



OPTIONS AND EVALUATION SUMMARY FOR:

# Adams Road

Hamlin Road to Walton Boulevard  
Oakland County, Rochester Hills, Michigan

March 2020

Prepared by:



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## 1.0 Introduction

The Road Commission for Oakland County Road (RCOC), City of Rochester Hills, and Oakland University (OU) contracted with Hubbell, Roth & Clark, Inc. (HRC) to study the Adams Road corridor from north of Hamlin Road to Walton Boulevard. The purpose of this study was to assess concepts to improve safety, reduce traffic congestion, accommodate pedestrians, and improve traffic flow along Adams Road. HRC's scope of work primarily consisted of preparing conceptual options, including preliminary horizontal and vertical alignments, cost estimates, and an evaluation of overall impacts and benefits. These options were then compared and reviewed with stakeholder to arrive at a preferred option.

Adams Road is currently a two-lane road with various passing lanes and traffic signals at Avon Road and Meadow Brook Rd/Hillendale Drive. The speed limit is 45 MPH along the corridor. On the west side of Adams Road is Oakland University including Katke-Cousins and R&S Sharf Golf Courses. The east side and southern part of Adams Road are residential areas.

HRC evaluated four concepts including a 4-lane boulevard, a 5-lane roadway, a 4-lane narrow boulevard with roundabouts, as well as relocating Adams Road as presented by OU. Preliminary vertical alignments were created and are in accordance with RCOC's Design Guidelines, following AASHTO 2011 Guidelines for sight distance.

HRC completed the following tasks:

- ≡ Held stakeholder meetings
- ≡ Developed aerial image, base surface file with existing ROW
- ≡ Conducted select traffic counts and studies
- ≡ Provided utility research and mapping
- ≡ Prepared preliminary alignments
- ≡ Prepared cost estimates
- ≡ Evaluated ROW needs and impacts

This study took place over 18 months with close coordination with RCOC, City of Rochester Hills, and OU.

## 2.0 Traffic Analysis

### 2.1 Traffic Data

HRC compiled historic Average Daily Traffic (ADT) using RCOC's Transportation Data Management System. These two-way ADTs are shown in **Table 1**. Data was available from 2003 to 2015 for the southern segment from Hamlin to Avon and northern segment from Avon to Walton.

**Table 1: Adams Road Historic Two-Way ADT**

| Year | Hamlin to Avon | Avon to Walton |
|------|----------------|----------------|
| 2015 | 25,230         | -              |
| 2014 | -              | 21,130         |
| 2011 | 20,690         | 17,820         |
| 2009 | 18,860         | 20,970         |
| 2006 | 15,110         | 20,600         |
| 2003 | 15,430         | 20,210         |

## 2.2 Crash Analysis

A crash analysis was performed on Adams Road from North of Hamlin Road to Walton Boulevard. This was done by first generating heat maps for the segment as provided in **Appendix A**. These heat maps were separated by crash types with the predominant rear-end type crashes on the first map and all other crash types on the second map. A review of the segment identified three high frequency crash locations including:

- ≡ Area 1: Adams Road near the signalized intersection of Adams Road and Meadow Brook Road/Hillendale Drive
- ≡ Area 2: Adams Road near Cambridge Drive
- ≡ Area 3: Adams Rd near the signalized intersection of Avon Road

**Table 2** shows all non-deer crashes along Adams Rd. There were no fatal crashes, however there were four A-level crashes as described here:

- ≡ Vehicle southbound on Adams Road north of Cambridge Drive lost control, crossed the centerline and struck a northbound vehicle
- ≡ Vehicle southbound on Adams Road north of Meadow Brook Road did not see vehicles stopped and rear ended the vehicle. Four vehicles were involved, all rear ended
- ≡ Vehicle northbound on Adams Road ran a red light at Walton Boulevard and struck a vehicle westbound on Walton Boulevard
- ≡ Vehicle southbound on South Adams Road was turning right onto westbound Walton Boulevard, turned right on red and hit a pedestrian crossing the North leg of the intersection

**Table 2: 2015-2017 Adams Rd Non-Deer Crashes from 500 Ft North of Hamlin Rd to Walton Blvd**

| Crash Type            | All Crashes | A-Injury | Injury    | Segment    | Intersection | Pedestrian or Bicycle | Night     | Non-Dry Condition |
|-----------------------|-------------|----------|-----------|------------|--------------|-----------------------|-----------|-------------------|
| Single Motor Vehicle  | 30          | 1        | 3         | 27         | 3            | 2                     | 13        | 9                 |
| Head-On               | 2           | 1        | 2         | 2          | 0            | 0                     | 1         | 1                 |
| Head-On Left Turn     | 15          | 0        | 3         | 2          | 13           | 0                     | 3         | 2                 |
| Angle                 | 38          | 1        | 12        | 5          | 33           | 0                     | 13        | 16                |
| Rear End              | 148         | 1        | 17        | 77         | 71           | 0                     | 23        | 43                |
| Rear End - Left Turn  | 13          | 0        | 1         | 2          | 11           | 0                     | 7         | 3                 |
| Rear End - Right Turn | 15          | 0        | 2         | 4          | 11           | 0                     | 0         | 3                 |
| Sideswipe - Same      | 38          | 0        | 3         | 10         | 28           | 0                     | 7         | 3                 |
| Sideswipe - Opposite  | 4           | 0        | 0         | 2          | 2            | 0                     | 0         | 0                 |
| Backing               | 4           | 0        | 0         | 0          | 4            | 0                     | 0         | 1                 |
| Other                 | 7           | 0        | 2         | 4          | 3            | 0                     | 3         | 2                 |
| <b>TOTAL</b>          | <b>314</b>  | <b>4</b> | <b>45</b> | <b>135</b> | <b>179</b>   | <b>2</b>              | <b>70</b> | <b>83</b>         |

**Tables 3 and 4** are intersection crash summaries for Adams Rd at Avon Rd and Adams Rd at Meadow Brook Rd/Hillendale Drive, respectively. There were no Fatal or A level injuries.

**Table 3: 2015-2017 Non-Deer Crashes at Adams Rd/Avon Rd Intersection**

| Crash Type            | All Crashes | A-Injury | Injury   | Segment  | Intersection | Pedestrian or Bicycle | Night    | Non-Dry Condition |
|-----------------------|-------------|----------|----------|----------|--------------|-----------------------|----------|-------------------|
| Single Motor Vehicle  | 0           | 0        | 0        | 0        | 0            | 0                     | 0        | 0                 |
| Head-On               | 0           | 0        | 0        | 0        | 0            | 0                     | 0        | 0                 |
| Head-On Left Turn     | 4           | 0        | 2        | 0        | 4            | 0                     | 0        | 0                 |
| Angle                 | 5           | 0        | 0        | 0        | 5            | 0                     | 1        | 5                 |
| Rear End              | 19          | 0        | 1        | 3        | 16           | 0                     | 4        | 6                 |
| Rear End - Left Turn  | 6           | 0        | 1        | 0        | 6            | 0                     | 2        | 2                 |
| Rear End - Right Turn | 13          | 0        | 1        | 4        | 9            | 0                     | 0        | 2                 |
| Sideswipe - Same      | 6           | 0        | 0        | 1        | 5            | 0                     | 1        | 0                 |
| Sideswipe - Opposite  | 0           | 0        | 0        | 0        | 0            | 0                     | 0        | 0                 |
| Backing               | 0           | 0        | 0        | 0        | 0            | 0                     | 0        | 0                 |
| Other                 | 2           | 0        | 1        | 0        | 2            | 0                     | 0        | 1                 |
| <b>TOTAL</b>          | <b>55</b>   | <b>0</b> | <b>6</b> | <b>8</b> | <b>47</b>    | <b>0</b>              | <b>8</b> | <b>16</b>         |

Avon Road rear-end crashes were reviewed in detail as follows:

- ≡ On Avon Road – 14 rear end crashes
  - ≡ 12 resulted from the right turn movement. (i.e. thought the vehicle in front was going to make a right turn on red but then didn't.)
  - ≡ 1 resulted from the left turn movement.
  - ≡ 1 resulted from a vehicle attempting to pass traffic on the right to get in the right turn lane.
- ≡ On Adams Road – 24 rear end crashes
  - ≡ 13 resulted from the vehicles stopping for traffic (4 SB, 9 NB)
  - ≡ 5 resulted from SB left turn movement.
  - ≡ 1 resulted from NB right turn movement.
  - ≡ 5 resulted from vehicles stopping for the red light.

