

Kenosha County
Administrative Proposal Form

1. Proposal Overview

Division: Highway Department: Public Works

Proposal Summary (attach explanation and required documents):

To create an ordinance to enact a Four-Way Stop at the intersection of County Trunk Highway "K" and County Trunk Highway "B" in the Town of Brighton and Village of Paddock Lake.

Dept./Division Head Signature: *Clement Abongwa* Date: 12-17-20

2. Department Head Review

Comments:

Recommendation: Approval Non-Approval

Department Head Signature: *RAW* Date: 12-18-20

3. Finance Division Review

Comments:

Recommendation: Approval Non-Approval

Finance Signature: *Jan K...* Date: 12/17/20

4. County Executive Review

Comments:

Action: Approval Non-Approval

Executive Signature: *Tim Kruse* Date: 12/22/20

Kenosha



County

Subject: To create an ordinance to enact a Four-Way Stop at the intersection of County Trunk Highway "K" and County Trunk Highway "B" in the Town of Brighton and Village of Salem Lakes.	
Original <input type="checkbox"/> Corrected <input type="checkbox"/> 2 nd Correction <input type="checkbox"/> Resubmitted <input type="checkbox"/>	
Date Submitted: 01/04/2021	Date Resubmitted:
Submitted by: PW/Facilities Committee	
Fiscal Note Attached <input type="checkbox"/>	Legal Note Attached <input type="checkbox"/>
Prepared by: Clement Abongwa, Director, Division of Highways	Signature: <i>Clement Abongwa</i>

BOARD OF SUPERVISORS

ORDINANCE NO. _____

The County Board of Supervisors of Kenosha County, Wisconsin does hereby ordain:

Kenosha County Ordinance, Section 7.025 on TRAFFIC CONTROLS is hereby amended by creating Section (2) (hh) as follows:

(hh) Four-Way Stop on intersection of County Trunk Highway "K" and County Trunk Highway "B". Traffic from all directions shall stop at the intersection of C.T.H. "K" and C.T.H. "B", and a Stop sign shall be placed at each corner of the intersection. This intersection is located in said Kenosha County, Wisconsin in the Town of Brighton and Village of Salem Lakes.

Respectfully Submitted:

Committee:

Aye

Nay

Abstain

Excused

Bill Grady, Chairperson

John Franco, Vice Chairperson

Laura Belsky

Andy Berg

Gabe Nudo

Sharon Pomaville

Zach Rodriguez

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COUNTY OF KENOSHA

Raymond G. Arbet, Director
Department of Public Works & Development Services

Clement Abongwa, Director
Division of Highways
19600 75th Street, Suite 122-1
Bristol, Wisconsin 53104
(262) 857-1870
Fax: (262) 857-1885

To: **Members,
Public Works/Facilities Committee**

From: **Clement Abongwa, Director
Division of Highways**

Date: **January 4, 2021**

Subject: **CTH 'K' and CTH 'B' Intersection Safety Review in the Town of
Brighton.**

Background Information

The Division of Highways performed the “Kenosha County Highway Safety Screening Study” in 2019 to identify and rank traffic safety issues for all County trunk highways and intersections.

The Safety Screening Study identified the intersection at CTH K and CTH B among the top ten intersections with safety concerns. In addition to this ranking, we have received contacts from the County Supervisor from the district where this intersection is located, Town of Brighton officials and concerned residents regarding the safety of this intersection. The concerns expressed were generally regarding vehicular crashes, near misses and requests to convert the 2-Way Stop to a 4-Way Stop intersection.

A formal review of this intersection was conducted using the guidelines stipulated in the national “Manual on Uniform Traffic Control Devices”. The full report outlines the results of the investigation and recommended mitigation measures designed to enhance traffic safety at this intersection. The Executive Summary that follows highlights the key elements from the report.

