

**To:** Louis Agresta  
*Clark County-Springfield Transportation Coordinating Committee*

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**Subject:** Miami Street Safety Study

The goal of this study was to assess the existing conditions and crash data along Miami Street (US 36) from Walnut Street to Edgewood Avenue in Urbana, Ohio. ODOT is resurfacing this segment of Miami Street as part of the ODOT Urban Resurfacing Program. Resurfacing will take place in 2023. The striping changes from this study will be included in the paving plans with the goal of mitigating crashes along Miami Street. Any additional signage will be purchased and installed by the City of Urbana in coordination with the resurfacing project.

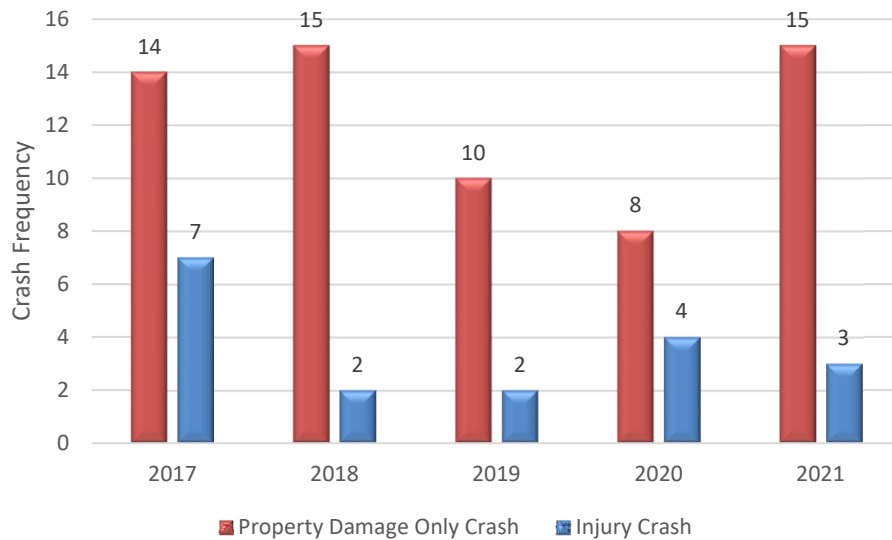
### **Roadway Conditions**

Miami Street is a minor arterial with an annual average daily traffic (AADT) in 2021 of 8,335 vehicles per day from Walnut Street to Oakland Street (SR 29) and 5,658 vehicles per day between Oakland Street and Edgewood Avenue based on ODOT's Traffic Monitoring Management System (TMMS). Miami Street is a three-lane roadway with one lane in each direction and a center two-way-left-turn-lane (TWLTL) between Walnut Street and High Street with on-street parking on both the north and south sides of Miami Street. Between High Street and Edgewood Avenue, Miami Street is a two-way two-lane roadway with on-street parking provided along both sides of the roadway.

Miami Street has a speed limit of 25 mph from Walnut Street to High Street and 35 mph between High Street and Edgewood Avenue. Throughout the corridor, driveways for both residential and commercial properties are prevalent. Sidewalks are provided along both sides of the corridor. The Simon Kenton Multi-Use Trail is located between Storms Avenue and Ann Street, with an at-grade crossing provided on Miami Street. In the near future, there are plans to install a Rectangular Rapid Flashing Beacon (RRFB) at this location after funds are secured from ODOT. A diagram that shows the existing signage along Miami Street is provided in **Attachment 1**.

