Legistar: 130436

To:	Chairperson and Transportation and Safety Committee
From:	Frank Kalisik, Civil Engineer II
Through:	Carl S. Goldsmith, Director of Public Works
Date:	August 29, 2013
Subject:	Elizabeth St. at St. Charles Rd. – Request for a Left Turn Arrow on SB Elizabeth St.

130436; Request to Install a Dedicated Left Turn Signal for Southbound Elizabeth St. at St. Charles Rd.

A resident has requested the placement of a left turn signal for southbound Elizabeth Street traffic at St. Charles Road, citing the southbound traffic signal for Elizabeth Street does not permit traffic to turn left at St. Charles Road when trains are present, causing unacceptable delays.

In 2010, the Illinois Commerce Commission (ICC) entered Order # T10-0160, requiring the Union Pacific Railroad (UPR) to interconnect the at-grade crossing gates at Elizabeth Street with the traffic signals at Elizabeth Street and St. Charles. In accordance with this Order, the Village of Lombard hired V3 Consultants to conduct a Minimum Time Study to determine the appropriate timing/pre-emption parameters that operate the traffic signals at the intersection of Elizabeth St. and St. Charles Rd. that would be necessary to clear any vehicles from the UPR tracks prior to a train entering the at-grade crossing on Elizabeth Street. In addition to the Minimum Time Study, V3 Consultants, with the assistance of the ICC and Chicago Metropolitan Agency for Planning (CMAP), determined traffic parameters, such as volume and direction, to determine if any improvements to the intersection, such as left turn lanes and traffic signals, would be necessary to accomplish the ICC directive.

During the preliminary design phase, the ICC stated it did not want traffic being directed to southbound Elizabeth Street south of St. Charles while the gates on Elizabeth Street were lowered (see attached V3 design memorandum of April 2, 1010). The purpose was not to permit too many vehicles to queue at the southbound gates to a point where they stack into the St. Charles Road and Elizabeth Street intersection. Also, as traffic volumes on southbound Elizabeth Street were not anticipated to change (historically 16 left turns during AM and 11 left turns during PM peak hours), the design engineers and the ICC determined no modification would be necesary to the pre-existing dedicated right-turn, combined straight and left turn lane configurations with a single green ball traffic signal.

When railroad pre-emption occurs, traffic signal cycling for the subject intersection requires that no matter what traffic signal direction is in operation when a train is detected, the northbound Elizabeth Street traffic will capture the intersection to clear any vehicles from the UPR grade crossing. Once cleared, the east and west traffic on St. Charles Road is permitted without any dedicated turn movements (as this is the second priority traffic concern). The southbound Elizabeth Street signal is skipped for this first pre-emption cycle and traffic for northbound Elizabeth is again permitted to clear. St. Charles Road traffic is then given another opportunity to move forward. (If the UPR gates are still lowered, i.e. hold phase, only east-west St. Charles Road is signaled.) After this sequence has occurred southbound Elizabeth Street traffic is entered into the cycle in conjunction with northbound Elizabeth Street traffic. The noted "skipping" of the southbound Elizabeth Street traffic signal will occur every time the railroad preemption is triggered. As the ICC records fifty (50) freight and fifty-four (54) passenger trains daily, southbound traffic at this intersection will experience frequent delays.

Given the existing traffic volumes on southbound Elizabeth Street at St. Charles Road, re-evaluation of traffic needs, re-programming the traffic signal phases, installation of a dedicated left-turn lane, and obtaining ICC and UPR approval, is not warranted. Staff does not recommend installing a southbound dedicated left turn lane and signal as requested at this time.

CC: Dan Whittington; District 1

MEMORANDUM

DATE: April 2, 2010

TO: Frank Kalisik, Village of Lombard

FROM: Mike Rechtorik, V3 Companies of Illinois
Dan Sherman, V3 Companies of Illinois

CC: David Dratnol, Village of Lombard
David Heslinga, V3 Companies of Illinois
John Johnson, Village of Lombard

RE: Elizabeth St. Traffic Signal Interconnect to Union Pacific Railroad
FINAL ENGINEERING SUBMITTAL PROJECT DEVELOPMENT REPORT

Introduction

The Village of Lombard is proposing to upgrade and interconnect the existing traffic signal at the intersection of St. Charles Road and Elizabeth Street north of where Elizabeth Street crosses the Union Pacific Railroad. The proposed improvements include a new traffic signal controller and cabinet, uninterruptible power supply, new pedestrian and traffic LED signal heads, signage and conduit for interconnecting to the railroad.

