

Tienken Rd at Falcon Dr: RRFB and Median Refuge Island

The AADT on Tienken Rd is 18,200 vehicles per day (vpd) and on Falcon Dr is 1,500 vpd. Per the National Functional Classification System, both roads are classified as local. The closest marked, controlled crossings is at the intersection of Squirrel Rd and Tienken Rd, which is 0.75 miles away. This crossing is currently marked but has no RRFB or median to protect vulnerable road users (VRU) who are crossing Tienken Rd to go to Rochester Adams High School or to Tienken Park. Given the presence of the neighborhood, park, and school, it is plausible that this midblock crossing experiences elevated levels of young non-motorized users. This group of road users is among the most vulnerable in the system. The intersection geometry is shown in **Figure 2**.

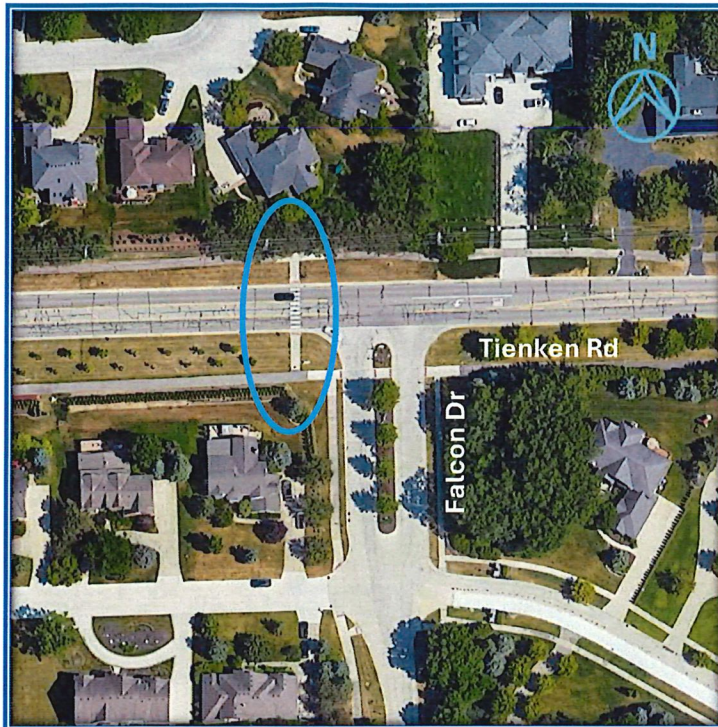
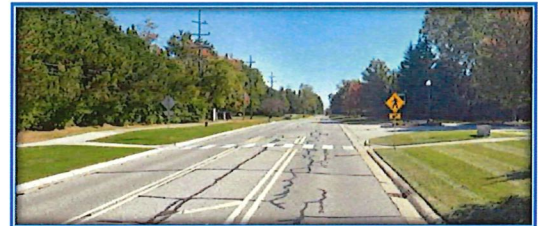


