Vriesman & Korhorn

MEMO

Date: April 12, 2023 *Project Number:* 1184

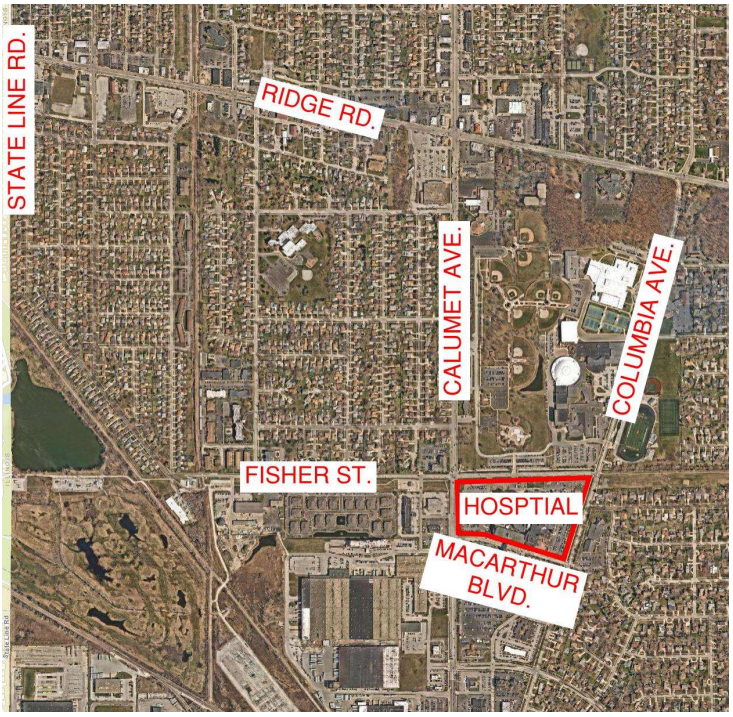
To: Dave Otte, Community Healthcare System

From: Aaron Van Proyen, P.E., PTOE AP

Regarding: Ridge Road – Road Diet Traffic Opinion

BACKGROUND

Community Healthcare System operates the Community Hospital located in Munster, Indiana. The hospital generally incorporates an area of land southeast of what would be considered downtown Munster. The hospital is bordered by Calumet Avenue to the west, Fisher Street to the north, Columbia Avenue to the east, and MacArthur Boulevard to the south, but also has offices and services south of MacArthur Boulevard. The hospital building includes an emergency department that receives emergency ambulances. When accessing the hospital, an ambulance will typically utilize Ridge Road from the west (Lansing, IL area) or east (Highland, IN area) to either Calumet Avenue or Columbia Avenue, then south to the hospital.



For the past few years, the Town of Munster has been contemplating a road diet for Ridge Road through the downtown area. Ridge Road is currently a five-lane road between State Line Road and Columbia Avenue: two westbound lanes, a center two-way left-turn lane (TWLTL), and two eastbound lanes. According to information available from the Town of Munster, the road diet for Ridge Road proposes to reduce the number of travel lanes from 5 to three or less – one in each direction and a center left turn lane or sometimes a median island.

Community Healthcare System has serious concerns regarding the reduction of lanes and the impact on emergency vehicle access and response times. It is our opinion that a road diet as restrictive as what is proposed will be detrimental to emergency vehicle throughput and the Town should perform a more thorough corridor analysis.

LANE REDUCTION CONCERNS

According to the U.S. Federal Highway Administration (FHWA), a road diet "typically involves converting an existing four-lane undivided roadway to a three-lane roadway consisting of two through lanes and a center two-way left-turn lane." FHWA's Road Diet Informational Guide provides safety, operational, and quality-of-life considerations from research and practice to help guide the decision-making process to determine if a road diet is a good fit for a certain corridor.

While the FHWA recognizes that a five-lane to three-lane lane reconfiguration is a possibility, Section 3.3.1 of the Road Diet Informational Guide states that a road diet is likely to succeed operationally if the existing roadway is already operating as a de facto three-lane roadway, that is, left-turning vehicles along the existing road have resulted in the majority of through traffic using the outside lanes. This is not the case for Ridge Road, as the existing cross-section is five lanes and already contains an exclusive, continuous center TWLTL. Through traffic along the existing road uses four lanes (two in each direction) of free flow without any turning vehicle interruptions.

