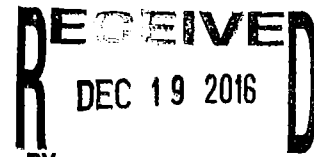




Building a Better World  
December 16, 2016



RE: Ramsey, Minnesota  
Flashing Yellow Arrow Analysis  
Armstrong Boulevard (CSAH 83) at  
Sunwood Drive/147<sup>th</sup> Avenue  
SEH No. RAMSY0000.00

Mr. Bruce Westby, PE  
City Engineer  
City of Ramsey  
7550 Sunwood Drive NW  
Ramsey, Minnesota 55303

Dear Mr. Westby:

Short Elliott Hendrickson Inc. (SEH<sup>®</sup>) appreciates the opportunity to submit this letter proposal to the City of Ramsey for up-front analysis of the existing signal system at Armstrong Boulevard (CSAH 83) and Sunwood Drive NW-147<sup>th</sup> Avenue NW with respect to potential implementation of flashing yellow left turn arrow operations.

Work required for this project will include a detailed site review of the signal system, review of existing signal plans to determine costs and ability to convert the signal system to flashing yellow left turn arrow operations for each approach, and final report preparation that will include the findings of our analysis as well as preliminary construction costs to implement flashing yellow arrow operations.

For your information, SEH has significant experience in all aspects relating to traffic signals. This experience includes study and analysis of the need for traffic signals, writing ICE-signal justification reports, design of new traffic signal systems, modifications of existing traffic signal systems, Emergency Vehicle Preemption (EVP) design, traffic signal timing and coordination, preparation of bid documents and construction inspection. Since 1978, SEH staff members have designed more than 900 traffic signals and more than 300 additional EVP system designs. A number of these designs have been within Anoka County and the City of Ramsey (including past design services for traffic signal and EVP systems along CSAH 5, CSAH 57 and CSAH 116). SEH has also completed several similar projects to address the potential for flashing yellow arrow operations, including for the Cities of Apple Valley, Burnsville, Golden Valley and Woodbury and for Anoka and Washington Counties.

This letter proposal can be the basis for an agreement for the work on this project and all subsequent services. As part of the project, we have put together the following work program for performing the services of this project. The work program is fairly well defined based on anticipated cooperative efforts of SEH, the City of Ramsey, and the Anoka County Highway Department for the complete project. The work program does, however, provide flexibility to make the most efficient use of SEH and City staff.

## Background

With the recent opening of the new Armstrong Boulevard bridge to the north (over Trunk Highway 10), area traffic patterns will change significantly. With these changes, the City wishes to consider changes in the operation of the signal system at Sunwood Drive NW-147<sup>th</sup> Avenue NW with respect to left turn phasing. This signal system is located just south of the new Trunk Highway 10 East Ramps intersection and currently operates with protected left

Engineers | Architects | Planners | Scientists

Short Elliott Hendrickson Inc., 3535 Vadnais Center Drive, St. Paul, MN 55110-5196  
SEH is 100% employee-owned | [sehinc.com](http://sehinc.com) | 651.490.2000 | 800.325.2055 | 888.908.8166 fax

turn phasing (left turns allowed on green arrow only) for all intersection approaches. In order to provide more efficient operations for these left turning movements (especially during non-peak traffic periods), the City is interested in considering modifications to this signal system to incorporate flashing yellow arrow operations on a time of day basis. The implementation of flashing yellow arrow operations generally allows for greater flexibility in how the left turn movements are operated throughout the day.

In order to analyze the potential for utilizing flashing yellow arrow operations, the City has requested that a qualified signal design consultant complete a comprehensive review of the signal system. This will help to determine if the signal system and corresponding left turn movements should be retrofitted with flashing yellow arrow operations or if the signal system should not be modified due to operational, geometric, or safety concerns (such as sight distance issues, crash history, intersection geometrics, etc.).

Items recommended to be considered in this analysis include:

- Review of intersection signal components (controller and cabinet equipment, signal head placement, vehicular detection, etc.) to determine what components will require upgrading to allow for flashing yellow arrow operations.
- Review of intersection geometrics to determine if there are conditions (such as dual left turn movements at highly traveled intersections, sight distance concerns, lack of dedicated left turn lanes, etc.) that might preclude the upgrading to flashing yellow arrow operations.
- Review of recent crash history at this intersection to determine if there are right angle crash histories that may preclude changes to the operation of the signal system.
- Review of recent traffic approach volumes to determine limitations of flashing yellow arrow operations and time of day operations.