This memorandum summarizes the proposed improvements.

Existing Conditions

Three tracks cross Elizabeth Street approximately 270 feet south of the signalized intersection of Elizabeth Street and St. Charles Road. This traffic signal is currently part of a coordinated network along St. Charles Road. A storage area of 302 feet for northbound Elizabeth Street traffic queues is measured from the northbound Elizabeth Street stop bar south to a point spanning across the three tracks. Pedestrian crossings with push buttons and signals currently exist across all legs of the St. Charles Road/Elizabeth Street intersection. Both sides of the Elizabeth Street/Railway intersection have crosswalks with railroad crossing gates. Elizabeth Street and St. Charles Road are both two-way streets. Residential housing, Walgreens, Lombard Community Church, and a child care center are in close proximity to the intersection and create multiple access points along Elizabeth Street and St. Charles Road. Two frontage streets connect with Elizabeth Street adjacent to the railway; Michael McGuire Drive to the north and Parkside Avenue to the south. Both are T-intersections east of Elizabeth Street and are stop sign controlled.

Proposed Improvements

A fully-actuated traffic signal controller in a type V cabinet and a new uninterruptible power supply (UPS) will be installed and interconnected to the existing railroad signal bungalow located on Michael McGuire Drive. Two 2-inch conduits will be installed from the existing handhole in front of the traffic signal control cabinet and will run south along Elizabeth Street and across Michael McGuire Drive to

an existing handhole at the southeast corner of Elizabeth Street and Michael McGuire Drive. From this existing handhole, one 2-inch conduit will run east to the existing railroad signal bungalow. A second 2-inch conduit will run west across Elizabeth Street to a new heavy duty handhole approximately 48 feet west of Elizabeth Street. This heavy duty handhole will be for a future interconnect when the railroad relocates their signal bungalow to the southwest corner of the railroad crossing at Elizabeth Street.

The Village has requested a traffic signal battery backup system capable of operating for 8 hours. Current IDOT supplemental specifications, section 862, provide for an extended length battery backup system capable of 6 hours of operation. V3 inquired with Traffic Control Corporation about an 8 hour backup system. The 8 hour system will cost approximately $1,000-$2,000 more than the 6 hour battery backup and will require an upgrade to a type M cabinet as 3 more batteries (9 batteries total) are needed. A new foundation will be required as a type M cabinet must be ground mounted.

Minimum Warning Time Study

A Minimum Warning Time (MWT) study was previously prepared and submitted to the Illinois Commerce Commission (ICC). On March 10, 2010 the ICC responded with comments to the study. A revised MWT study was resubmitted to the ICC under separate cover recommending 41 seconds of warning time for railroad preemption.

The ICC commented that during the hold phase, the traffic signal will be permitted to cycle through northbound through and left and eastbound and westbound through movements. Westbound lefts will not be permitted during the hold phase. We concur with the ICC recommendation and the sequence of operation charts in the traffic signal plans have been prepared to reflect this.

