

## SCOTT COUNTY ENGINEER'S OFFICE

950 E. Blackhawk Trail  
Eldridge, Iowa 52748

(563) 326-8640

FAX – (563) 328-4173

E-MAIL - [engineer@scottcountyiowa.com](mailto:engineer@scottcountyiowa.com)

WEB SITE - [www.scottcountyiowa.com](http://www.scottcountyiowa.com)



ANGELA K. KERSTEN, P.E.  
County Engineer

ELLIOTT R. PENNOCK, E.I.T.  
Assistant County Engineer

TARA YOUNGERS  
Senior Administrative Assistant

### MEMO

TO: Mahesh Sharma  
County Administrator

FROM: Angie Kersten, P.E.  
County Engineer

SUBJ: Stop Sign Installation on 240<sup>th</sup> Street at 210<sup>th</sup> Avenue – 1<sup>st</sup> Reading

DATE: September 22, 2020

Our department, the Sheriff's Department, and the Iowa Department of Transportation are concerned with the safety of the 240<sup>th</sup> Street (F-45) and 210<sup>th</sup> Avenue (Z-16) intersection. 240<sup>th</sup> Street is a major collector and Farm-to-Market route that runs east-west through the intersection. 210<sup>th</sup> Avenue is a major collector and Farm-to-Market route that runs north-south through the intersection. The intersection is two-way stop controlled with stop signs on 210<sup>th</sup> Avenue. There have been several crashes at this intersection over the past several years. Most recently, there have been six crashes within the past five months. Many of the crashes reported at this intersection in recent years have involved failure to yield crashes from the stop controlled approaches at the intersection.

A Traffic and Safety Study was performed in August 2018, to identify potential improvements that could be made to this intersection. At the time of the study, the intersection did not meet the warrants listed in the Manual on Uniform Traffic Control Devices (MUTCD) for a multi-way stop or traffic signal. The study did recommend several low cost improvements that could be made to improve safety. We completed those improvements which included removing non-regulatory signs that were not necessary, painting an additional stop bar on 210<sup>th</sup> Avenue closer to the 240<sup>th</sup> Street edge of traveled way, installing "Cross Traffic Does Not Stop" plaques to the backside of the existing plaques for northbound and southbound approaches, and installing MUTCD compliant solar powered flashing beacons on the stop signs on 210<sup>th</sup> Avenue and the intersection warning signs on 240<sup>th</sup> Street.

Even with these improvements, the intersection continues to experience failure to yield crashes from the stop controlled approaches. Over the past few months, our office conducted an engineering study for safety improvements at this intersection. The analysis included calculating the crash rate, re-evaluating the warrants listed in the MUTCD for a multi-way stop and traffic signal, and performing a benefit-to-cost analysis.

The results of the engineering study indicate that the intersection still does not meet the warrants for a traffic signal, however it now meets the multi-way stop control warrant due to

the number of failure to yield crashes that have occurred over the past two years. The intersection has seen 8 crashes within the most recent 12-month period and 12 crashes within the most recent 2-year period. The crash rate at this intersection is 1.74 crashes per million entering vehicles (MEV) which is above the average crash rate of 1.0 crashes/MEV at Iowa rural intersections for secondary with secondary roads. Over the past 10 years, the average annual daily traffic (AADT) on 240<sup>th</sup> Street has increased by 1.09% and the AADT on 210<sup>th</sup> Avenue has increased by 2.37%. The AADT of 210<sup>th</sup> Avenue has been greater than that of 240<sup>th</sup> Street since 2002. The hourly average entering traffic volume on 210<sup>th</sup> Avenue exceeds 240<sup>th</sup> Street during mid-day and evening hours.

One tool that can be used to determine whether or not an improvement is economically feasible is a benefit-to-cost (B/C) analysis. A B/C analysis was performed to convert the intersection into a multi-way stop. The B/C analysis resulted in a 112.6:1 ratio. Most studies indicate that an improvement with a B/C ratio of 1:1 or greater is considered beneficial and less than 1:1 is not. Iowa DOT Instructional Memorandum 3.250, Economic Analysis (Benefit-to-Cost Ratio), states that for a B/C Ratio greater than 1.2:1 the improvement is probably cost effective and should be accomplished as part of a proposed project or for work programmed in the near future.

Based on the crash experience and high B/C ratio, I recommend installing a multi-way stop at this intersection for safety purposes. Less restrictive measures have been installed at this intersection over the past two years and crashes have not decreased.