**Table 4: 2015-2017 Non-Deer Crashes at Adams Rd/Meadow Brook Rd/Hillendale Dr Intersection**

| Crash Type            | All Crashes | A-Injury | Injury   | Segment  | Intersection | Pedestrian or Bicycle | Night    | Non-Dry Condition |
|-----------------------|-------------|----------|----------|----------|--------------|-----------------------|----------|-------------------|
| Single Motor Vehicle  | 1           | 0        | 0        | 1        | 0            | 0                     | 0        | 1                 |
| Head-On               | 0           | 0        | 0        | 0        | 0            | 0                     | 0        | 0                 |
| Head-On Left Turn     | 3           | 0        | 0        | 0        | 3            | 0                     | 2        | 1                 |
| Angle                 | 2           | 0        | 1        | 0        | 2            | 0                     | 1        | 1                 |
| Rear End              | 11          | 0        | 3        | 2        | 9            | 0                     | 1        | 2                 |
| Rear End - Left Turn  | 3           | 0        | 0        | 1        | 2            | 0                     | 2        | 0                 |
| Rear End - Right Turn | 0           | 0        | 0        | 0        | 0            | 0                     | 0        | 0                 |
| Sideswipe - Same      | 1           | 0        | 0        | 0        | 1            | 0                     | 0        | 0                 |
| Sideswipe - Opposite  | 0           | 0        | 0        | 0        | 0            | 0                     | 0        | 0                 |
| Backing               | 0           | 0        | 0        | 0        | 0            | 0                     | 0        | 0                 |
| Other                 | 1           | 0        | 0        | 1        | 0            | 0                     | 0        | 0                 |
| <b>TOTAL</b>          | <b>22</b>   | <b>0</b> | <b>4</b> | <b>5</b> | <b>17</b>    | <b>0</b>              | <b>6</b> | <b>5</b>          |

### 3.0 Stakeholder Meetings

HRC held several meetings which included progress meetings, meetings with affected stakeholders, and other information meetings. HRC prepared the required materials, attended and documented meetings. HRC assisted RCOC with requested coordination effort and communication with parties involved. Meeting summaries are provided in **Appendix B**.

The stakeholder meetings were held on the following dates:

- ≡ September 05, 2018
- ≡ May 01, 2019
- ≡ May 13, 2019
- ≡ September 23, 2019
- ≡ October 16, 2019

These meetings identified other stakeholders outside of RCOC, City of Rochester Hills, and OU. These additional stakeholders are listed as follows:

- ≡ Gatehouse and golf course
- ≡ Meadow Brook hall and amphitheater
- ≡ Student Affairs for neighborhood and sorority/fraternity houses
- ≡ Organic Farm on Butler Road
- ≡ Historic Representatives with OU
- ≡ Abutting neighborhoods
- ≡ University Presbyterian Church, historical site
- ≡ Historic Districts Commission

During the kick-off meeting, the following goals were identified:

- ≡ Safety is #1 priority. Existing vertical curves are to be reviewed.
- ≡ Oakland University interested in underpass at Meadow Brook Drive/Hillendale Drive to connect east and west sides of Adams Road.
- ≡ City desires 8-foot pathways on both sides of road.
- ≡ Improve traffic, this is a major concern for all parties
- ≡ Provide positive messaging and communication about project.
- ≡ Connectivity for non-motorized traffic.

Other discussion items from meetings includes the following.

- ≡ OU's master plan is available on their website. They have plans to expand on the property located at the southwest corner of Adams and Walton Blvd.
- ≡ OU interested in relocating gatehouse, hasn't been done due to costs. Also noted historical areas of farmhouse, greenhouse, and wall to be considered during planning/construction.
- ≡ Main reasons for conducting the study were reiterated: improve traffic flow and safety
- ≡ City undergoing Master Plan which will include Adams Road
- ≡ Stakeholders to start thinking of next steps for funding design and construction

## 4.0 Design Alternatives

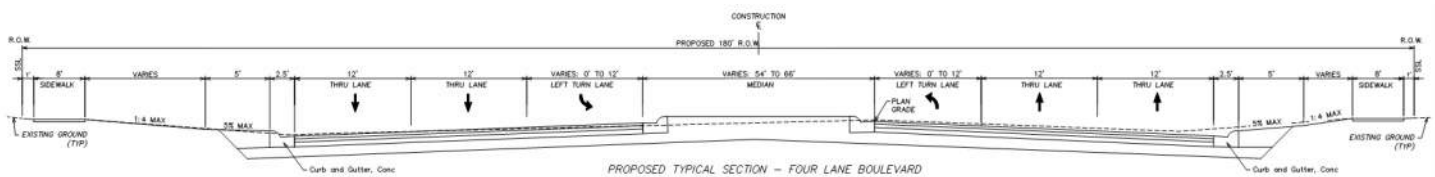
HRC reviewed a total of four different concepts with various configurations at major intersections including:

- ≡ Four-Lane Boulevard
- ≡ Five-Lane Road
- ≡ OU Alternative
- ≡ Four-Lane Narrow Boulevard with Roundabouts

The options considered include two lanes for northbound and southbound traffic due to existing and future traffic volumes and the desired level of service (LOS). Conceptual horizontal and vertical alignments were created for each concept. Vertical alignments are in accordance with RCOC’s Design Standards, following AASHTO Guidelines for sight distance. Exhibits of each option are provided in **Appendix C**. The following sections provide a summary of each concept along with the pros and cons.

### 4.1 Four-Lane Boulevard

The four-lane boulevard concept includes two 12-foot through lanes for each direction with a boulevard median of 66 feet to accommodate WB-50 trucks. Various left turn lanes will be located at crossovers. Traffic signals are proposed at Avon Road and the two corresponding crossovers north and south of the intersection. The proposed ROW for this concept is 180 feet. **Figure 1** below shows the typical cross section for this concept.

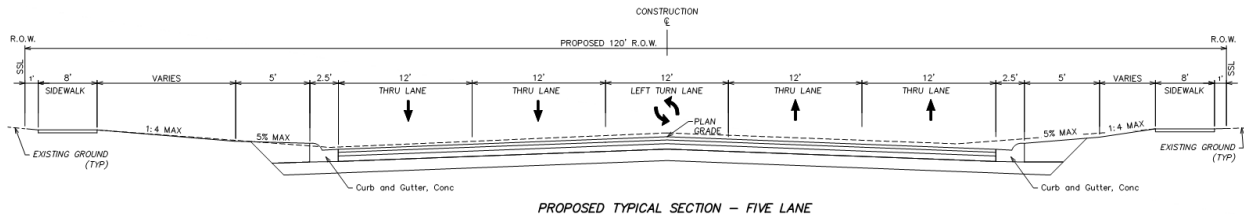


**Figure 1: Four-Lane Boulevard Typical Cross Section**

| Pros   | Cons  |
|--|---|
| <ul style="list-style-type: none"> <li>≡ Improves safety with median</li> <li>≡ Increases capacity with additional through lanes</li> <li>≡ Reduces congestion</li> <li>≡ Improves sight distance with vertical alignment changes</li> </ul> | <ul style="list-style-type: none"> <li>≡ Significant ROW impacts</li> <li>≡ Most expensive concept</li> <li>≡ Utility relocations</li> <li>≡ Increased travel distance for left turning vehicles</li> <li>≡ Underpass road (described in Section 4.2) needed to provide direct, unsignalized connection between west and east sides of Adams</li> </ul> |