Estimate of Probable Construction Cost

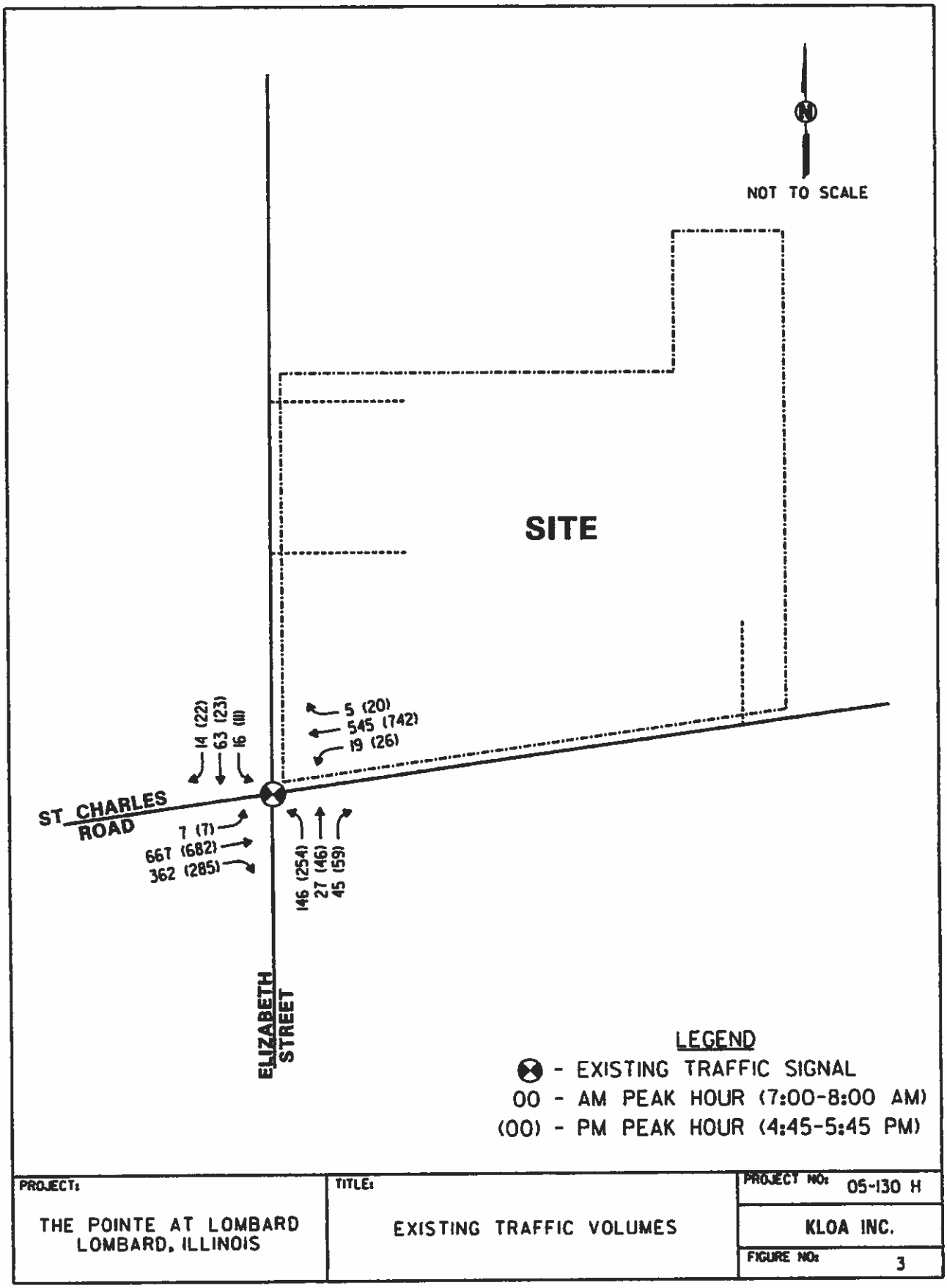
An engineers estimate of probable construction cost is provided with this submittal. The cost is $92,613, which includes a $10,000 lump sum item for railroad protective liability insurance. The estimate of probable cost will be finalized after approval of the final engineering plans.

Construction Phasing

The proposed work consisting of installing the new interconnect cable in conduit, the new foundation needed for the battery backup cabinet, and replacing the existing traffic signal and pedestrian signal heads can all be conducted prior to removing the existing traffic signal controller and installing the new controller in the type V cabinet. The contract documents have been prepared so that the work removing the existing cabinet and installing the new controller will be required to be performed during a single weekend starting Friday at 8 pm and ending Monday morning at 12 am. All other work can be performed in advance. The intersection will be posted as a 4-way stop condition while the controller is being removed and replaced.

Conclusions

V3 Companies is pleased to present this engineering report to the Village of Lombard. After receipt of written comments from this submittal, a final project report will be prepared and submitted for approval.



PROJECT:	TITLE:	PROJECT NO: 05-130 H
THE POINTE AT LOMBARD LOMBARD, ILLINOIS	EXISTING TRAFFIC VOLUMES	KLOA INC.
		FIGURE NO: 3