Figure 2: Tienken Rd at Falcon Dr

Westbound Tienken Rd



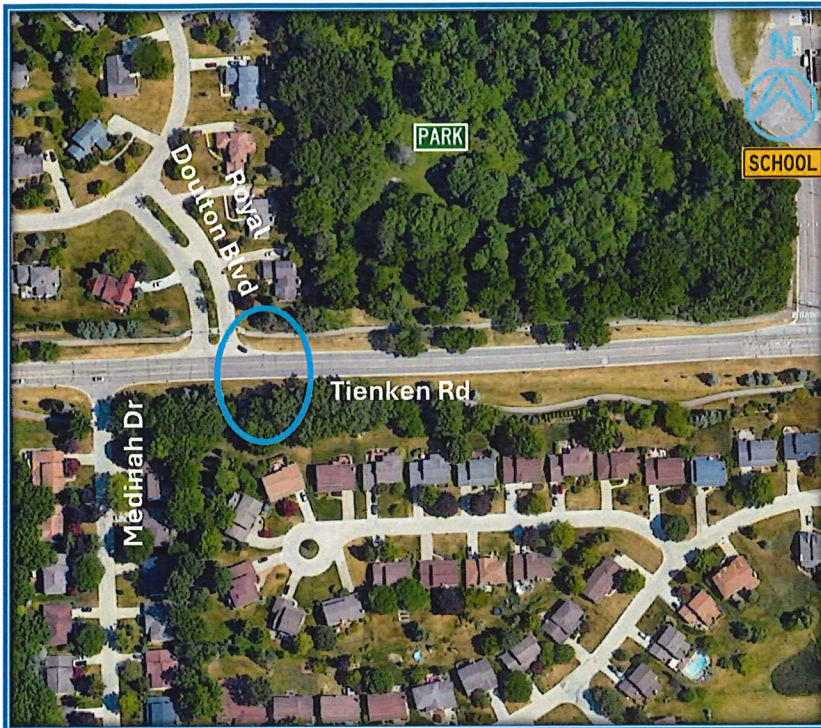
Eastbound Tienken Rd



RRFBs will be installed on the west leg of the intersection. Pedestrians will activate the RRFB to alert motorists of their desire to cross the street. The crossing will include high-emphasis 12-inch crosswalk markings, and crosswalk warning signs. The assemblies at the crossing will include dual-sided 36-inch fluorescent yellow-green W11-2 and W16-7P signs. Advance crosswalk warning assemblies (W11-2 and W16-9P) will be installed east and west of the intersection at the specified advanced warning distance and will be 36-inch fluorescent yellow-green. The advance assemblies will include retroreflective signpost panels. The flashing LEDs and fluorescent yellow-green sheeting will provide higher visibility of the crossing to motorists, prompting motorists to yield, and providing safe gaps in traffic to cross Alpine Ave. In addition, a median refuge and new ADA sidewalk ramps are to be installed. The median refuge will reduce roadway width, effectively shortening the crossing and giving the effect of constriction which should induce vehicle slowing through the crossing. The combination of these technologies and devices introduces redundant safety to the intersection which helps achieve the goals of the Safe Systems Approach.

Tienken Rd at Royal Doulton Blvd / Medinah Dr: RRFB and Median Refuge Island

The AADT on Tienken Rd is 18,200 vpd and on Royal Doulton Blvd / Medinah Dr is 1,500 vpd. Per the National Functional Classification System, both roads are classified as local. The closest marked, controlled crossings is at the intersection of Adams Rd and Tienken Rd, which is 0.40 miles away. This crossing is not marked and has no RRFB or median to protect VRU's who are crossing Tienken Rd to go to Rochester Adams High School or to Tienken Park. Given the presence of the neighborhood, park, and school, it is plausible that this midblock crossing experiences elevated levels of young non-motorized users. This group of road users is among the most vulnerable in the system. The intersection geometry is shown in **Figure 3**.



Westbound Tienken Rd



Eastbound Tienken Rd

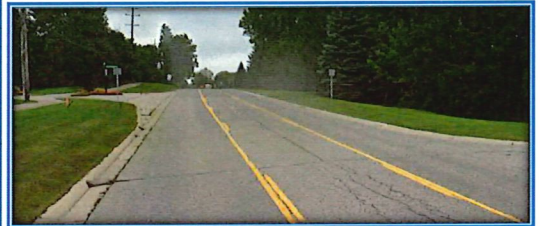


Figure 3: Tienken Rd at Royal Doulton Blvd / Medinah Dr

RRFBs will be installed on the west leg of the intersection. Pedestrians will activate the RRFB to alert motorists of their desire to cross the street. The crossing will include high-emphasis 12-inch crosswalk markings, and crosswalk warning signs. The assemblies at the crossing will include dual-sided 36-inch fluorescent yellow-green W11-2 and W16-7P signs. Advance crosswalk warning assemblies (W11-2 and W16-9P) will be installed east and west of the intersection at the specified advanced warning distance and will be 36-inch fluorescent yellow-green. The advance assemblies will include retroreflective signpost panels. The flashing LEDs and fluorescent yellow-green sheeting will provide higher visibility of the crossing to motorists, prompting motorists to yield, and providing safe gaps in traffic to cross Alpine Ave. In addition, a median refuge and new ADA sidewalk ramps are to be installed. The median refuge will reduce roadway width, effectively shortening the crossing and giving the effect of constriction which should induce vehicle slowing through the crossing. The combination of these technologies and devices introduces redundant safety to the intersection which helps achieve the goals of the Safe Systems Approach.

Hamlin Road: HAWK Signal at the Clinton River Trail

The AADT on Hamlin Road is 13,300 vpd and is classified as a minor arterial per the National Functional Classification System. There is currently a crossing at this location however it is not controlled by a HAWK signal or similar device. The intersection geometry is shown in **Figure 4** and includes the one lane in each direction.

