are not necessarily intended to be a substitute for standard flashing beacons. Engineering judgement should be exercised.

Guidance:

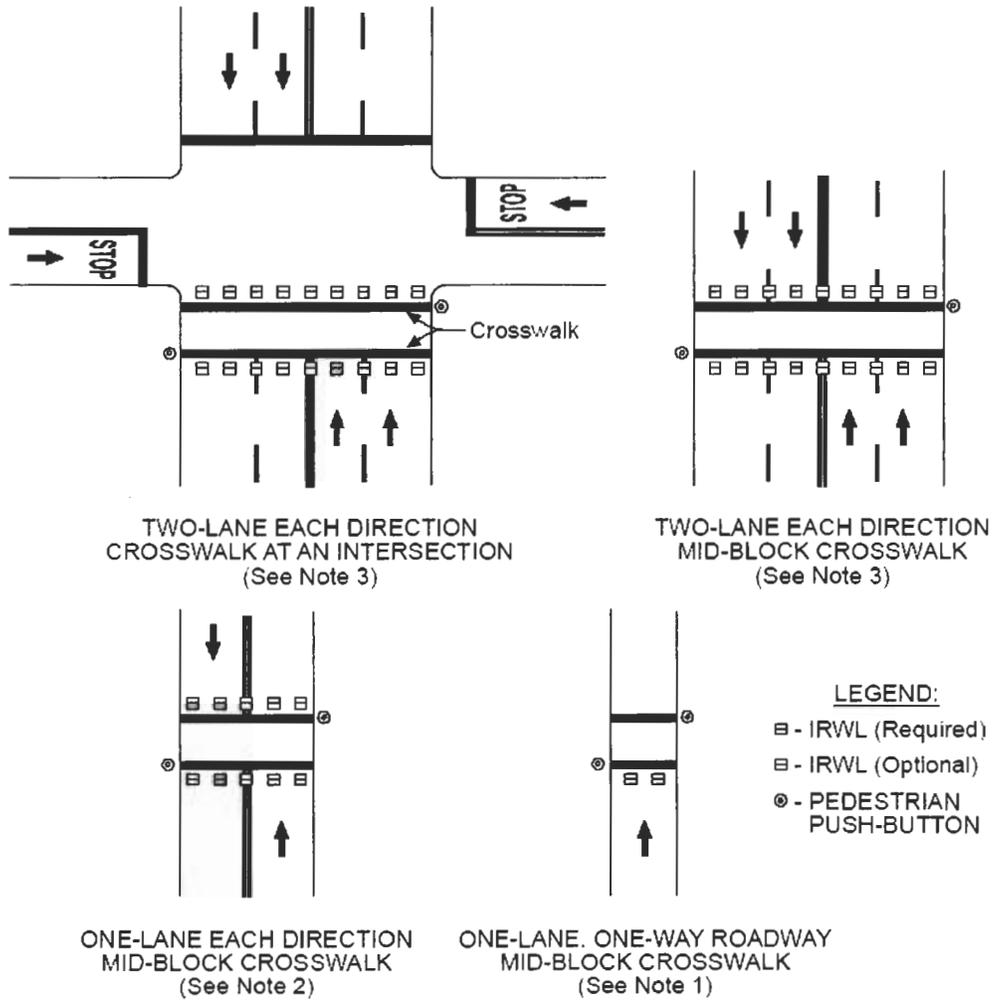
Typical applications of In-Roadway Warning Lights are shown in Figure 4L-101.

4L.101 In-Roadway Warning Lights at Crosswalks Financing and Maintenance-State Highways

Standard:

When In-Roadway Warning Lights are proposed by Caltrans on State highways, Caltrans shall pay the costs of installation and maintenance. When In-Roadway Warning Lights are proposed and installed by a local agency on State highways, the installation of In-Roadway Warning Lights shall be covered by an Encroachment Permit issued by the local District Director of Caltrans. The local agency shall be responsible for installation and maintenance of the In-Roadway Warning Lights.