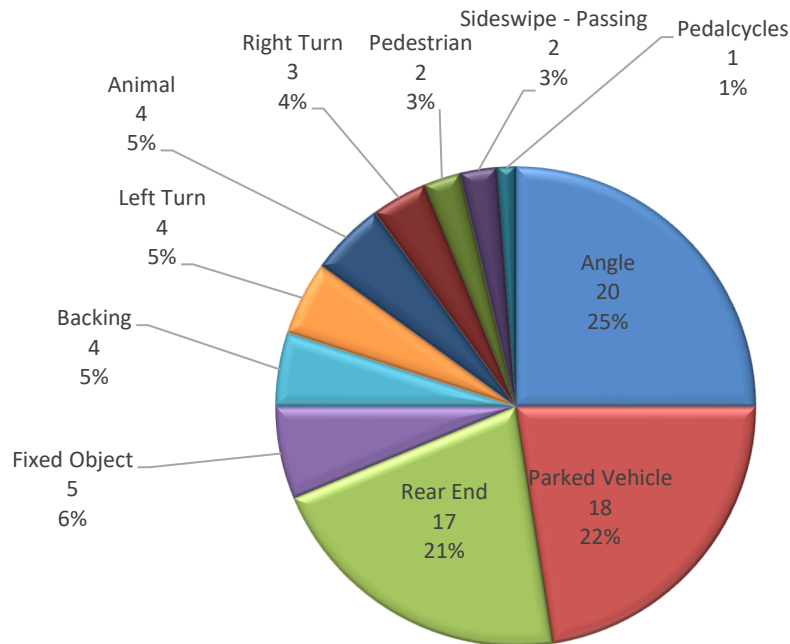
### **Crash Analysis**

Crash data from January 1, 2017 through December 31, 2021 was obtained for the study area using ODOT's GIS Crash Analysis Tool (GCAT) and analyzed using the Crash Analysis Module (CAM) Tool. The crash reports were opened and reviewed to verify the location of the crash and the crash type. A collision diagram that shows crash patterns by illustrating the approximate location of each reported crash is provided in **Attachment 2**. The output for the CAM tool is provided in **Attachment 3**. There was a total of 80 crashes with 18 (23 percent) resulting in injury. In the five-year period, one serious injury occurred. No fatalities were reported during the study period. **Figure 1** shows the crash frequency by year and severity.



**Figure 1: Crash Frequency by Severity**

**Figure 2** shows the crashes in the study area by crash type. Angle collisions were the most prevalent crash type along Miami Street (25 percent). Out of the 20 angle collisions, seven (35 percent) resulted in injury. Parked vehicle collisions and rear end collisions were the next most prevalent crash types in the corridor. The crash patterns at each location along Miami Street will be described in more detail in the following sections.



**Figure 2: Crash Frequency by Crash Type**

**Locations for Improvement**

The existing conditions and potential improvements for each location along the corridor are detailed below. Detailed layouts of the potential improvements are shown in **Attachment 4**. The corresponding page number for each location is included below.

**Walnut Street**

*Existing Conditions*

- Three angle collisions occurred due to northbound vehicles on Walnut Street failing to yield to vehicles on Miami Street.
- During the site visit it was observed the northbound sight distance to the east was slightly obstructed by parked vehicles, shown in **Photo 1**.

*Potential Improvements (See **Attachment 4, Page 7**)*

- Add a “right-turn only” sign on the northbound approach to help mitigate angle collisions at this location.



**Photo 1: Northbound Approach at Walnut Street**

### Miami Street between Walnut Street and High Street

#### Existing Conditions

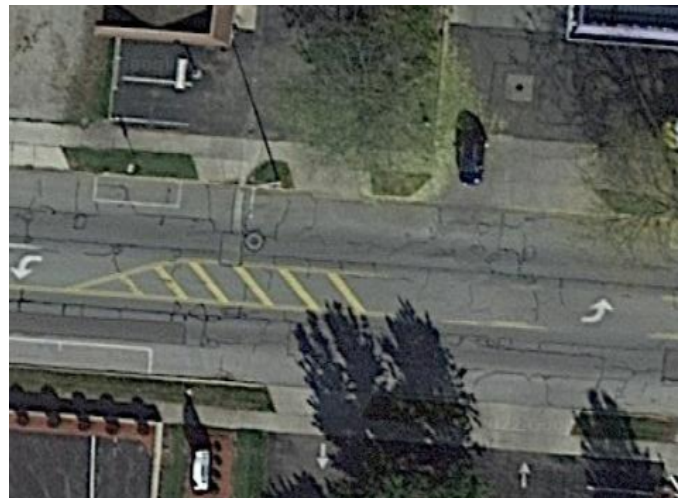
- In the five year period, no crashes occurred on this section of Miami Street.
- The eastern driveway of the United Dairy Farmers (UDF) operates as a right-in only driveway, but no signage or striping is provided to indicate the traffic control, shown in **Photo 2**.
- Transverse striping in front of the western UDF driveway separates the TWLTL and the exclusive westbound left-turn lane at High Street. This striping is located too close to the driveway, resulting in vehicles driving on the transverse striping to turn into the driveway. The striping is shown in **Photo 3**.



**Photo 2: Eastern UDF Driveway**

#### Potential Improvements (See **Attachment 4, Page 7**)

- Add pavement marking hatching to reinforce that the driveway is right-in only at the eastern UDF driveway.
- Add a directional pavement arrow and a “Do Not Enter” sign. This would need to be implemented by the UDF private property owner.
- Shorten the transverse striping and extend the TWLTL to facilitate left-turn movements into the western driveway at the UDF.
- Delineate on-street parking with striping along this corridor. The method for striping the parking would include solid lines parallel to the travel lane and perpendicular tick marks to indicate each parking stall. Clearly marking the on-street parking will help prevent vehicles from driving in the parking lane and will likely slow vehicle speeds by reducing the width of the roadway. Slower speeds will result in less severe crashes and a safer roadway for bicyclist and pedestrians.