Executive Summary

- The most significant safety issue identified for this intersection is the existence of a “sight distance deficiency” due to a combination of topography, road curvature and private property foliage present on the northeast corner of this intersection.
- The intersection has an annual average crash rate of 3.16 MEV (crash rate per million entering vehicles), significantly higher than the State of Wisconsin annual average crash rate of 0.94 MEV for rural intersections.
- A 4-Way Stop warrant is met at this intersection because of the identified sight distance issue which would be significantly mitigated by a 4-Way stop control.



COUNTY OF KENOSHA

Raymond G. Arbet, Director
Department of Public Works & Development Services

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- It appears a 4-Way Stop control could mitigate 87 percent of the crashes at this intersection and the associated economic loss.

Taking all the above into consideration, the recommendation is to install a 4-Way Stop control at the intersection at CTH K and CTH B incorporating 36"X36" signage.

TRAFFIC SAFETY EVALUATION AT THE COUNTY TRUNK HIGHWAY K (CTH K) AND COUNTY TRUNK HIGHWAY B (CTH B) INTERSECTION

Study Timeframe: November 2020

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I. Purpose of the study

The purpose of this study is to carry out a comprehensive safety review of the intersection at CTH K and CTH B with the goal of determining and implementing a cost-effective traffic safety enhancement to mitigate crashes at the said intersection.

II. Problem Statement and Study Justification

The Division of Highways performed a "Kenosha County Highway Safety Screening Study" in 2019 to identify safety issues along County highway corridors and their intersections. The safety study identifies the intersection at CTH K and CTH B among the top 10 intersections with safety concerns. The safety concerns of some of the intersections on the list of 10 have been addressed or would be addressed by ongoing projects. The CTH K and CTH B intersection is not in an area where there is an ongoing project and neither have the issues at the intersection been addressed. The County, therefore, is evaluating the safety concerns at this intersection to determine cost-effective mitigation measures to address the issues.

In addition to this ranking, we have received contacts from the County Supervisor from the district where this intersection is located, Town of Brighton officials and concerned residents regarding the safety of this intersection. The concerns expressed were generally regarding vehicular crashes, near misses and requests to convert the 2-Way Stop to a 4-Way Stop intersection.