SEH has previously completed analysis of flashing yellow arrow operations at several locations and has provided agencies such as the Anoka County Highway Department with a detailed memorandum listing criteria for consideration of flashing yellow arrow operations. These criteria are based on current State standards and guidelines along with consideration of specific intersection issues.

SEH will provide the City of Ramsey with analysis and review services needed for the City to be able to consider budgeting and scheduling for future flashing yellow arrow upgrades to this signal system. The City and County will be included in the ongoing analysis to ensure that the City and County are in agreement with this analysis and are able to provide input into proposed future budgeting and implementation recommendations.

## **Scope of Work**

### **Field Review of Intersection**

Using existing signal plans to be provided by the City or County, SEH will perform a brief site visit of this signal system to determine existing signal components, controller and cabinet capabilities, requirements for signal construction work needed to upgrade each left turn movement to FYA operations, and overall limitations on being able to implement FYA operations for any applicable intersection movement.

### **Analysis**

Upon completion of the field review, SEH will compile crash history information for the most recent 5 years of available data (through the City and County and also through the State of Minnesota's crash website). SEH has already performed an updated AM and PM peak hour traffic count (7-9 am and 4-6 pm) at the intersection as part of nearby flashing yellow arrow analysis for the County and will use this information in order to determine current traffic patterns and peak hour intersection usage.

Using existing signal plans, site review information, and data compiled for this intersection, SEH will perform a brief but detailed analysis of the signal system to determine which movements are able to be upgraded to flashing yellow arrow operations. A preliminary cost estimate will also be prepared for the City to determine estimated costs to upgrade the individual signal system to have flashing yellow arrow operations. Equipment required to be upgraded will be briefly listed for City information and consideration.

A letter report will be prepared for City (and County) review and consideration that will include:

- Analysis of traffic counts to determine potential time of day implementation of flashing yellow arrow operations,
- Work recommended to be completed at this intersection,
- Limitations on implementation of flashing yellow arrow operations,
- Overall intersection estimated costs to upgrade to flashing yellow arrow operations,

### **Final FYA Design**

As part of this analysis, no final design services for signal modifications are included in the proposed scope of work. If requested, SEH can provide the City with estimated design and construction administration costs for construction of FYA improvements for City consideration and budgeting. SEH can also provide the City with a separate proposal which would include all design, bidding, and construction observation services needed to fully implement the construction of these improvements.

### **Schedule**

SEH proposes to begin work after a Notice-To-Proceed is issued by the City. We will complete a field review of the intersection in January-February 2017 and provide the City and County with our analysis findings by March 1, 2017.

### **Compensation**

The proposed work program includes a detailed field review of the signal system, analysis and report preparation. We propose to be paid for the work we do on an hourly basis based on direct labor costs, plus the actual cost of reimbursable expenses.

The field review, intersection analysis, and report preparation work, as defined above, will be done on an hourly basis (plus reimbursable expenses) for a cost-not-to-exceed of **\$1,700**. These costs will not be exceeded except as otherwise approved by the City.

Any additional tasks added to or deleted from this project (due to significant changes in the general scope of the project or its design including, but not limited to, changes in size, complexity of character or type of construction) shall be by written amendment to the contract signed by both parties.

Mr. Bruce Westby, PE  
December 16, 2016  
Page 4

This Agreement for Professional Engineering Services between SEH and the City of Ramsey may be terminated by either party upon seven (7) days written notice should the other party fail substantially to perform in accordance with its terms through no fault of the party initiating the termination. In the event of termination, SEH shall be compensated for services performed to termination date, including expenses and equipment costs then due and all terminal expenses. SEH will provide the City with reproducible copies of any plan, specification, or documents already completed at the time of termination.

We appreciate the opportunity to provide the City of Ramsey with a letter proposal for these services, and look forward to hopefully being able to work with you and the City on this project. Feel free to contact John Gray at 651.490.2073 if you have any questions or comments regarding any of the above mentioned information.

Sincerely,

SHORT ELLIOTT HENDRICKSON INC.

A handwritten signature in black ink, appearing to read 'JMG', with a long horizontal flourish extending to the right.

John M. Gray, PE  
Project Manager