**Photo 3: Transverse Striping at Western UDF Driveway**

## High Street

### Existing Conditions

- In the five-year period, six angle collisions occurred at this intersection. Half of the angle collisions were between northbound vehicles and westbound vehicles with the westbound driver being at fault by running the red light.
- The eastbound left-turn lane on Miami Street is narrow with a width of 10 feet.
- Two parked vehicle collisions occurred at the loading zone by the Caring Kitchen, likely due to vehicles parking close to the intersection, shown in **Photo 4**.
- The current 25-mph speed limit sign is mounted at a substandard height and location, shown in **Photo 5**. Due to the vehicles parked close to the intersection, this speed limit sign is often obstructed.

### Potential Improvements (See **Attachment 4, Page 6**)

- Shift the lanes toward the southern side of Miami Street by removing parking to provide more width in the eastbound left-turn lane.
- Relocate the 25-mph speed limit sign to the east side of the intersection and ensure that it is installed at an appropriate height.
- Delineate a clear loading zone on the northern side of Miami Street west of High Street.
- Modify the northbound and southbound red clearance intervals from 1 second to 1.4 seconds based on clearance interval calculations performed at the intersection. These calculations are provided in **Attachment 5**.
- Add backplates to the eastbound and westbound approaches. The backplates may require that the signal be reconstructed to support the additional wind load. A more detailed analysis should be performed to determine the structural effects of the backplates.

## Miami Street between High Street and Dewey Avenue

### Existing Conditions

- Two angle collisions occurred at the intersection of Miami Street and Russell Street.
- Two parked vehicle collisions occurred on this section of Miami Street.

### Potential Improvements (See **Attachment 4, Page 6**)

- Delineate on-street parking with striping.
- Add “Reduced Speed Ahead” signage in the eastbound direction to alert drivers to the upcoming speed limit change.



**Photo 4: Parking In Front of Caring Kitchen**



**Photo 5: Substandard Speed Limit Sign at High St**

- Install 35 mph speed limit signs in the westbound direction.

### Miami Street between Dewey Avenue and Railroad Crossing

#### Existing Conditions

- Three westbound rear end collisions occurred at Storms Avenue, likely due to vehicles stopping in the through lane on Miami Street to turn left onto Storms Avenue.
- The current stop sign at the intersection of Storms Avenue and Miami Street is not properly located in relation to Miami Street, shown in **Photo 6**.
- The driveway on the southside of the bike crossing at the Simon Kenton Trail is very wide and the bike path is not delineated, shown in **Photo 7**.
- There were some drainage issues located at the driveway of the Depot Coffee House causing a large amount of standing water, shown in **Photo 8**.
- Stakeholders have indicated that the Depot Coffee House parking lot fills up often and vehicles park along the street.
- A future medical center is being constructed on the south side of this section of Miami Street, which will likely result in increased traffic in the area.



**Photo 6: Stop Sign at Storms Avenue**



**Photo 7: Wide Driveway at Bike Path**



**Photo 8: Standing Water at Coffee Depot House Driveway**

#### Potential Improvements (See **Attachment 4, Page 5**)

- Move the stop sign at Miami Street and Storms Avenue closer to Miami Street.
- Stripe a bike lane through the driveway at the bike path on the north side of Miami Street near the Depot Coffee House to provide better delineation for bicycle traffic.
- In the future, wayfinding signage can be added at the trail to direct bicyclists to the downtown area.
- Stripe a center TWLTL along this segment to accommodate the number of left-turn vehicles accessing the future medical center development and the existing businesses along this segment. The TWLTL will begin just west of the railroad bridge providing a westbound left-turn lane onto Storms Avenue. With the center TWLTL, on-street parking will be delineated on the north side of Miami Street.

- The drainage issue at the Depot Coffee House is located on a bridge approach controlled by ODOT. Repairs to this area will be coordinated with ODOT.

**Miami Street between Railroad Crossing and Rohrer Street**

*Existing Conditions*

- Sidewalk is not provided on the north side of Miami Street across the large drive of the Premier Feeds business, shown in **Photo 9**.
- While performing the site visit, vehicles from the drive-through were observed queueing out of Crabill's Hamburger Shoppe onto Miami Street in the afternoon.