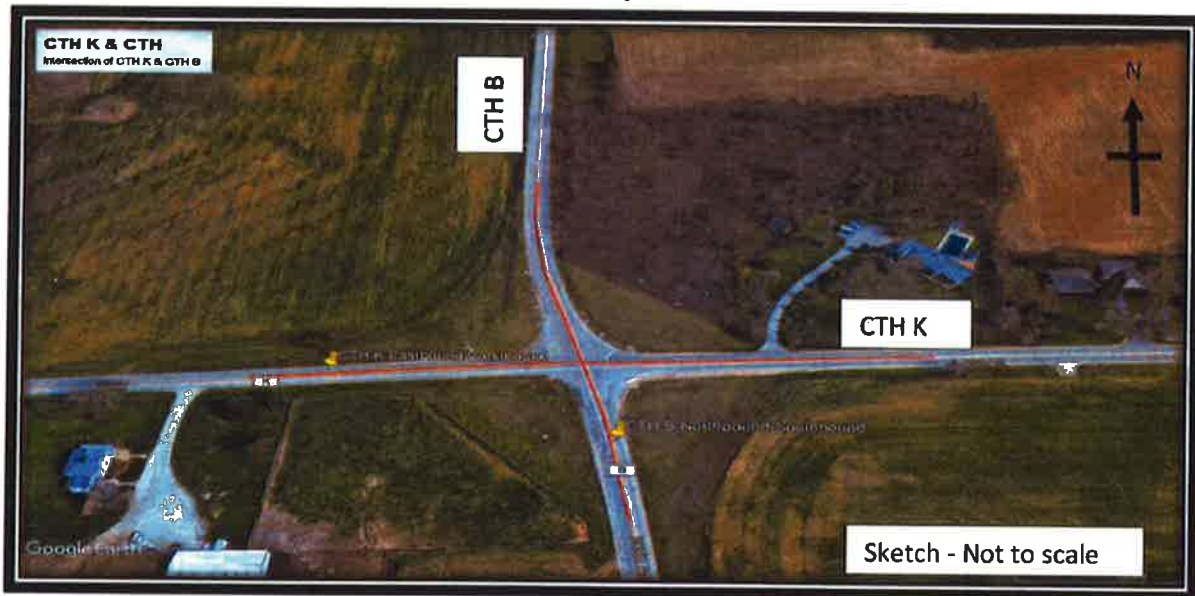
III. Study Methodology

The study employed guidelines outlined in the Manual on Uniform Traffic Control Devices (MUTCD) as the basis for evaluating the intersection safety and to determine suitable countermeasures to mitigate safety concerns at the said intersection. The following criteria were considered in this study; intersection geometry, sight distance, crash history, intersection approaching speed and evaluating the intersection on the criteria for a 4-Way Stop.

IV. Intersection Geometry

The CTH K and CTH B intersection is a slightly skewed 4-leg intersection with a 2-Way Stop on CTH K's east and west approaches. There is slope on the north and south leg of the intersection that seems to limit the sight distance at the southwest corner and worsen the severity of the sight distance issue on the northeast corner. Exhibit I illustrates the geometric layout of the intersection.

Exhibit I: CTH K and CTH B Intersection Layout



V. 2019 Intersection Safety Review

A comprehensive countywide safety study carried out in 2019 ranks the intersection at CTH K and CTH B 8th among the intersections with the most severe safety issues when compared with other intersections on County highways. The study estimated a 5-year economic loss of \$285,000 as result of crashes that occurred during the 5-year study period. The intersection is also ranked 2nd with the highest 5-year annual crash rate of 3.16 MEV (crash rate per million entering vehicles) which is higher than the State of Wisconsin annual average crash rate of 0.94 MEV for rural intersections. A summary of the study report is highlighted in Exhibit II.

Exhibit II: Intersection Safety Study

Intersection Collision Diagram



Location: CTH K (60th St) & CTH B (288th Ave)
Municipality: Salem
County: Kenosha
Traffic Control: Minor Street Stop

Duration:
From: 1/1/2014 **5 Years**
To: 12/31/2018 **0 Months**
AAADT: 2,610 **MAC**
Area Type: Rural
GPS Coordinates: 42.582556, -88.158583

TOTAL CRASHES (5 YRS): 16
AVG. CRASHES/YEAR: 3.2
CRASH RATE: 3.15 per MVEV
RMS CRASH RATE: 0.42 per MVEV
ECONOMIC LOSS*: \$ 286,080
*AMB - AMB, C-CDM, PDD-PR

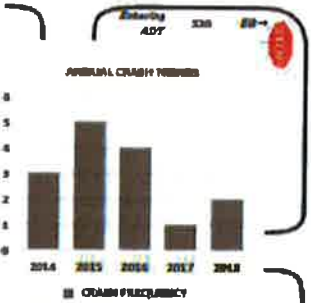
YEAR	E	A	B	C	PDD	TOT.	ECOM. LOSS
2014	0	0	0	1	2	3	\$0,000
2015	0	0	0	2	0	2	\$0,000
2016	0	0	1	0	0	1	\$7,000
2017	0	0	0	0	1	1	\$4,000
2018	0	0	1	0	1	2	\$0,000
TOTAL	0	0	1	3	10	15	\$20,000

E - Fatal, A - Major Injury, B - Non-Disabling Injury, C - Possible Injury, PDD - Property Damage Only

CTH K - 60th St

CTH B - 288th Ave

Misc Crashes:
3 East Leg



CRASH TYPE

CRASH TYPE	E	A	B	C	PDD	TOT.	ECOM. LOSS
RT-AMBUL	0	0	0	0	0	0	\$ -
RT-AMBUL	0	0	2	3	7	12	\$ 275,000
PROPERTY	0	0	0	0	0	0	\$ -
RT-TURN FROM-STOP	0	0	0	0	0	0	\$ -
SWAY-STOP	0	0	0	0	0	0	\$ -
SWAY-OTHER	0	0	0	0	0	0	\$ -
BICYCLE-RELATED	0	0	0	0	0	0	\$ -
PASSENGER-VEHICLE	0	0	0	0	0	0	\$ -
BIKE-OTHER	0	0	0	0	2	2	\$ 8,000
BIKE-VEHICLE	0	0	0	0	0	0	\$ -
BIKE-OTHER	0	0	0	0	0	0	\$ -
BIKE-VEHICLE	0	0	0	0	1	1	\$ 4,000
TOTAL	0	0	1	3	10	15	\$ 286,000

