Comparing At-Grade Intersection Designs Along Randall Road

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ABSTRACT

Randall Road is a vital arterial located within McHenry County, Illinois. This county maintained roadway currently consists of two through lanes in each direction with ADT volumes ranging between 35,000 - 45,000 vpd. It traverses through several communities, such as Crystal Lake, Lake in the Hills and Algonquin, that each have their own ideas of what improvements should be implemented within their community. The project focused on a 3.5 mile section aimed at improving mobility and local access while addressing safety issues, community values, and environmental impacts. A Context Sensitive Solutions (CSS) approach was followed throughout the study with goals of improving regional mobility, improving local access/local system deficiencies, enhancing local access/local system deficiencies, accommodating land use planning goals and addressing safety concerns.

The focus of the poster is two-fold; highlighting the various CSS methods used to gain public consensus as well as summarizing the operational analysis of the various alternatives considered. Several popular traffic engineering tools, including HCS+, Synchro, and VISSIM were used to demonstrate the benefits of the proposed alternatives. VISSIM was a key tool in allowing the project team as well as citizens to visualize the proposed improvements, especially at the intersection of Randall Road and Algonquin Road. Future operational characteristics of a traditional at-grade intersection, SPUI, CFI (2 & 4 Leg) were analyzed based on future ADT volumes ranging between 54,000 - 66,000 vpd. Demonstrating the various differences of the alternatives was vital to gaining the public’s trust.

PROJECT LOCATION

The Randall Road Phase I Study provides a comprehensive solution to address the communities’ needs by complying with the Federal Aid guidelines, utilizing an interactive public involvement approach, and integrating the project goals with National Environmental Policy Act (NEPA) guidelines. The project combines the experience of a multi-disciplinary team of professionals including transportation planners, traffic engineers, roadway design engineers, environmental specialists, hydraulic engineers, and public involvement specialists.

A continuous Public Involvement Program using the principles of Context Sensitive Solutions has included two public meetings, a public hearing, the formation of a Community Advisory Council, meetings with local officials and special interest groups, a website, and project newsletters. The public has been encouraged to take an active role in the project development process and they have responded with enthusiasm.

The alternative evaluation process involved a focused, fact-based technical analysis conducted in conjunction with the comprehensive public and agency involvement program. The fact-based technical approach analyzes alternatives through a two-level alternatives evaluation process. The first level of analysis (fatal flaw evaluation) eliminates alternatives that clearly do not meet the purpose and need for the project. The second level (comprehensive analysis) compares the relative benefits and affects of the alternatives based on how effectively they meet established evaluation criteria.

STUDY PROCESS

Scoping | Purpose and Need
Development of Alternatives | Evaluation of Alternative(s)
Selection of the Preferred Alternative | Draft Document
Final Document | ROD

Construction Alternatives

- Existing & 2030 No-Action
- Preferred Alternatives Analysis

- Alternatives Evaluation
- Alternatives Analysis

- Partial
- At

HCIS+, Synchro & VISSIM
Synchro & VISSIM
HCIS+, Synchro & VISSIM

SUMMARY (Preferred Alternative: 2-Leg Partial CFI)

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