*Potential Improvements (See Attachment 4, Page 4)*

- Construct the center TWLTL from Storms Avenue, past the railroad tracks, to the entrance of Crabill's Hamburger Shoppe.
- It is recommended that the Premier Feeds driveway be narrowed to improve access management and sidewalk would be constructed across the driveway apron. These improvements would be part of a project separate from the resurfacing and subsequent restriping.



**Photo 9: Wide Pavement at Premier Feeds**

**Miami Street between Rohrer Street and Oakland Street**

*Existing Conditions*

- Seven parked vehicle collisions occurred along this section of Miami Street.

*Potential Improvements (See Attachment 4, Page 3)*

- Delineate the on-street parking and add "No Parking" signage.

### Oakland Street

#### Existing Conditions

- Stakeholders indicated that truck drivers turning left from N Oakland Street to Miami Street have complained about the parked vehicles on the south side of Miami Street near the intersection, shown in **Photo 10**. The location of the parked vehicles makes it difficult for drivers of large vehicles to make their turning maneuver onto eastbound Miami Street, especially when there is a vehicle stopped at or past the stop bar in the westbound through lane.
  - Two parked vehicle collisions occurred at this intersection.
- Vehicles were observed parking in the westbound right-turn lane, shown in **Photo 11**.
- While performing the field review, it was observed that all the push button covers were missing on the pedestrian push buttons at the intersection, shown in **Photo 12**.



**Photo 10: Vehicles Parked near Oakland Street**



**Photo 11: Vehicle Parked near Westbound Right-Turn Lane at Oakland St**



**Photo 12: Push Button with No Cover at Oakland Street**

#### Potential Improvements (See **Attachment 4, Page 3**)

- Repair pedestrian push buttons.
- To accommodate the turning maneuvers for the larger southbound left-turning vehicles at this intersection, the westbound right-turn lane could be removed so that the westbound through lane could be shifted north of the centerline. The on-street parking on the southern side of Miami Street could remain. Based on the traffic volumes provided by the City of Urbana, this exclusive turn lane at this intersection is not warranted.



- A secondary benefit of removing the right-turn lane is that large trucks can make a westbound right-turn onto northbound N Oakland Street easier and faster from the new shared through and right-turn lane than from existing narrow exclusive right-turn lane.
- Add “No Parking” signage between S Oakland Street and N Oakland Street on the south side of Miami Street and between Pappy’s and N Oakland Street on the north side of Miami Street.

*Potential Long-Term Improvements (See Attachment 4, Page 8 & 9)*

- The stop bar for the eastbound approach of the signalized intersection at N Oakland Street is located to the west of the stop-controlled S Oakland Street approach. With this configuration, the traffic control is confusing as the drivers on the stop-controlled approach cannot see the signal heads for the adjacent signal to select an appropriate gap. Two improvement options could be implemented at this location:
  - Maintain the existing roadway configurations but signalize the S Oakland Street approach. Under this condition, the southbound and northbound approaches would need to be split phased. Split phasing with an offset intersection like this one will likely result in inefficient operations and could cause longer delays along Miami Street compared to existing conditions (see next section for operational analysis results).
  - Realign S Oakland Street with N Oakland Street to create a traditional four-legged signalized intersection. With this realignment, the signal would not need to operate under split phasing and would likely operate very similarly to existing operations (see next section for operational analysis results).

**Miami Street between Oakland Street and Edgewood Avenue**

*Existing Conditions*

- Five parked vehicle collisions occurred along this section of Miami Street.

*Potential Improvements (See Attachment 4, Page 1 & 2)*

- Delineate the on-street parking.

**Edgewood Avenue**

*Existing Conditions*

- Three angle collisions occurred at this intersection, all due to southbound vehicles failing to yield to vehicles on Miami Street.
- The curb radius on the southeast corner is currently not large enough to accommodate semi-trucks turning right from Edgewood Avenue. A fixed object crash occurred on this corner when a semi-truck drove into the grass and struck a fire hydrant while turning right.

*Potential Improvements (See Attachment 4, Page 1)*

- Add “Intersection Ahead” signage on the eastbound approach of Miami Street. This sign would be on the state-owned roadway segment, so coordination will be needed with ODOT to implement this signage.
- Parking restrictions adjacent to the intersection are recommended to prevent parked vehicles from obstructing the sight distance for drivers on Edgewood Avenue. This parking restriction can be shown by painting the curb yellow.
- The radius on the southeast corner has been redesigned and will be modified to improve truck turning at the intersection.