ROAD CONDITIONS

DRY	12	80%
WET	2	13%
SLUSHY	0	0%
ICE	0	0%
OTDR	0	0%
TOT.	15	

WEATHER CONDITIONS

DAY	14	93%
DAWN	1	7%
TOT.	15	

DRIVER BEHAVIOR

ALCOHOL	1	7%
DRIVING	0	0%
SPEED	1	7%
TOT.	2	

VEHICLE DAMAGE

OTHER/UNK.	0	0%
NONE	0	0%
VERY SEVERE	0	0%
MODERATE	10	66%
SEVERE	10	66%
VERY SEVERE	1	6%
TOTAL VEHICLES	27	

DAY/TIME TABLE

	12:00-12:59	1:00-1:59	2:00-2:59	3:00-3:59	4:00-4:59	5:00-5:59	6:00-6:59	7:00-7:59	8:00-8:59	9:00-9:59	10:00-10:59	11:00-11:59	12:00-12:59	1:00-1:59	2:00-2:59	3:00-3:59	4:00-4:59	5:00-5:59	6:00-6:59	7:00-7:59	8:00-8:59	9:00-9:59	10:00-10:59	11:00-11:59	12:00-12:59	TOT.
SPCH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RT-AMBUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROPERTY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RT-TURN FROM-STOP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWAY-STOP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWAY-OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BICYCLE-RELATED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PASSENGER-VEHICLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIKE-OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIKE-VEHICLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIKE-OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOT.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15

VI. 4-Way Stop Warrant Review

The intersection at CTH K and CTH B was also evaluated to determine whether any criteria was met to indicate the merits to implement a 4-Way stop control at this intersection. The evaluation determination is summarized in Exhibit III 4-Way Warrant Matrix.

Exhibit III: 4-Way Warrant Matrix

SN	CRITERIA DESCRIPTION	WARRANT	FIELD CONDITIONS	DETERMINATION
1	ANNUAL CRASHES	≥ 5	3	Nominal
2	Volume			
	a) Major approach average vehicular volume per hour for any 8 hours	≥ 300	130	Not Met
	b) Minor approach average counts for peds/vehicular/cyclists per hour for any 8 hours	≥200	115	Not Met
	c) Delay at highest hour	≥30 secs	None	Not Met
3	85TH PERCENTILE SPEED ON MAJOR ROAD EXCEEDS 40MPH			
	a) Major approach average vehicular volume per hour for any 8 hours	≥210	130	Not Met
	b) Minor approach average counts for peds/vehicular/cyclists per hour for any 8 hours	≥140	115	Not Met
4	SIGHT DISTANCE	At least one corner	Obstruction at northeast and southwest corners	Met
5	ANY UNSAFE CONDITIONS APPARENT TO THE MOTORISTS	Creating safety issues at the intersection	Horizontal curves & slope on approaching north and south legs of the intersection	Met

a. Annual Crashes

This intersection has an annual average of 3 crashes a year which is lower than the threshold number to merit a 4-Way stop. It was also observed that 87% (13 out of the 15) of the crashes that occurred during the last five years could be corrected by implementing a 4-Way stop control. These observations are consistent with a 2019 safety screening study that ranks this intersection as 8th (out of 20) with the most severe safety concerns when compared with other intersections on County highways. The study report further ranks this intersection 8th on the bases of economic loss (\$285,000) caused by the 5-year crashes at the said intersection. The intersection is ranked 2nd on high crash frequency and has a crash rate of 3.16 MEV which is higher than 0.94 MEV, the State of Wisconsin annual average crash rate for rural intersections. Even though the number of crashes does not merit a 4-Way stop control, staff still recommends a 4-Way stop control on basis of the crash frequency, economic loss and the fact that about 87% of the crashes can be corrected with the implementation of a 4-Way stop control. Exhibit IV denotes the crashes that occurred in the last 5 years at this intersection.