The proposed road diet effectively removes one free-flow lane in each direction and interrupts the continuous center TWLTL with center islands. The FHWA states that the overall objective of a road diet is to match the design with the intended or preferred function of the roadway for all road users, but that is difficult to conclude in this case as the road is operating as a five-lane and may create unintended consequences when converting to a three-lane, including hampering emergency vehicle access.

FHWA publication SA 17 020 "Road Diets and Emergency Response: Friends, Not Foes" attempts to address the issue of road diets and emergency vehicle response times. The brochure theorizes that emergency response is actually improved due to the presence of a TWLTL which would allow emergency vehicles to pull into the (presumably unblocked) center lane to pass vehicles stopped in the through lanes. However, the publication does not address what happens when the center lane is blocked by either turning vehicles or full-width islands like those proposed by Munster. In those instances, emergency vehicle access would be hampered and response times would increase. Also, Ridge Road currently has a center TWLTL, so the solution presented by this publication does not apply.

LEVEL OF SERVICE CONCERNS

Extrapolating from graphics in the Transportation Research Board's (TRB) Highway Capacity Manual, a significant reduction in the level of service for the vehicles along Ridge Road can be expected after the road diet is in place. Level of service is a measure of how well or poorly traffic travels under given circumstances and includes aspects such as density, free flow speed, and delay. A lower level of service for vehicles is typically one goal of a road diet, the opposite effect being increased safety and accessibility for non-motorized bikes and pedestrians. However, to achieve this balance, a road diet could come at the cost of reduced emergency vehicle access if not given proper consideration.

We estimate the existing AM peak hour level of service to deteriorate from LOS A to a proposed LOS C, the PM from LOS A to LOS D, and the overall day from LOS C to LOS D. This is primarily due to the reduction of one travel lane in each direction. While these levels of service are generally considered acceptable for suburban areas like Munster, they will likely create an additional delay for emergency vehicles along the corridor and may further deteriorate in the future with increased traffic volumes.

AVERAGE DAILY TRAFFIC CONCERNS

Road diets have been applied across a wide range of roads with varying average daily traffic volumes (ADT) and maximum hourly counts across the nation. Multiple studies have tried to determine the ideal ADT or peak hour volume of a road for which a road diet should be considered, but a perfect consensus has not been reached.

The chart below shows a select few different agencies that have provided guidance regarding ADT for a road diet and their recommendations.

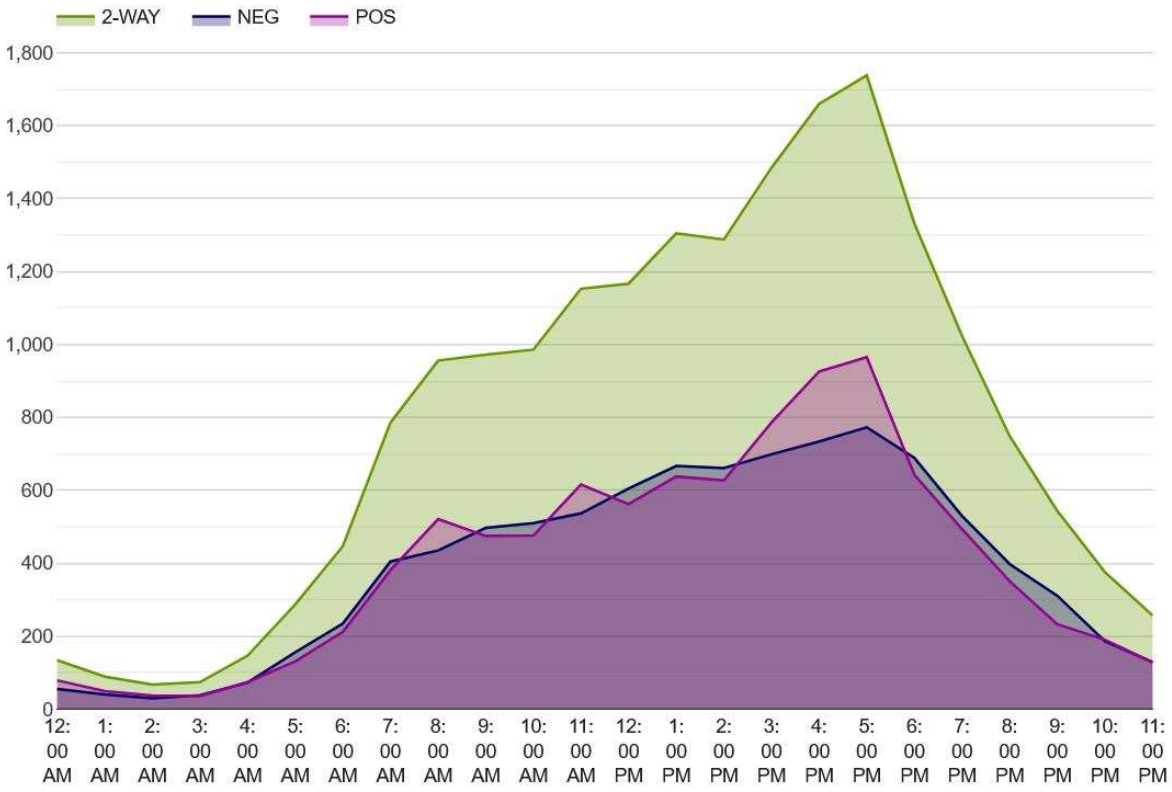
Agency	ADT Threshold (vpd)	Additional Notes/ Limits:
Michigan Department of Transportation	11,000	1,000 vehicles per hour peak volume
Chicago Department of Transportation	18,000	--
FHWA	20,000	875 vehicles per hour per direction (vphpd)
Kentucky Transportation Center	23,000	--
City of Seattle, WA	25,000	Corridor study recommended over 16,000