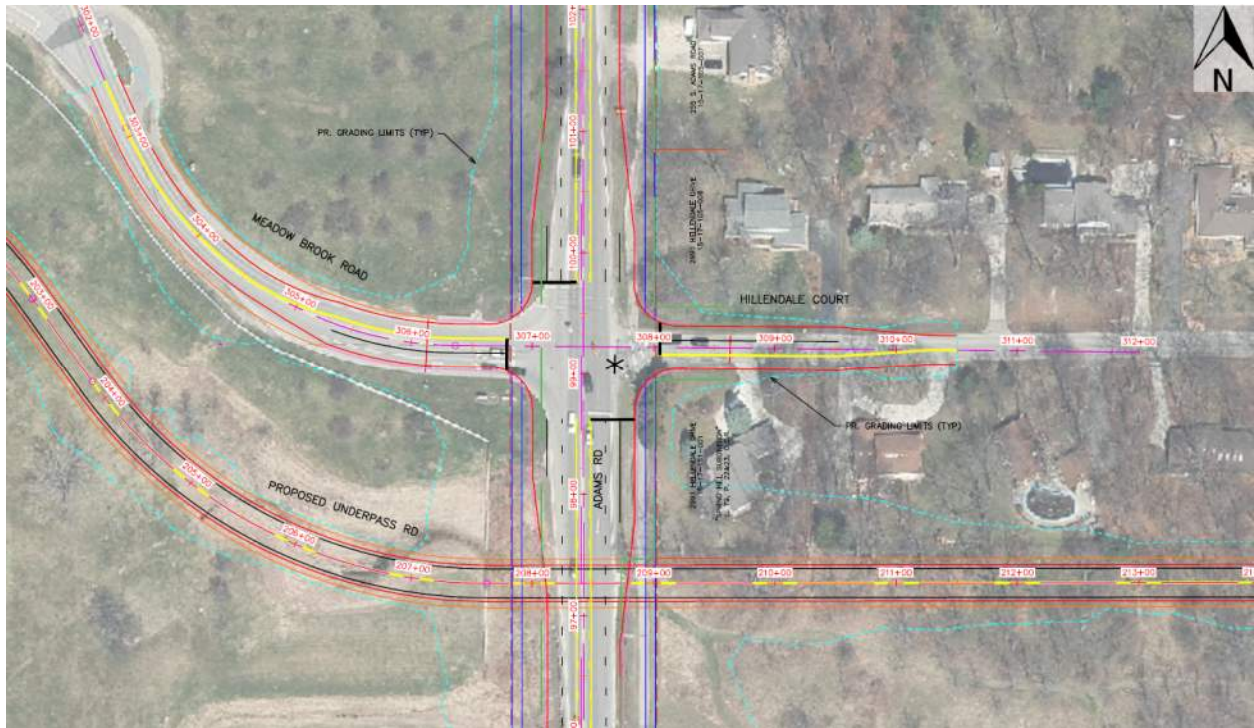
### 4.2 Five-Lane Roadway

The five-lane roadway concept includes signalized intersections at Avon Road and Meadow Brook/Hillendale Drive. **Figure 2** below shows the cross section for this concept. This include two through lanes in each direction with a continuous center left turn lane. Eight-foot pathways are shown on both sides of the road, one foot off the proposed ROW. The proposed ROW for this concept is 120 feet.



**Figure 2: Five-Lane Typical Cross Section**

OU is interested in providing a direct connection between the west and east sides of Adams Road at Meadow Brook Road/Hillendale Drive. OU is considering the future use of their property on the east side of Adams Road which currently is the home to fraternities, sororities and staff housing. The location of the proposed underpass road was reviewed to determine the most logical location given the existing topography in the area. The underpass road would accommodate vehicular as well as nonmotorized traffic and provide direct access without the use of a traffic signal, further improving safety as shown in **Figure 3**. The proposed underpass road was positioned south of Meadow Brook Road/Hillendale Drive and north of the golf course parking lot on the west side of Adams Road. While the land is lower on both sides of Adam Road, Adams Road and Meadow Brook Road/Hillendale Road would both need to be raised and the proposed underpass road depressed from existing ground to provide the proper height clearances.



**Figure 3: Proposed Underpass Road**

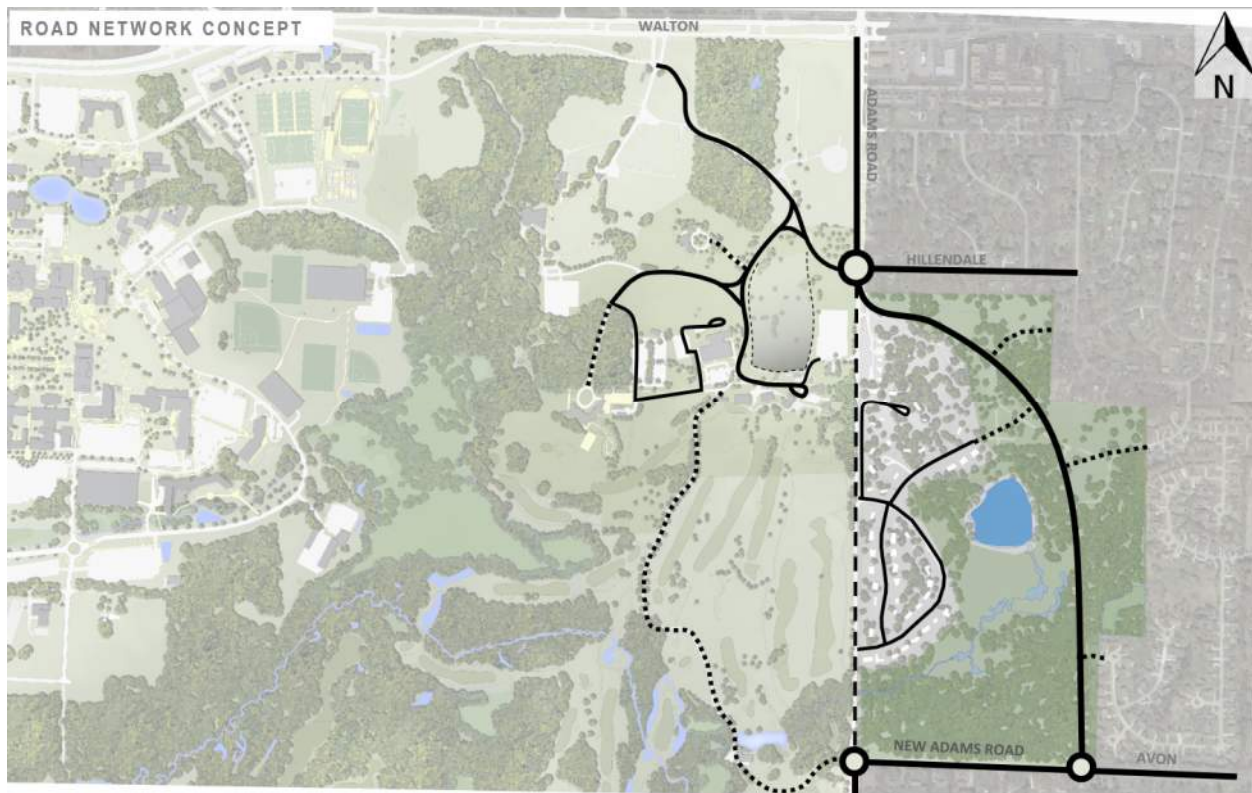


| Pros  | Cons  |
|---|---|
| <ul style="list-style-type: none"> <li>≡ Less ROW impacts than boulevard concept</li> <li>≡ Improves safety with center left turn lane</li> <li>≡ Increases capacity with additional through lanes</li> <li>≡ Reduces congestion</li> <li>≡ Improves sight distance with vertical alignment changes</li> <li>≡ Lowest cost concept</li> </ul> | <ul style="list-style-type: none"> <li>≡ Does not provide left turn separation</li> <li>≡ Shared center turn lanes typically have higher crash rates than medians</li> <li>≡ Underpass road needed to provide direct, unsignalized connection between west and east sides of Adams</li> </ul> |

### 4.3 Adam Relocation Alternative

The concept shown in **Figure 4** was presented by OU as an alternative to reconstructing Adams Road in-place. According to OU, this alternative presents the following advantages:

- ≡ It avoids any direct conflict with existing historical assets or building structures.
- ≡ It would maintain the feel of Adams as a rural and residential road.
- ≡ It allows/opens development of additional residential property adjacent to the new route.
- ≡ It could be largely constructed without interference with existing road and houses as it is on property that is open.



**Figure 4: Oakland University Alternative Concept**

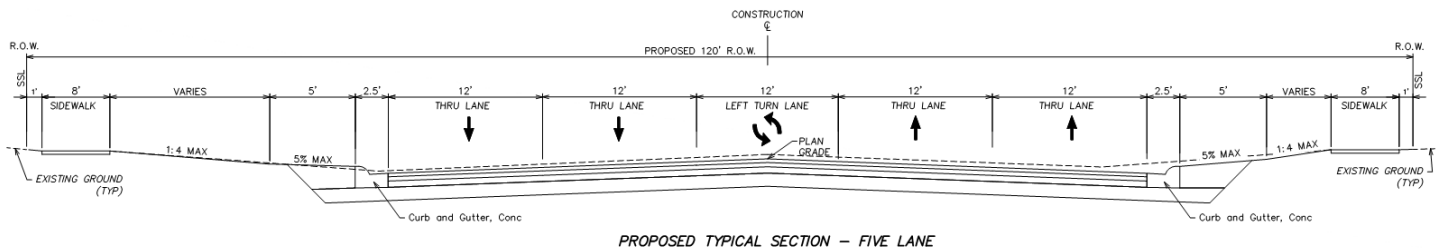
This alternative was further reviewed by HRC and a preliminary vertical alignment developed as shown in **Appendix C**. The following is a summary of some of the discussion items regarding this alignment:

- ≡ Oakland County Soils map was reviewed and found areas of Houghton and Adrian Mucks through the center
- ≡ There would be multiple options to connect to Avon Road to the new Adams Road alignment.
- ≡ The existing Adams Road would need to remain to accommodate existing utilities.
- ≡ There is a significant elevation change east of Adams Road.