Exhibit IV: 5-year Crash History

CTH B - CTH K INTERSECTION CRASH DATA (AUGUST 2015 - AUGUST 2020)											
Crash No.	DOE Document No.	Crash Date	Location	Severity	Injuries	Fatalities	Type	Light Cond.	Surface Cond.	Weather Cond.	Description
1	986689K3	09/12/2015	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Dry	Cloudy	*Driver in vehicle right of way *Line 1 (WB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Following line closely *Alcohol
2	98772MP	11/03/2015	CTH B - CTH K Intersection	PD	0	0	Rear End	Day	Dry	Clear	*Line 1 (EB) was stopped at stop sign. Line 2 (SB) to PAI turned right and was rear ended by Line 1. *Driver in the driver's seat *Line 2 (SB) saw the sign off the road left the roadway into ditch, re-entered the roadway, and struck Line 1 (WB) who was legally stopped at stop sign.
3	987518B	04/17/2016	CTH B - CTH K Intersection	PD	0	0	Other	Day	Dry	Clear	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 3 (EB) failed to stop at stop sign and struck Line 2 (NB). Line 2 proceeded through to make Line 3 (EB) *Line 3 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 3 (EB)
4	98772704	06/07/2016	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Dry	Clear	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
5	9877213H	08/20/2016	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Dry	Clear	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
6	9878787H	08/26/2018	CTH B - CTH K Intersection	INJ	2	0	Angle	Day	Dry	Cloudy	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
7	0F180C147Z	08/17/2017	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Dry	Clear	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
8	0F180714WRW	09/26/2018	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Dry	Clear	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
9	0F180897VX	12/12/2018	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Dry	Clear	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
10	0F180734LH1	04/02/2019	CTH B - CTH K Intersection	INJ	2	0	Angle	Day	Dry	Cloudy	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
11	0F18079V1R2	10/28/2019	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Wet	Rain	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
12	0F18079V1R1T	11/12/2019	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Snowy	Clear	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
13	0F18079V1R1T	06/15/2020	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Dry	Cloudy	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
14	0F18079V1R1T	06/16/2020	CTH B - CTH K Intersection	PD	0	0	Angle	Day	Dry	Cloudy	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)
15	0F18079V1R1T	05/01/2020	CTH B - CTH K Intersection	INJ	2	0	Angle	Day	Dry	Clear	*Line 1 (EB) was stopped at stop sign, proceeded through intersection, and was struck by Line 2 (NB) *Line 2 (NB) failed to stop at stop sign and was struck by Line 1 (EB)

b. Volume

The volume warrant for a 4-Way stop control is not met. However, the annual average daily traffic along CTH K of 1,999 is higher than 1,572 of CTH B making CTH K the major highway. Typically, the stop control is implemented on the minor highway which in this case would be CTH B. Taking the traffic volume into consideration, staff recommends a 4-Way stop control at the intersection.