Using information from the Indiana Traffic Count Database System (TCDS), we find the following volumes along Ridge Road in the area of the road diet:

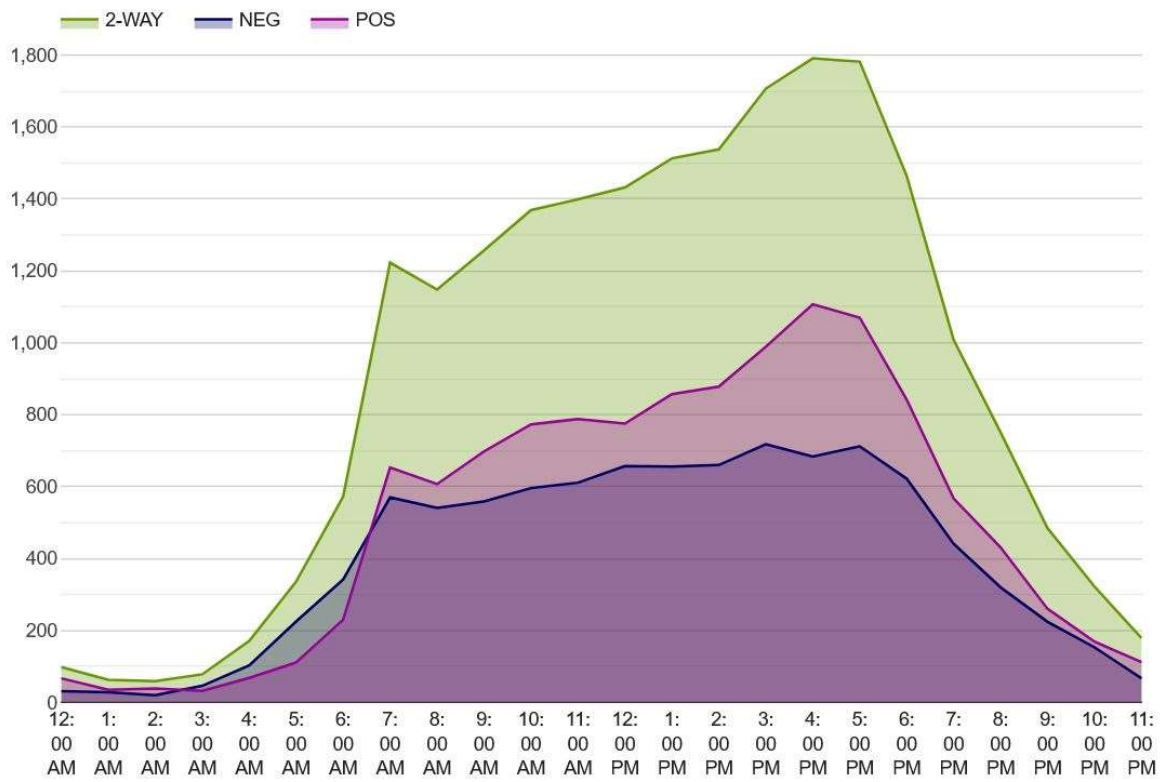
- Ridge Road near State Line Road (2021)
  - 19,000 vpd
  - Max. volume of 1,738 vph
  - Max. one direction of 965 vphpd
- Ridge Road near Calumet Avenue (2021)
  - 21,700 vpd
  - Max. volume of 1,791 vph
  - Max. one direction of 1,107 vphpd