This location is located at the Clinton River Trail which is heavily used by VRUs. While this crossing is signed it does not require vehicles to stop when users want to cross, thus leading to safety issues for the trail users. The addition of a HAWK signal will help improve non-motorized users' visibility and safety during all hours of the day at the crossing location. Pushbuttons will be provided on both sides of Hamlin Rd at the ramps, as well as on the median refuge island. ADA ramps will be modified as needed to provide accessible crossings for all users. Additional upgrades will be installed per MDOT SIG-DESIGN-030-F including 24-inch stop bars, high-emphasis 12-inch crosswalk markings, and advanced crossing warning signs. W11-15 signs will be 36-inch and W16-7P and W16-9P will be 36x18. All advanced crossing warning signs will be fluorescent yellow and include the installation of reflective signpost panels.

While there were no crashes at this location there were bike crashes nearby along the corridor. Improving this crossing will increase visibility along the corridor for non-motorized users.

Per the MDOT SIG-DESIGN-030-F, the HAWK signal location must be a minimum of 100 feet from any intersection. Shown in **Figure 4** below is the location of the HAWK signal. This location is more than 100 feet from each intersection. A HAWK signal warrant analysis was performed for the location using an estimated use of 20 pedestrians per hour during peak hours. This meets the warrants for four (4) hours, however, only one (1) hour is recommended to be met in order for a HAWK to be considered. If the HAWK signal is built, at least 20 pedestrians per hour will use it for at least one hour of the day.

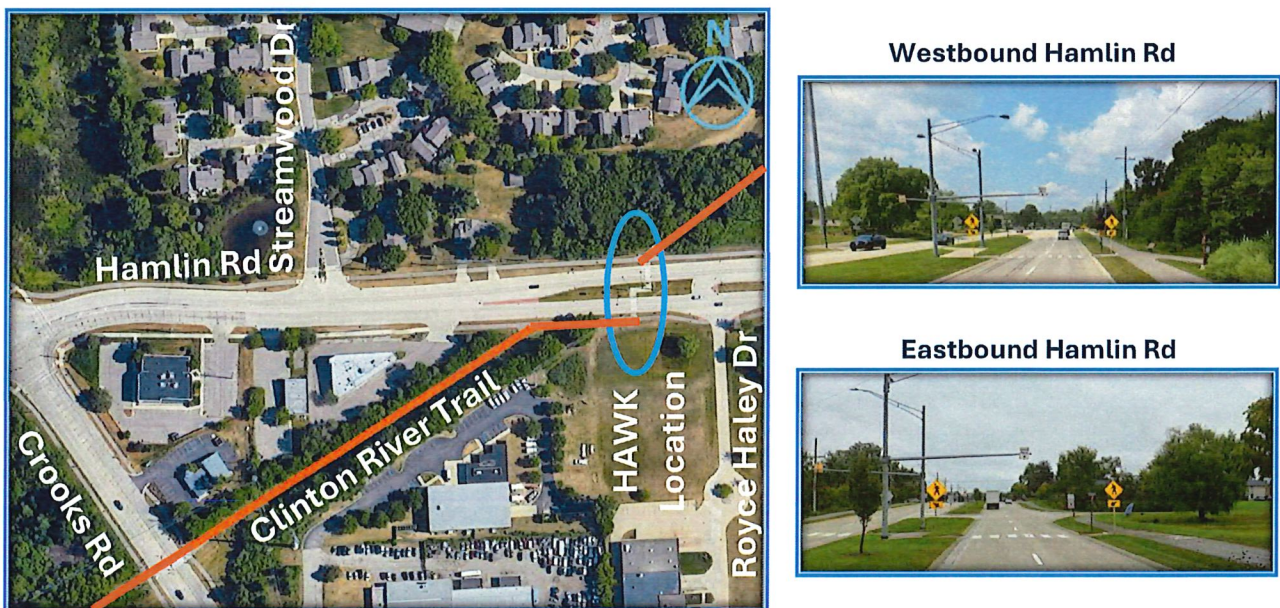


Figure 4: HAWK Location at the Clinton River Trail

The installation of the HAWK on Hamlin Rd at the Clinton River Trail achieves the Vision for Rochester Hills of providing a reliable network that provides travel options for vehicles, pedestrians, and bicyclists. The transportation network will emphasize safe and efficient travel, as set forth in the **City of Rochester Hills Transportation Master Plan**.

Hamlin Road: HAWK Signal / Median Refuge Island at the Hamlin Elementary

The AADT on Hamlin Road is 13,300 vpd and is classified as a minor arterial per the National Functional Classification System. There is currently a crossing at this location, however it is not controlled by a HAWK signal. The intersection geometry is shown in **Figure 5** and includes the one lane in each direction.