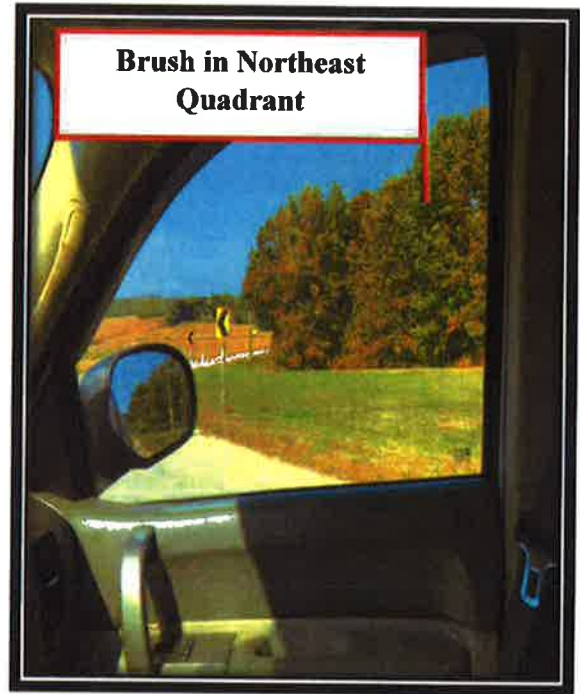
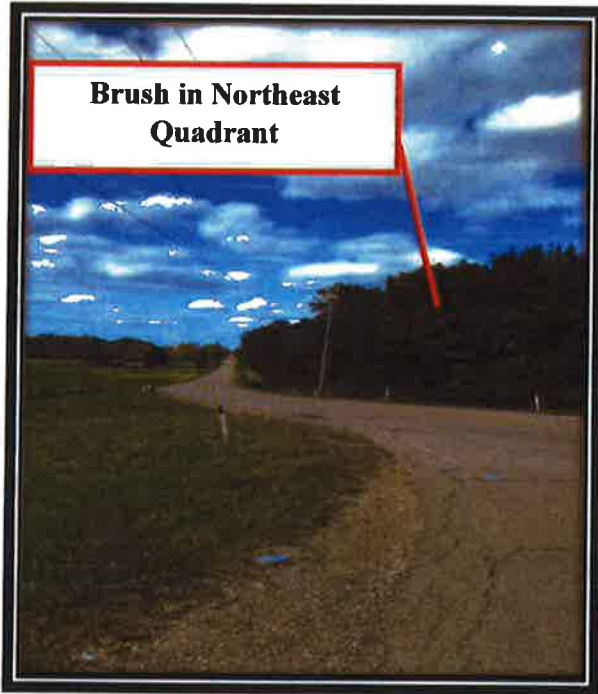
c. 85th Percentile speed

The intersection did not meet the 85th percentile merit for a 4-Way stop.

d. Sight Distance

This intersection meets the sight distance warrant for a 4-Way stop. There is significant obstruction of the driver's line of sight at the northeast corner of the intersection due to the skewness of the intersection and the presence of foliage. The severity of the sight distance issue is worsened by the slope of the north and south approaches of the intersection. The sight distance restriction can be mitigated by a 4-Way stop control. The photos below highlight the sight distance issues at the said intersection.

Skewness of Intersection and Line of Sight obstruction - NE Corner



VII. Temporary 4-Way Stop Control Trial

The intersection is currently under a pilot temporary 4-Way stop trial to observe the impacts that the 4-Way stop control has on the travelling public. After a month of trial we observed that the travelling public is complying with the 4-Way stop control and the 4-Way stop control did not create any unintended negative impact to the traffic flow at the intersection.

VIII. Summary of the Intersection Safety Review Determinations

In conclusion, the following determinations were made from the safety evaluation of the intersection at CTH K and CTH B,

- The most significant safety issue identified for this intersection is the existence of a "sight distance deficiency"

due to a combination of topography, road curvature and private property foliage present on the northeast corner of this intersection.

- The intersection has an annual average crash rate of 3.16 MEV (crash rate per million entering vehicles), significantly higher than the State of Wisconsin annual average crash rate of 0.94 MEV for rural intersections.
- A 4-Way Stop warrant is met at this intersection because of the identified sight distance issue which would be significantly mitigated by a 4-Way stop control. It appears a 4-Way Stop control could mitigate 87 percent of the crashes at this intersection and the associated economic loss.

IX. Recommendations

Staff recommends a 4-Way stop control at the intersection at CTH K and CTH B based on the findings of the safety review of the intersection at CTH K and CTH B. Staff also recommends increasing the size of the existing 30" X 30" stop signs to a 36" X 36" stop signs to enhance visibility and effectiveness of the signs.