The traffic volume figures on the next page show the hourly breakdown. The ADT volumes are outside some of the generally accepted ranges and the peak hour volumes all exceed the generally accepted ranges. All volumes are likely higher now in the beginning of 2023 than what was observed in 2021.

454196 - RIDGE RD 100 E OF ILLINOIS S/L - Daily Volume Counts - Wednesday, Oct 27, 2021



454198 - NW RIDGE RD 0.10 MI E OF CALUMET AVE - Daily Volume Counts - Wednesday, Oct 27, 2021



A further concern is traffic that detours from I-80/I-94 which may use Ridge Road as an alternate route during incident management. Anecdotal evidence shows that traffic can get very heavy on Ridge Road during these times, especially if the freeway incident occurs during peak hours. Leaving Ridge Road as a five-lane setup is much more suitable as an incident management route.

AT-GRADE RAILROAD CROSSING CONCERN

A potential option as part of the Town of Munster's downtown improvement plan includes an at-grade railroad crossing for the future West Lake Corridor branch of the South Shore Line. Section 3.5.4 of the Road Diet Informational Guide states that this type of train crossing in conjunction with a road diet could reasonably result in vehicle queues that are twice as long as compared to before the road diet, presenting a significant delay for emergency vehicles.

EXAMPLE ROAD DIET

The City of Charlotte, NC performed a road diet on a very similar road, East Boulevard. This road is classified as a major collector with an ADT of 18,800 vpd, serving a mix of offices, retail, grocery stores, restaurants, housing, and a park and greenway trail. In 2010, a section of roadway with five lanes (four lanes and a TWLTL) and on-street parking in both directions was converted to two lanes with a TWLTL, bike lanes, and on-street parking within a 70-foot right-of-way (Ridge Road has 80 feet).

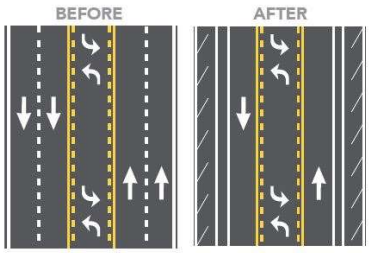
The City of Charlotte created a very wide center TWLTL and placed bike lanes outside of the through lanes which allow vehicles to divert in either direction when an emergency vehicle is passing. This setup could be installed along Ridge Road with slight modifications to the pathway or greenbelt on the south side.

CONCLUSIONS AND RECOMMENDATIONS

A road diet plan for Ridge Road may not be a good fit for the reasons presented herein. It appears that the process may be far enough along to prevent a lane reconfiguration from happening, so we recommend working with the proper municipalities and agencies to ensure equal function for all road users. The following is a list of potential changes that should be considered during the design phase and traffic analysis:

- Request that the Town of Munster include Community Healthcare System in all future conversations regarding design and road use and consider their challenges.
- If the Town still desires a 3-lane cross-section, the following solutions could be used to help emergency vehicle access in case of stopped/blocking vehicles:
    - Consider removing the landscaped median islands or at least converting the curbs to mountable and paving the island interiors. This will allow emergency vehicles nearly full use of the road to pass stopped vehicles, especially in areas with no center TWLTL.
    - Consider using decorative paving or flexible delineators to delineate pedestrian crossings instead of hard-curbed islands.

- Consider creating a wider center TWLTL, up to 20 feet, which could still accommodate center median islands and allow for emergency vehicle maneuvers.
- Consider a more typical road diet layout: install bike lanes on the outside of the through lanes to allow stopped traffic to move in to allow emergency vehicles more room to pass. (See Graphic)



This five-lane to three-lane Road Diet removes lanes to allocate space for multipurpose use.

- Consider signage to direct incident management traffic from I-80/I-94 exiting at Torrence Ave or Calumet Avenue north to River Oaks Drive.