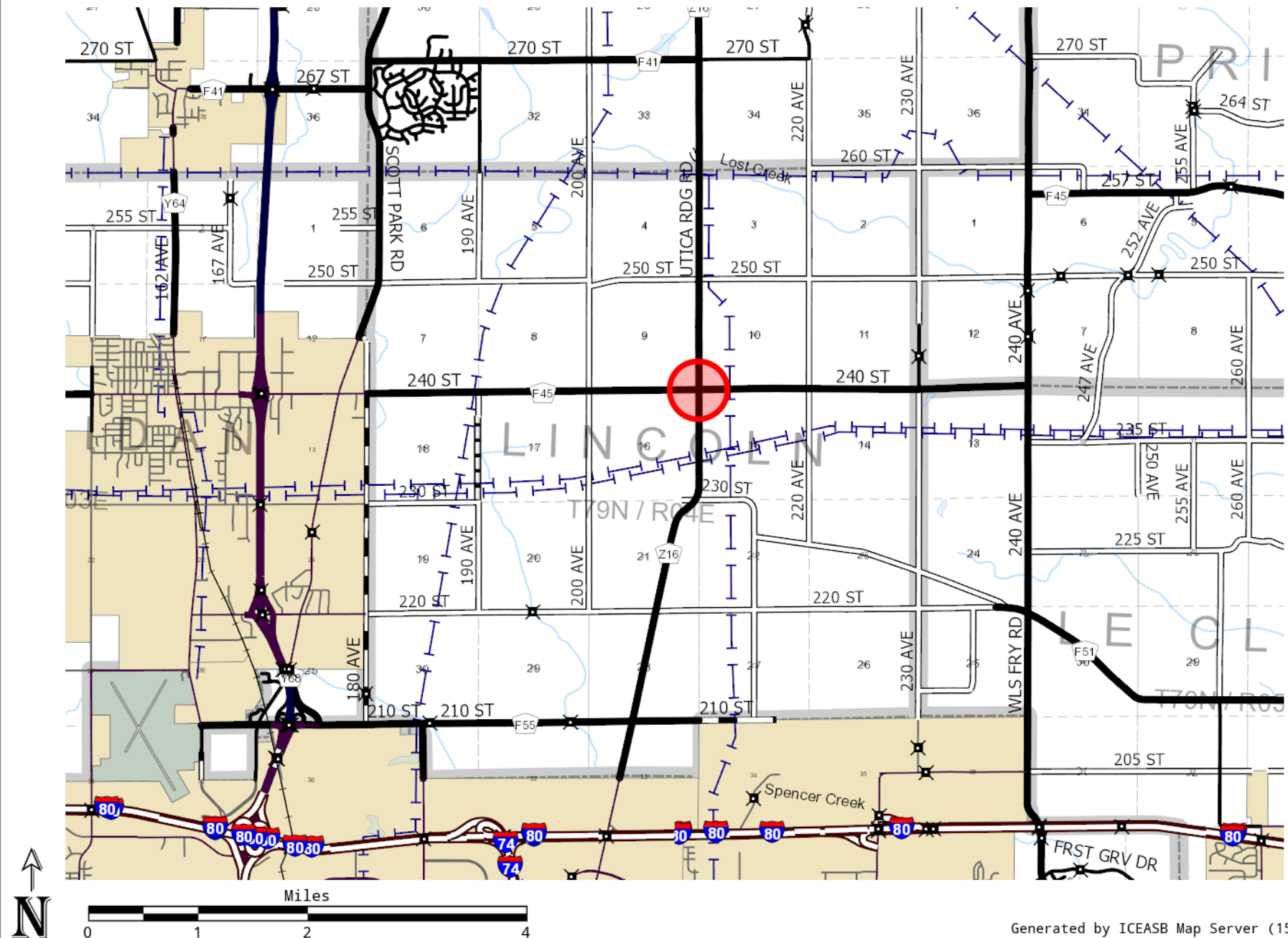
The Traffic and Safety Study that was performed in 2018 investigated alternative intersection designs and one alternative to the existing intersection geometry includes replacing the current intersection with a single lane entry roundabout. Roundabouts improve traffic flow by allowing continuous flow traffic to enter the intersection. All entering vehicles yield to traffic circulating the roundabout. Although each entering vehicle is required to slow down, the time stopped while waiting is significantly reduced. Roundabouts improve safety by reducing the number of conflict points between vehicle paths and eliminate severe crash types including head-on crashes, right-angle “broadside” crashes and left turning crashes. As part of our engineering study our office performed a B/C analysis to convert the intersection into a roundabout and the analysis resulted in a 12:1 ratio. Our office will continue to explore this alternative design and funding opportunities for potential implementation in the future.

However, I recommend moving forward with installing a multi-way stop at this intersection at this time. This will be the first of three readings of the ordinance to place stop signs on 240<sup>th</sup> Street at the intersection with 210<sup>th</sup> Avenue. Included with this memo is a location map.

# Safety Improvement Project at 240th St & 210th Ave

Scott - ICEASB Easy Map

7:59 AM, Fri, Jul 31, 2020



SCOTT COUNTY ORDINANCE NO 20-\_\_\_\_\_

AN ORDINANCE TO AMEND CHAPTER 13, SEC. 13-47A-9bb OF THE SCOTT COUNTY CODE RELATIVE TO PLACEMENT OF STOP SIGNS ON SCOTT COUNTY SECONDARY ROADS.

BE IT ENACTED BY THE BOARD OF SUPERVISORS OF SCOTT COUNTY, IOWA:

SECTION 1.

Under Sec. 13-47A-9bb - to read: From the East and West entrances at the intersection of 210<sup>th</sup> Avenue and 240<sup>th</sup> Street.

SECTION 2.

The County Auditor is directed to keep and maintain a copy of the Ordinance in the County Auditor's office.

SECTION 3. SEVERABILITY CLAUSE

If any of the provisions of the Ordinance are for any reason illegal or void, then the lawful provisions of this Ordinance shall be and remain in full force and effect, the same as if the Ordinance contained no illegal or void provisions.

SECTION 4. REPEALER

All Ordinances or parts of Ordinances in conflict with the provisions of this Ordinance are hereby repealed.

SECTION 5. EFFECTIVE DATE

This Ordinance shall be in full force and effect after its final passage and publication as by law provided.

APPROVED this 29<sup>th</sup> day of October, 2020.

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Tony Knobbe, Chairperson  
Scott County Board of Supervisors

ATTESTED BY:

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Roxanna Moritz  
Scott County Auditor