Figure 4L-101
Typical Layout for In-Roadway Warning Lights (IRWLs)



- NOTES:**
1. One-Lane, One-Way Roadways, a minimum of two IRWLs shall be installed on the approach side of the crosswalk.
 2. One-Lane each direction, a minimum of three IRWLs shall be installed along both sides of the crosswalk.
 3. Two-Lanes each direction, a minimum of one IRWLs per lane, shall be installed along both sides of the crosswalk.
 4. IRWLs should be located off the tire tracks.

RESOLUTION NO. 2005-02

A RESOLUTION OF THE LODI CITY COUNCIL AWARDING THE
CONTRACT FOR LIGHTED CROSSWALK SYSTEM PROJECT AT
LOCKEFORD STREET AND CALAVERAS STREET, AND FURTHER
APPROPRIATING FUNDS FOR THE PROJECT

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WHEREAS, in 2003, in cooperation with the Lodi Unified School District and the Lawrence School Principal, City staff applied for State of California Department of Transportation (Caltrans) "Safe Route to School" grant funds for a lighted crosswalk system on Lockeford Street at Calaveras Street intersection; and

WHEREAS, in November 2003, Caltrans informed the City federal funds from the Safe Route to School (SR2S) Program were approved for our project; and

WHEREAS, to simplify and expedite the project, the City requested de-federalizing the project and in September 2004 received an allocation for State funds from the SR2S Program; and

WHEREAS, the preferred system includes Light Emitting Diode (LED) in-ground devices and advance lighted LED crosswalk signage and pedestrian push buttons. When a pedestrian pushes the button, the in-ground devices and advance lighted signs are activated causing the road surface-mounted LEDs to flash in both directions of traffic, indicating the presence of the crosswalk and pedestrian; and

WHEREAS, in answer to notice duly published in accordance with law and the order of this City Council, sealed bids were received and publicly opened on December 1, 2004, at 11:00 a.m. for the Lighted Crosswalk System Project at Lockeford Street and Calaveras Street, described in the specifications therefore approved by the City Council on October 20, 2004; and

WHEREAS, said bids have been compared, checked, and tabulated and a report thereof filed with the City Manager as shown below:

Bidder	Location	Bid
<u>Engineer's Estimate</u>		<u>\$26,900</u>
Collins Electrical	Stockton	\$41,382
Northern Electric	Lodi	\$45,589
W. Bradley Electric	Novato	\$46,400
Clayborn Contracting	Auburn	\$50,198
Columbia Electric	San Leandro	\$50,483
Richard Heaps	Sacramento	\$52,473
Pacific Excavation	Elk Grove	\$58,760
Steiny & Company	Vallejo	\$59,312
Tennyson Electric	Livermore	\$59,361

WHEREAS, staff recommends that the City Council award the contract to the lowest bidder, Collins Electrical Company, of Stockton, California, in the amount of \$41,380, and further appropriate \$45,500 for this project.

NOW, THEREFORE, BE IT RESOLVED that the Lodi City Council does hereby award the contract to the lowest bidder, Collins Electrical Company, of Stockton, California, in the amount of \$41,380; and

BE IT FURTHER RESOLVED that the City Council hereby appropriates funds as follows:

Suggested Route to School Program	\$37,800
Transportation Development Act Funds	\$ 7,700

Dated: January 5, 2005

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I hereby certify that Resolution No. 2005-02 was passed and adopted by the City Council of the City of Lodi in a regular meeting held January 5, 2005, by the following vote:

AYES: COUNCIL MEMBERS – Hansen, Hitchcock, Johnson, Mounce,
and Mayor Beckman

NOES: COUNCIL MEMBERS – None

ABSENT: COUNCIL MEMBERS – None

ABSTAIN: COUNCIL MEMBERS – None



SUSAN J. BLACKSTON
City Clerk