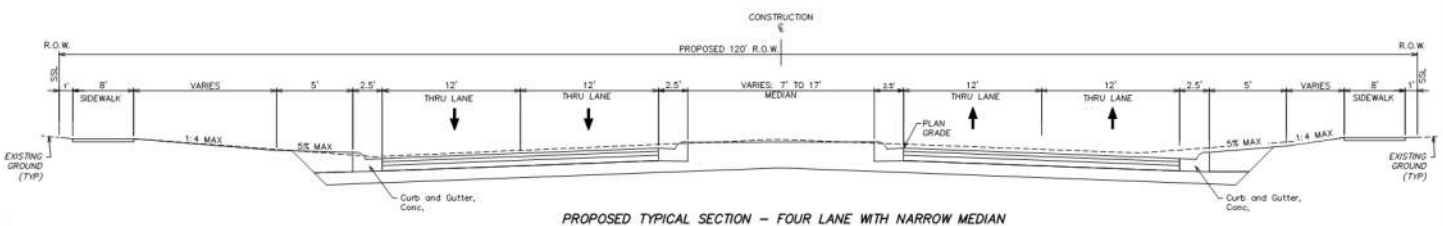
| Pros  | Cons   |
|---|--|
| <ul style="list-style-type: none"> <li>≡ Oakland University owns the land and willing to negotiate ROW</li> <li>≡ Avoids historical properties on Adams Road</li> <li>≡ Maintains rural feel</li> <li>≡ Eliminates Underpass Rd</li> <li>≡ Underpass road NOT needed to provide direct, unsignalized connection between west and east sides of Adams</li> </ul> | <ul style="list-style-type: none"> <li>≡ Shifts road substantivity close to residential homes in Cambridge subdivision</li> <li>≡ Increased travel distance</li> <li>≡ Increased traffic on Avon Road</li> <li>≡ Impacts to natural features</li> <li>≡ Required construction through poor soil areas</li> <li>≡ Cost</li> </ul> |

#### 4.4 Roundabouts with Narrow Medians (Preferred Alternative)

This concept includes cross sections with five lanes and a center turn lane as shown in **Figure 5** as well as cross sections with four lanes and narrow medians as shown in **Figure 6**. This is the preferred alternative by stakeholders.



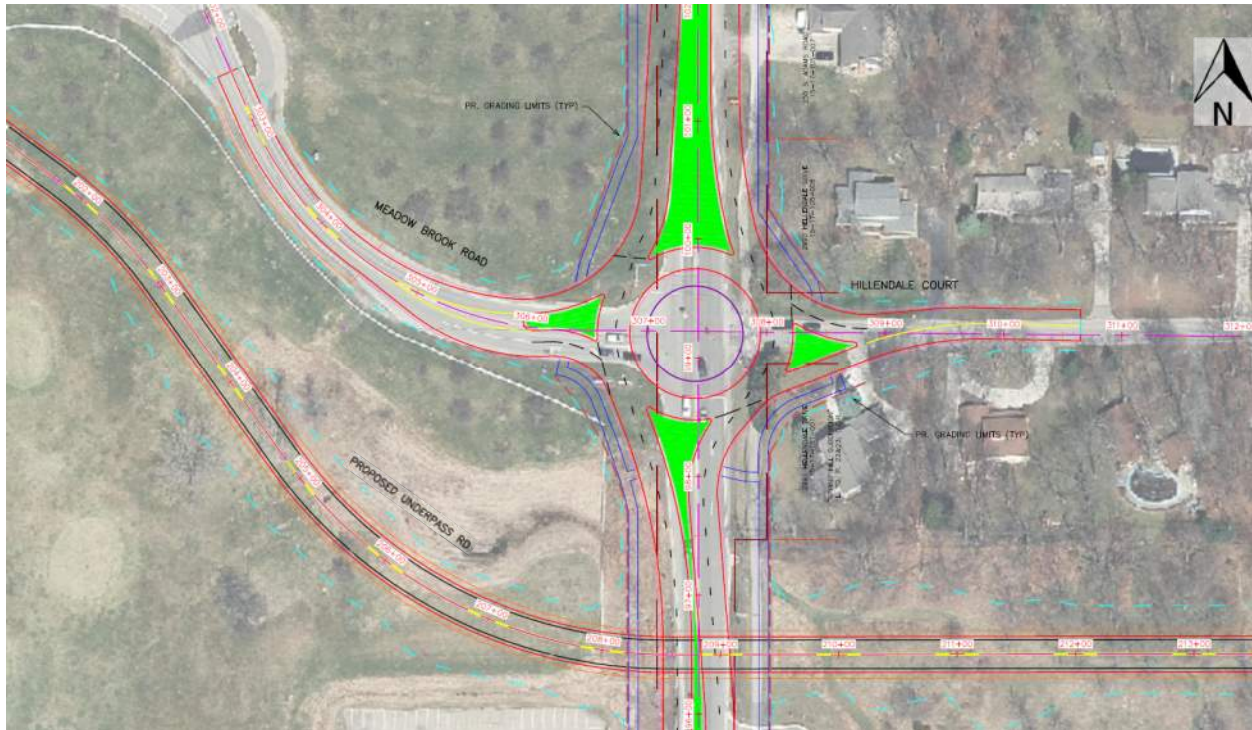
**Figure 5: Five-Lane Typical Cross Section**



**Figure 6: Narrow Median Typical Cross Section**

Roundabouts are proposed at Butler Road, Avon Road, and Hillendale Drive. The five-lane cross section is proposed from Portage Trail Drive to the roundabout at Butler Road. The narrow median cross section is proposed between the two roundabouts at Butler Road and Avon Road. In this narrow median segment, drivers would make right turn movements into and out of driveways and side streets. The roundabouts will provide the indirect left turns. Narrow medians as shown in are also proposed between Avon Road and Meadow Brook Road/Hillendale Drive; however, given the distance between the roundabouts, some direct openings with five lanes may be necessary to accommodate turning movements. From Meadow Brook Road/Hillendale Drive to Walton Road, a combination of narrow median and five lane road is proposed.

The proposed location for the underpass road was revised further to the south to provide more separation from the Meadow Brook Road/Hillendale Drive intersection and to fit better with existing topography as shown in **Figure 7**. OU also noted that moving closer to the golf course parking lot is not an issue. OU is open to reconfiguring that area.



**Figure 7: Preferred Location for Proposed Underpass Road**

| Pros   | Cons   |
|--|--|
| <ul style="list-style-type: none"> <li>≡ Less ROW impacts than boulevard concept</li> <li>≡ Improves safety with medians and roundabouts</li> <li>≡ Increases capacity with additional through lanes</li> <li>≡ Reduces congestion</li> <li>≡ Improves sight distance with vertical alignment changes</li> </ul> | <ul style="list-style-type: none"> <li>≡ Additional ROW needed at roundabouts</li> <li>≡ Increased travel time for left turning vehicles</li> <li>≡ Underpass road needed to provide direct connection between west and east sides of Adams</li> </ul> |

#### 4.5 Executive Summary

Having reviewed various alternatives, the roundabouts with narrow medians was chosen as the preferred alternative by the stakeholders. This concept meets their overall goals of improvement safety and traffic flow through this corridor.