This location is located at the Hamlin Elementary School, which is heavily used by VRUs. While this crossing is signed it does require vehicles to stop when users want to cross, thus leading to safety issues for the younger VRU's crossing the Hamlin Road. The addition of a HAWK signal will help improve non-motorized users' visibility and safety during all hours of the day at the crossing location. Pushbuttons will be provided on both sides of Hamlin Rd at the ramps, as well as on the median refuge island. ADA ramps will be modified as needed to provide accessible crossings for all users. Additional upgrades will be installed per MDOT SIG-DESIGN-030-F, including 24-inch stop bars, high-emphasis 12-inch crosswalk markings, and advanced crossing warning signs. S1-1 signs will be 36-inch and W16-7P and W16-9P will be 36x18. All advanced crossing warning signs will be fluorescent yellow-green and include the installation of reflective signpost panels.

While there were no crashes at this location there were bike crashes nearby along the corridor. Improving this crossing will increase visibility along the corridor for non-motorized users.

Per the MDOT SIG-DESIGN-030-F, the HAWK signal location must be a minimum of 100 feet from any intersection. Shown in **Figure 4** below is the location of the HAWK signal. This location is more than 100 feet from each intersection. A HAWK signal warrant analysis was performed for the location using an estimated use of 20 pedestrians per hour during peak hours. This meets the warrants for four (4) hours, however, only one (1) hour is recommended to be met in order for a HAWK to be considered. If the HAWK signal is built, at least 20 pedestrians per hour will use it for at least one hour of the day.

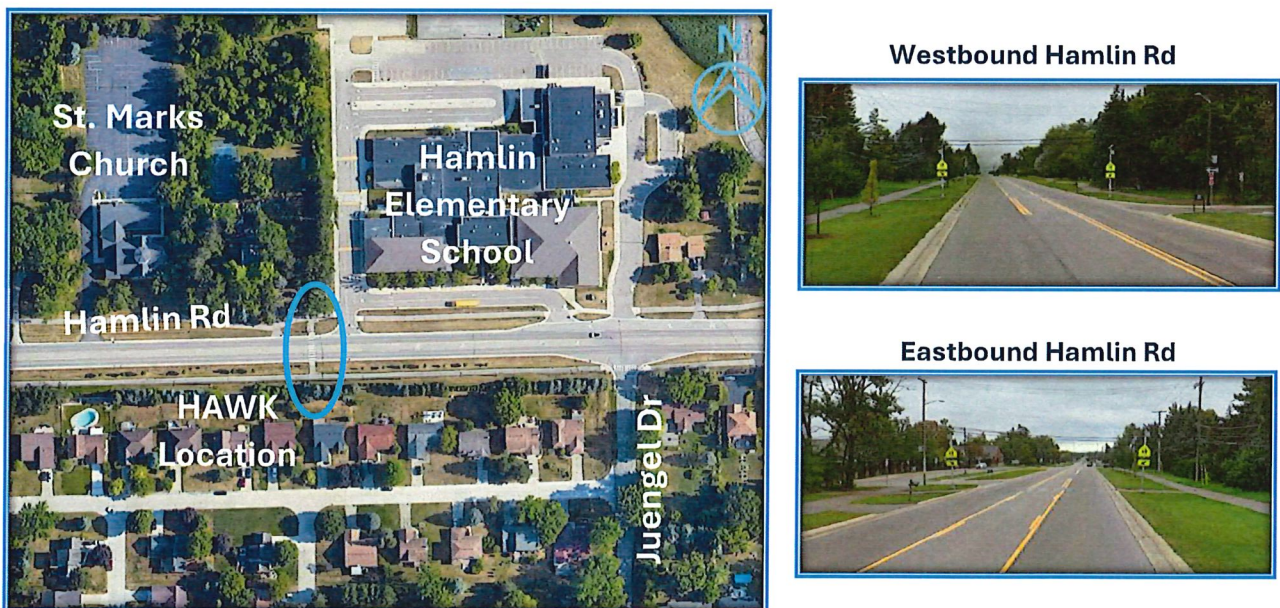


Figure 5: HAWK Location at Hamlin Elementary School

The installation of the HAWK on Hamlin Rd at the Clinton River Trail achieves the Vision for Rochester Hills of providing a reliable network that provides travel options for vehicles, pedestrians, and bicyclists. The transportation network will emphasize safe and efficient travel, as set forth in the **City of Rochester Hills Transportation Master Plan**.