**Overall Corridor**

*Potential Improvements (See Attachment 4)*

- Sharrows are proposed along the roadway to bring drivers’ attention to bicycles in the area while providing a connection between the Simon Kenton Trail and downtown Urbana. These pavement

markings will be implemented on Miami Street between the Simon Kenton Trail Crossing and Walnut Street.

- Additional “Share the Road Signs” should be placed strategically along the corridor.

*Alternative Analysis*

HCS capacity analysis was performed at the intersection of Miami Street and Oakland Street for the northbound leg addition to the signal, the removal of the westbound right-turn lane and realigning N and S Oakland Street. Turning movement counts from Tuesday, October 21, 2021 were from a local Traffic Impact Study provided by the City of Urbana. HCS output is provided in **Attachment 6**.

**Table 1** summarizes the results of the HCS analysis below. The signal timings were optimized in all scenarios. 20 vehicle per hour for each of the northbound movements were estimated for both the AM and PM peak hours for S Oakland Street, as traffic counts were not available for this leg. In all scenarios, for both the AM and PM peak hours, all approaches and the overall intersection operate at LOS B or better. Signalizing S Oakland Street without aligning N and S Oakland Street resulted in the worst operation. This decrease in efficiency occurred because the northbound and southbound approaches operate as split phased due to the offset intersection legs and resulting path overlap. When N and S Oakland Street are aligned, the northbound and southbound movements are able to run together, improving the efficiency of the signal. The analysis indicates that both adding the northbound leg of Oakland Street and removing the westbound right-turn lane would work operationally and would adequately accommodate traffic.

Table 1: Operational Analysis Results

Intersection	Approach	Delay (Seconds)	LOS
		AM (PM)	AM (PM)
Existing Lane Conditions	Eastbound	6.3 (8.6)	A (A)
	Westbound	5.9 (7.9)	A (A)
	Northbound	--	--
	Southbound	9.0 (8.3)	A (A)
	<b>Overall Intersection</b>	<b>6.7 (8.2)</b>	<b>A (A)</b>
Intersection	Approach	Delay (Seconds)	LOS
		AM (PM)	AM (PM)
No Westbound Right-Turn Lane	Eastbound	6.3 (7.9)	A (A)
	Westbound	6.5 (8.8)	A (A)
	Northbound	--	--
	Southbound	9.0 (9.5)	A (A)
	<b>Overall Intersection</b>	<b>6.9 (8.6)</b>	<b>A (A)</b>
Intersection	Approach	Delay (Seconds)	LOS
		AM (PM)	AM (PM)
No Westbound Right-Turn Lane + S Oakland Street Signalized	Eastbound	12.6 (12.5)	B (B)
	Westbound	12.6 (13.7)	B (B)
	Northbound	14.6 (19.1)	B (B)
	Southbound	13.6 (17.3)	B (B)
	<b>Overall Intersection</b>	<b>13.0 (14.2)</b>	<b>B (B)</b>
Intersection	Approach	Delay (Seconds)	LOS
		AM (PM)	AM (PM)
No Westbound Right-Turn Lane + S Oakland Street Realigned	Eastbound	7.3 (7.9)	A (A)
	Westbound	7.4 (8.8)	A (A)
	Northbound	7.8 (8.7)	A (A)
	Southbound	8.2 (9.5)	A (A)
	<b>Overall Intersection</b>	<b>7.6 (8.6)</b>	<b>A (A)</b>

**Cost Estimates**

The following items were included in the cost estimates:

*Resurfacing*

- Additional signage

*Additional Improvements*

- Backplates at Miami Street and High Street (Assuming the existing signal can support the addition of backplates)
- Pedestrian push button face replacement at Miami Street and Oakland
- Maintain existing lane configuration and signalize S Oakland Street approach
- Realign N and S Oakland Street

**Table 2** shows the cost estimate for both the resurfacing project costs and the additional safety improvements. Costs that will be covered in the ODOT Resurfacing Project (such as striping) are not included. The ODOT Resurfacing Project does not include the cost to bring pedestrian facilities to ADA compliance. These costs are detailed in **Attachment 7**. The long-term improvements were inflated to FY 2027.

**Table 2: Cost Estimates**

<b>Improvements</b>	<b>2022 Construction Costs</b>
Signing Costs with Resurfacing Project	\$8,600
Additional Backplates	\$2,800
Push Button Replacements	\$1,530
Southern Leg Signal Addition at Miami Street and S Oakland Street	\$28,000
<b>Long-Term Improvements</b>	<b>2028 Construction Costs</b>
Realignment of Oakland Street (FY 2028)	\$608,500