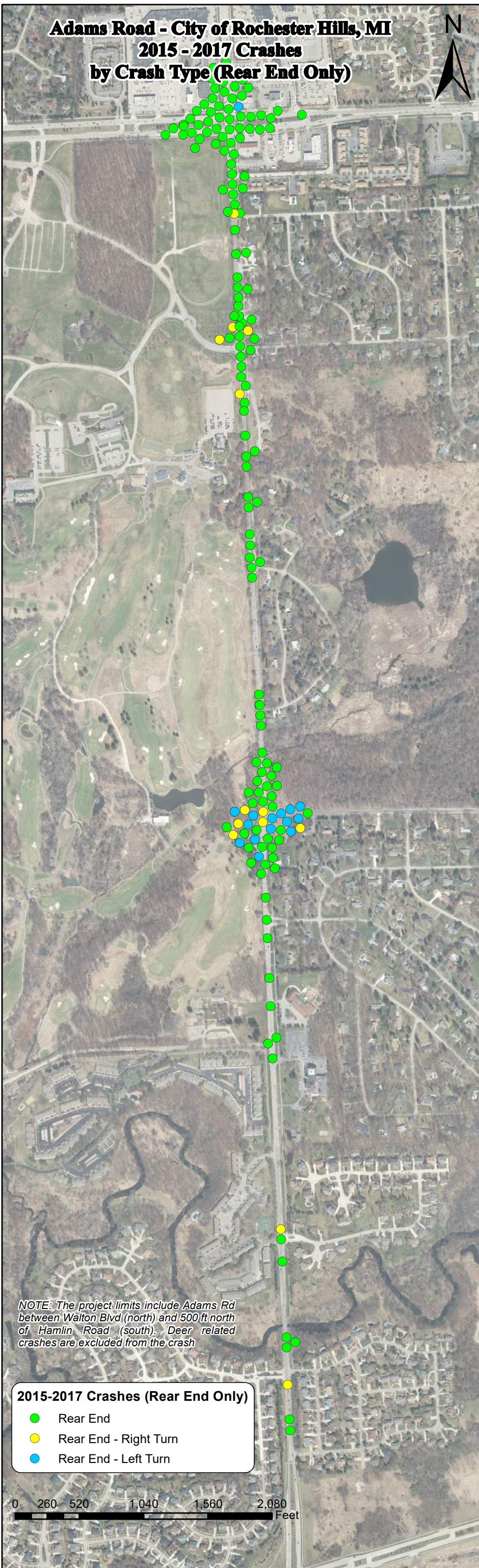
The next step for this project is to secure funding to move into early preliminary engineering (EPE) and the Environment Assessment. An Environment Assessment is needed to determine the project would have a Findings of No Significant Impact (FONSI). EPE would include collecting topographic survey and beginning design to further understand the overall impacts of this project.

In addition, funding for right-of-way acquisitions, preliminary engineering, construction and construction engineering would be needed to move the project toward completion.

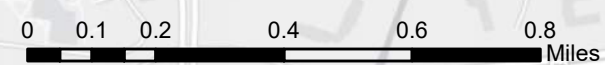
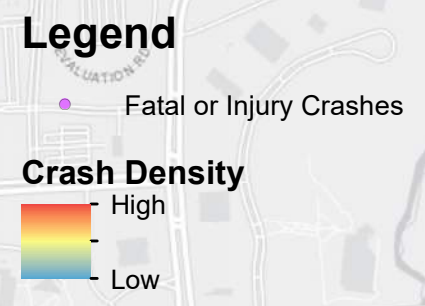
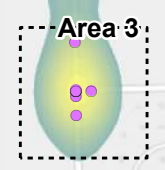
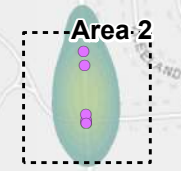
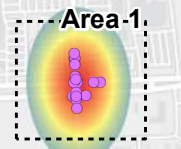
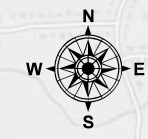
## 5.0 Cost Estimate for Preferred Alternative

HRC developed conceptual construction costs for the preferred alternative. This includes an assumed 9" concrete pavement on 8" aggregate base with proposed storm sewer and underdrain through the corridor and 8' pathways on both sides of the road. It includes estimated allowances for utility relocations cost but does not include ROW acquisition costs. HRC has estimated the preferred alternative to cost approximately \$48 Million (2020 Dollars) which includes the proposed underpass at Meadow Brook Road. The full estimate is provided in **Appendix D**.

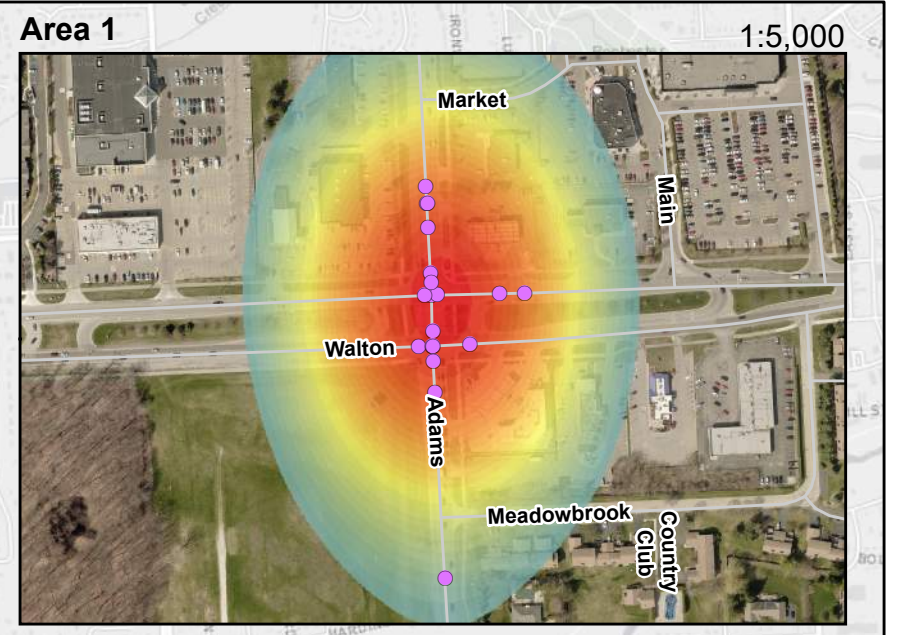
**Appendix A: Crash Maps**



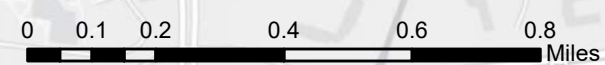
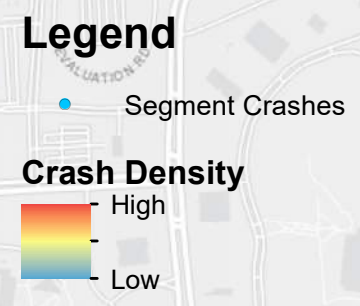
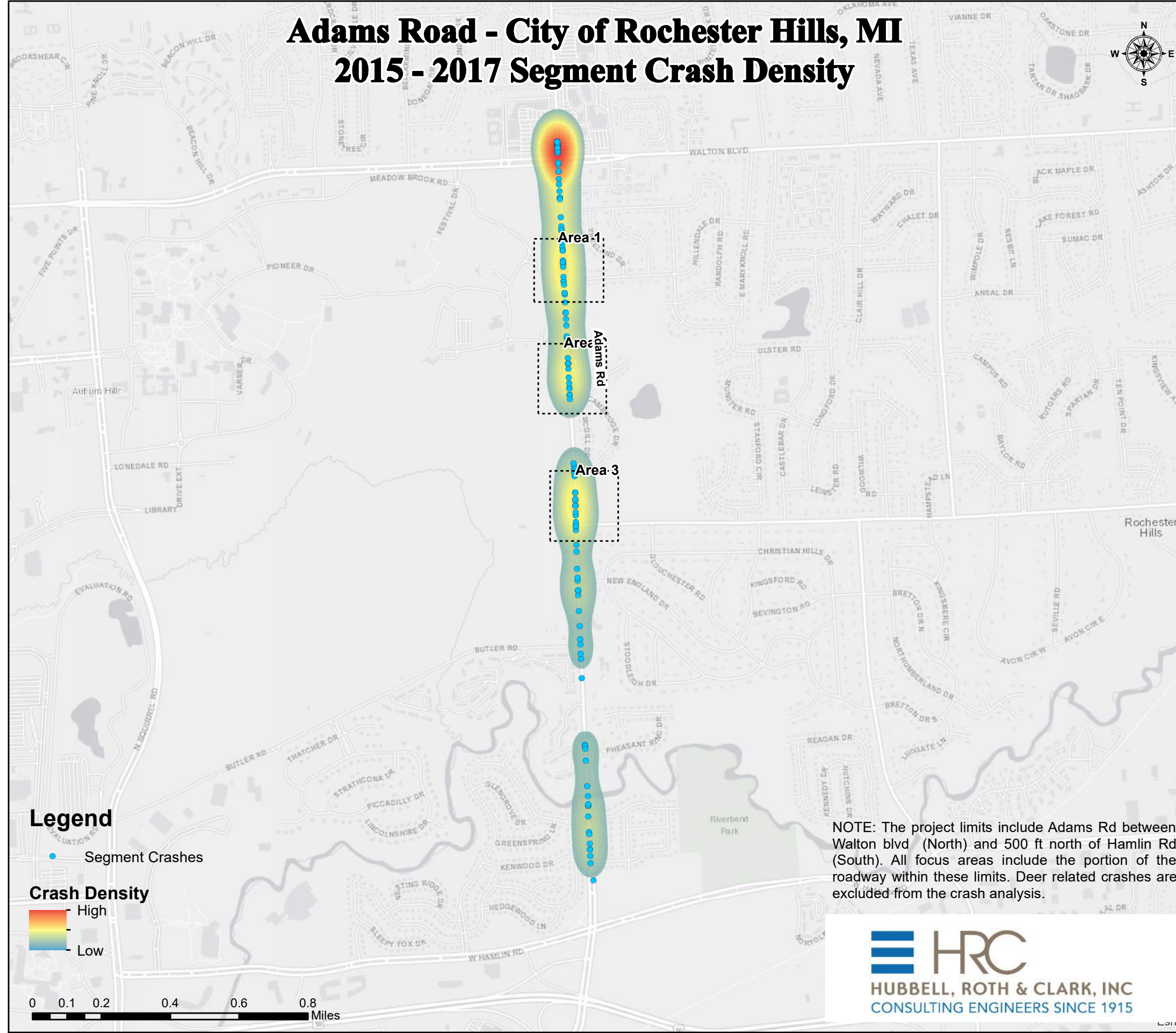
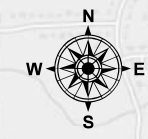
# Adams Road - City of Rochester Hills, MI 2015 - 2017 Fatal or Injury Crash Density



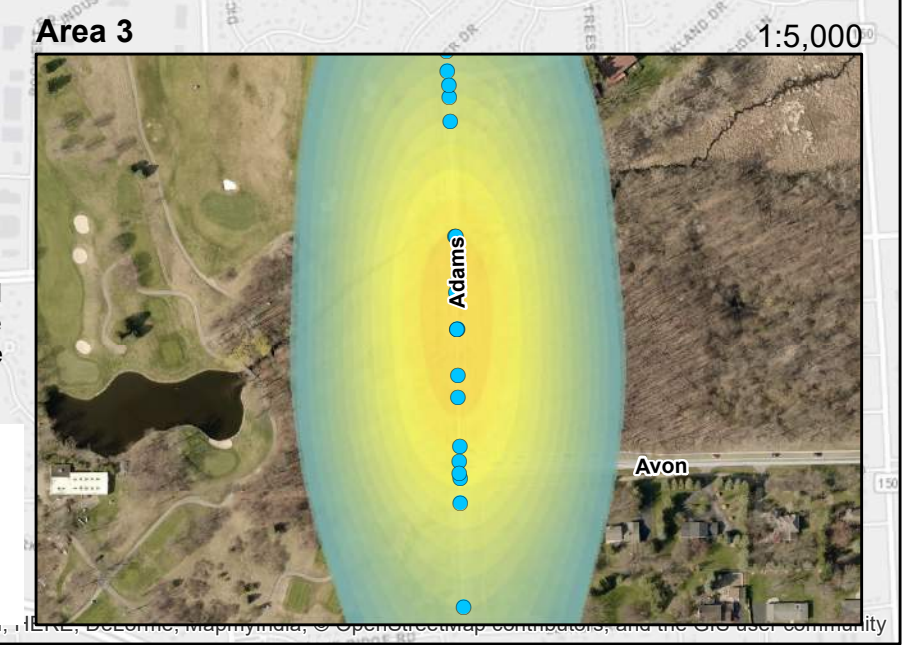
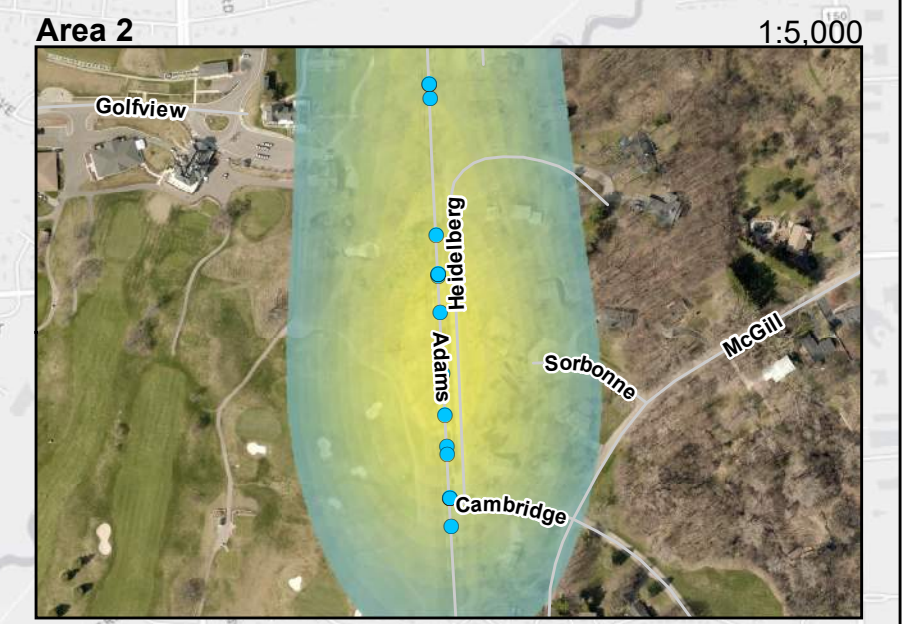
NOTE: The project limits include Adams Rd between Walton blvd (North) and 500 ft north of Hamlin Rd (South). All focus areas include the portion of the roadway within these limits. Deer related crashes are excluded from the crash analysis.



# Adams Road - City of Rochester Hills, MI 2015 - 2017 Segment Crash Density



NOTE: The project limits include Adams Rd between Walton Blvd (North) and 500 ft north of Hamlin Rd (South). All focus areas include the portion of the roadway within these limits. Deer related crashes are excluded from the crash analysis.





**Appendix B: Meeting Minutes**

**PRINCIPALS**

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Marshall J. Grazioli  
Colleen L. Hill-Stramsak  
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Matthew G. Slicker  
James J. Surhigh  
Trevor S. Wagenmaker

**HUBBELL, ROTH & CLARK, INC.**

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**SHIPPING:** 555 Hulet Drive  
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**PHONE:** 248-454-6300

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**OTHER OFFICE LOCATIONS**

Delhi Township  
Detroit  
Grand Rapids  
Howell  
Jackson  
Kalamazoo  
Lansing

**Kick-off Meeting Agenda  
Adams Road Options & Evaluation  
Hamlin Road to Walton Boulevard**

**Date:** Wednesday, September 5, 2018

**Meeting Location:** Road Commission for Oakland County

| <u>Attendee Name</u>  | <u>Representing</u>         | <u>Phone No.</u> |
|-----------------------|-----------------------------|------------------|
| Eric Wilson .....     | RCOC .....                  | 877-858-4804     |
| Gary Piotrowicz ..... | RCOC .....                  | 248-645-2000     |
| Craig Bryson.....     | RCOC .....                  | 248-645-2000     |
| Allan Schneck.....    | Rochester Hills.....        | 248-841-2497     |
| Tom Talbert.....      | Rochester Hills.....        | 248-766-8693     |
| Sara Roediger .....   | Rochester Hills.....        | 248-451-2573     |
| Pat Engle.....        | Oakland University.....     | 248-372-4660     |
| Scott Kunselman ..... | Oakland University.....     | 248-370-4287     |
| Charles Hart .....    | Hubbell, Roth & Clark ..... | 248-535-3364     |
| Lia Michaels .....    | Hubbell, Roth & Clark ..... | 248-454-6812     |

This meeting was held to discuss stakeholders, goals and schedule for the Adams Road options and evaluations study from Hamlin Road to Walton Boulevard. Below is a summary of the discussion.

≡ Stakeholders

- ≡ Road Commission for Oakland County (OU), City of Rochester Hills & Oakland University
- ≡ Others may include:
  - Gate house and golf course
  - Meadowbrook
  - Student Affairs for neighborhood and sorority/fraternity houses
  - Organic Farm on Butler Road
  - Historic District
  - Abutting neighborhoods
  - University Presbyterian Church, historical site
  - Dr. Richard Stamps, OU faculty and member of Historic Districts Commission

≡ Goals

- ≡ Safety is #1 priority for RCOC. Existing vertical curves will be reviewed.
- ≡ Oakland University interested in underpass at Meadow Brook Drive/Hillendale Drive to connect east and west side of Adams Road.
- ≡ 8-foot safety path desired on both sides of road.
- ≡ Improve traffic, this is a major concern for City residents.
- ≡ Provide positive messaging and communication about project.
- ≡ Connectivity between Southwest and Northeast corners of Adams and Walton for non-motorized traffic.

≡ Additional Items

- ≡ OU's master plan is available on their website. They have plans to expand on the property located at the southwest corner of Adams and Walton Blvd.
- ≡ OU interested in relocating gatehouse, hasn't been done due to costs.
- ≡ GLRI Grant in the process for the Galloway Creek.
- ≡ City interested in flex lanes if directional traffic exists or grade separations/limited access roads.
- ≡ HRC will have property labels showing ownership on future exhibits.
- ≡ HRC will review future opportunities including public access bonds.
- ≡ HRC to collect updated traffic volumes after construction projects end.

≡ Schedule

- ≡ Fall 2018 – Begin base plan, utility coordination
- ≡ Winter 2018 – Develop concepts/cost/impacts
- ≡ Spring 2019 – Review concepts/cost/impacts with stakeholders
- ≡ Summer 2019 – Develop preferred concept/cost/impact

**PRINCIPALS**

Daniel W. Mitchell  
Nancy M. D. Faught  
Jesse B. VanDeCreek  
Roland N. Alix  
Michael C. MacDonald  
James F. Burton  
Charles E. Hart  
Todd J. Sneathen

**CONTROLLER**

Donna M. Martin

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**Meeting Agenda**  
**Adams Road Options & Evaluation**  
**Hamlin Road to Walton Boulevard**

**Date:** Wednesday, May 1, 2019

**Meeting Location:** Road Commission for Oakland County

- 
- ≡ Underpass Exhibits
    - ≡ Exhibit A – Proposed Underpass Road horizontal and vertical alignments
    - ≡ Exhibit B – Meadow Brook Road / Hillendale Court horizontal and vertical alignments with the addition of the proposed underpass
    - ≡ Exhibit C – Five Lane Adams Road horizontal and vertical alignments with the addition of the proposed underpass
  
  - ≡ Oakland University Alternative
    - ≡ Benefits (Per Oakland University)
      - it is a better solution to the two hills that hamper the current layout and avoids costly bridges and underpasses as well as wide cut back as part of grade elimination.
      - it avoids any direct conflict with existing historical assets, or building structures.
      - it would maintain the feel of Adams as a rural and residential road.
      - it allows/opens development of additional residential property adjacent to the new route.
      - it could be largely constructed without interference with existing road and houses as it is on property that is open.
    - ≡ Considerations
      - ROW
      - Utilities
      - Grade
      - Existing Ground
  
  - ≡ Next Steps
    - ≡ Refine concepts to continue reviewing
    - ≡ Traffic studies
    - ≡ Cost estimates
    - ≡ Budget
  
  - ≡ Agenda for Monday, May 13<sup>th</sup> Meeting with Stakeholders

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**Kick-off Meeting Agenda  
Adams Road Options & Evaluation  
Hamlin Road to Walton Boulevard**

**Date:** Monday, May 13, 2019

**Meeting Location:** Road Commission for Oakland County

| <u>Attendee Name</u>  | <u>Representing</u>         | <u>Phone No.</u> |
|-----------------------|-----------------------------|------------------|
| Gary Piotrowicz ..... | RCOC .....                  | 248-645-2000     |
| Dennis Kolar .....    | RCOC .....                  | 248-645-2000     |
| Allan Schneck.....    | Rochester Hills.....        | 248-841-2497     |
| Sara Roediger .....   | Rochester Hills.....        | 248-451-2573     |
| Pat Engle.....        | Oakland University.....     | 248-372-4660     |
| Scott Kunselman ..... | Oakland University.....     | 248-370-4287     |
| Charles Hart .....    | Hubbell, Roth & Clark ..... | 248-535-3364     |
| Lia Michaels .....    | Hubbell, Roth & Clark ..... | 248-454-6812     |

**PURPOSE:** This meeting was held to review the concepts developed for Adams Road.

≡ Concepts Reviewed

- ≡ Four Lane Boulevard
  - Most significant ROW impacts
- ≡ Five Lane
- ≡ Five Lane with Roundabouts with Narrow Median
  - Preferred option from three prepared by HRC
  - HRC to prepare cost estimate for this option
- ≡ Underpass Road
  - OU requested underpass be realigned so east side is pushed farther south
  - HRC to prepare cost estimate for this option
- ≡ OU Alternative
  - Existing Adams Road would be abandoned, utilities could remain
  - Eliminates need for Underpass Road
  - OU owns this property and provides development opportunity for OU
  - City noted #1 concern with residents is congestion in the City
  - Environmental impacts should be considered
  - HRC to provide a conceptual alignment

≡ Next steps for HRC

- ≡ Provide cost estimate for Five Lane with Roundabouts with Narrow Median and Underpass
- ≡ Provide conceptual plan for OU's alternative
- ≡ Schedule next meeting in Summer 2019

These minutes are intended to be a summary of those items discussed. Any corrections and/or comments should be noted to the writer as soon as possible.

Respectfully submitted,

HUBBELL, ROTH & CLARK, INC.

*Lia Michaels*

Lia Michaels, P.E., PTOE  
Project Engineer

LFM/lfm

pc: All present

**PRINCIPALS**

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**Meeting Agenda**  
**Adams Road Options & Evaluation**  
**Hamlin Road to Walton Boulevard**

**Date:** Monday, September 23, 2019

**Time:** 1:00 PM

**Meeting Location:** Road Commission for Oakland County

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≡ Discussion Items

≡ Cost Estimate

- Five Lane with Roundabouts with Narrow Median
- Underpass Road

≡ Adams Road Alternate Alignment

≡ Budget

≡ Agenda for Wednesday, October 16<sup>th</sup> Meeting with Stakeholders

**PRINCIPALS**

Daniel W. Mitchell  
Nancy M. D. Faught  
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**Kick-off Meeting Agenda  
Adams Road Options & Evaluation  
Hamlin Road to Walton Boulevard**

**Date:** Wednesday, October 16, 2019

**Meeting Location:** City of Rochester Hills

| <u>Attendee Name</u>  | <u>Representing</u>         | <u>Phone No.</u> |
|-----------------------|-----------------------------|------------------|
| Gary Piotrowicz ..... | RCOC .....                  | 248-645-2000     |
| Dennis Kolar .....    | RCOC .....                  | 248-645-2000     |
| Sara Roediger .....   | Rochester Hills.....        | 248-451-2573     |
| Tom Talbert.....      | Rochester Hills.....        | 248-766-8643     |
| Paul Shumejko .....   | Rochester Hills.....        | 248-841-2489     |
| Keith Depp.....       | Rochester Hills.....        | 248-841-2503     |
| Seth Bucholz .....    | Rochester Hills.....        | 248-841-2491     |
| Pat Engle.....        | Oakland University.....     | 248-372-4660     |
| Scott Kunselman ..... | Oakland University.....     | 248-370-4287     |
| Charles Hart .....    | Hubbell, Roth & Clark ..... | 248-535-3364     |
| Lia Michaels .....    | Hubbell, Roth & Clark ..... | 248-454-6812     |

**PURPOSE:** This meeting was held to review the cost estimate for the roundabout option with narrow median and underpass and HRC's work reviewing the alternate alignment proposed by Oakland University.

≡ Summary of Concepts Reviewed

- ≡ Four Lane Boulevard
- ≡ Five Lane Road
- ≡ Five Lane with Roundabouts and Narrow Median
- ≡ Underpass Option near Meadowbrook Road/Hillendale Court
  - Exhibit A – Proposed Underpass Road horizontal and vertical alignments
  - Exhibit B – Meadow Brook Road / Hillendale Court horizontal and vertical alignments with the addition of the proposed underpass
  - Exhibit C – Five Lane Adams Road horizontal and vertical alignments with the addition of the proposed underpass.
- ≡ Concept presented by Oakland University
- ≡ Cost estimate for Concept of Roundabouts with Narrow Median including Underpass near Meadow Brook Rd/Hillendale Dr
  - Roundabouts with Narrow Median and Revised Underpass pushed further south than previous concept
  - Exhibit A – Revised Underpass Road
  - Exhibit B – Meadow Brook Road / Hillendale Court with Revised Underpass Road
- ≡ Alternate Alignment
  - This concept provides an alternate alignment for Adams Road as proposed by Oakland University



- The Oakland County Soil Map is overlaid and areas of 'Houghton and Adrian Mucks' hatched in green
- The horizontal alignment is the existing ground along the proposed centerline.

### ≡ Summary of Discussion Points

- ≡ Main reasons for conducting the study were reiterated: improve traffic flow and safety
- ≡ Oakland University noted historical areas of farmhouse, greenhouse, gate house and wall to be considered during planning/construction
- ≡ City undergoing Master Plan which will include Adams Road
- ≡ Stakeholders to start thinking of next steps for funding design and construction

HRC will set up the next meeting for the beginning of December. This will give stakeholders time to review internally and provide feedback to the group at the next meeting.

These minutes are intended to be a summary of those items discussed. Any corrections and/or comments should be noted to the writer as soon as possible.

Respectfully submitted,

HUBBELL, ROTH & CLARK, INC.



Lia Michaels, P.E., PTOE  
Project Engineer

LFM/lfm

pc: All present

## Appendix C: Design Alternatives

## Appendix D: Cost Estimates



## Construction Cost Estimating - Summary

Conceptual Engineering

Preliminary Engineering

Detailed Design

Prepared By LFM

Reviewed By CEH

**Client** City of Rochester Hills/RCOC/Oakland University **Date** 9/16/2019

**Project** Adams Rd - Walton to Hamlin (Roundabouts with Narrow Median) **Project Number** 20180065

| No. | Item   | Qty     |      | Price           | Cost                |
|-----|--|---------|------|-----------------|---------------------|
| 1.  | Mobilization, Max 10%                                    | 1       | Lsum | \$ 3,002,000.00 | \$3,002,000         |
| 2.  | Clearing   | 6       | Acre | \$ 15,000.00    | \$90,000            |
| 3.  | Tree, Rem  | 220     | Ea   | \$ 700.00       | \$154,000           |
| 4.  | Historic Retaining Wall, Rem                             | 1       | Lsum | \$ 20,000.00    | \$20,000            |
| 5.  | Pedestrian Bridge, Rem                                   | 1       | Lsum | \$ 200,000.00   | \$200,000           |
| 6.  | Storm Sewer Removal                                      | 1       | Lsum | \$ 50,000.00    | \$50,000            |
| 7.  | Curb and Gutter, Rem                                     | 8100    | Ft   | \$ 8.00         | \$64,800            |
| 8.  | Fence, Rem   | 8200    | Ft   | \$ 4.00         | \$32,800            |
| 9.  | Pavt, Rem  | 2600    | Syd  | \$ 5.50         | \$14,300            |
| 10. | Sidewalk, Rem  | 1000    | Syd  | \$ 8.00         | \$8,000             |
| 11. | Station Grading, Special                                 | 113.25  | Sta  | \$ 5,000.00     | \$566,250           |
| 12. | Subgrade Undercutting, 1 x 3, Special                    | 3400    | Cyd  | \$ 40.00        | \$136,000           |
| 13. | Erosion Control  | 1       | Lsum | \$ 150,000.00   | \$150,000           |
| 14. | Aggregate Base, 4 inch, Special                          | 21800   | Syd  | \$ 10.00        | \$218,000           |
| 15. | Aggregate Base, 8 inch, Special                          | 94100   | Syd  | \$ 15.00        | \$1,411,500         |
| 16. | Geogrid, Special   | 10200   | Syd  | \$ 6.00         | \$61,200            |
| 17. | Sewer, CI IV, 12 inch, Tr Det B                          | 6700    | Ft   | \$ 50.00        | \$335,000           |
| 18. | Sewer, CI IV, 15 inch, Tr Det B                          | 3500    | Ft   | \$ 60.00        | \$210,000           |
| 19. | Sewer, CI IV, 18 inch, Tr Det B                          | 3000    | Ft   | \$ 65.00        | \$195,000           |
| 20. | Sewer, CI IV, 24 inch, Tr Det B                          | 2000    | Ft   | \$ 80.00        | \$160,000           |
| 21. | Dr Structure Cover, Type J                               | 100     | Ea   | \$ 500.00       | \$50,000            |
| 22. | Dr Structure, 24 inch dia                                | 40      | Ea   | \$ 1,540.00     | \$61,600            |
| 23. | Dr Structure, 48 inch dia                                | 55      | Ea   | \$ 2,000.00     | \$110,000           |
| 24. | Dr Structure, 60 inch dia                                | 5       | Ea   | \$ 2,500.00     | \$12,500            |
| 25. | Underdrain, Subgrade, Open-Graded, 6 inch, Special       | 25,400  | Ft   | \$ 20.00        | \$508,000           |
| 26. | HMA Surface, Rem   | 60,000  | Syd  | \$ 5.00         | \$300,000           |
| 27. | Concrete Joints  | 1       | Lsum | \$ 300,000.00   | \$300,000           |
| 28. | Conc Pavt with Integral Curb, Nonreinf, 9 inch           | 88,300  | Syd  | \$ 60.00        | \$5,298,000         |
| 29. | Curb and Gutter, Conc, Det B1                            | 25,400  | Ft   | \$ 20.00        | \$508,000           |
| 30. | Proposed Bridge (Clinton River) inc. Ped Facilities      | 1       | Lsum | \$ 4,000,000.00 | \$4,000,000         |
| 31. | Proposed Underpass and Bridge                            | 1       | Lsum | \$ 5,000,000.00 | \$5,000,000         |
| 32. | Proposed Culvert Bridge (N. of Avon) inc. Ped Facilities | 1       | Lsum | \$ 2,000,000.00 | \$2,000,000         |
| 33. | Proposed Retaining Walls                                 | 1       | Lsum | \$ 500,000.00   | \$500,000           |
| 34. | Driveway, Nonreinf Conc, 6 inch                          | 1,200   | Syd  | \$ 45.00        | \$54,000            |
| 35. | ADA Compliant Sidewalk Ramps                             | 1       | Lsum | \$ 50,000.00    | \$50,000            |
| 35. | Sidewalk, Conc, 4 inch                                   | 171,100 | Sft  | \$ 6.00         | \$1,026,600         |
| 36. | Proposed Guardrail                                       | 1       | Lsum | \$ 50,000.00    | \$50,000            |
| 37. | Proposed Permanent Signing                               | 1       | Lsum | \$ 20,000.00    | \$20,000            |
| 38. | Proposed Pavement Markings                               | 1       | Lsum | \$ 40,000.00    | \$40,000            |
| 39. | Maintenance of Traffic                                   | 1       | Lsum | \$ 500,000.00   | \$500,000           |
| 40. | Turf Establishment, Special                              | 108,000 | Syd  | \$ 6.00         | \$648,000           |
| 41. | Hawk Signals   | 3       | Ea   | \$ 500,000.00   | \$1,500,000         |
| 42. | Public Utilities - Water, Sewer (Allowance)              | 1       | Lsum | \$ 3,000,000.00 | \$3,000,000         |
| 43. | Private Utility (DTE Pole Rel)                           | 18      | Ea   | \$ 20,000.00    | \$360,000           |
|     | Subtotal -   |         |      |                 | \$33,100,000        |
|     | Estimated Total Construction Cost                        |         |      |                 | \$33,100,000        |
|     | Contingencies (10%)                                      |         |      |                 | \$3,300,000         |
|     | Inflation (10%)  |         |      |                 | \$3,300,000         |
|     | PE and CE (25%)  |         |      |                 | \$8,200,000         |
|     | <b>Total Project Cost</b>                                |         |      |                 | <b>\$47,900,000</b> |

**Design Factors/Assumptions**

1. 20% Undercuts - Geogrid and 1x3 put back
2. 9" Concrete Pavement on 8" Aggregate Base
3. Proposed Storm Sewer and 6" Underdrain throughout entire corridor - draining to existing outlets on site
4. All drives and approaches to be put back as concrete

**Unresolved items that may affect cost**

1. ROW acquisition
2. Replacing Trees and/or Fencing
3. Street Lighting
4. Landscaping