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September 29, 2006

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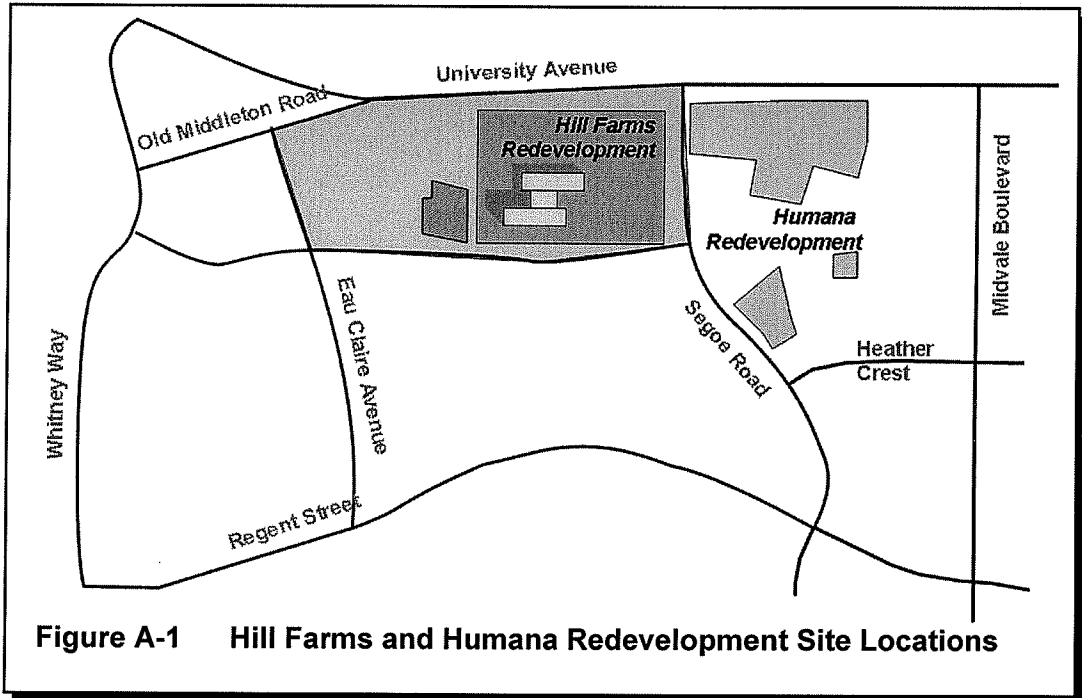
Re: Humana Redevelopment–Impact of Hill Farms Traffic

Dear Dan,

This letter is an addendum to the Humana Redevelopment Traffic Impact Analysis (TIA) submitted to the City of Madison Traffic Department on September 27, 2006. This addendum broadly describes the impact of the proposed Hill Farms redevelopment on the Humana Site and the surrounding transportation systems. This letter does not constitute a TIA for the Hill Farms site but rather assesses the appropriateness of the improvements recommended by the Humana TIA considering the changes in traffic volumes and patterns likely to accompany a redevelopment and densification of the Hill Farms site.

**Introduction**

The State of Wisconsin is investigating the redevelopment of the property that is currently occupied by the Hill Farms office complex. The redevelopment site is located south of University Avenue, north of Sheboygan Avenue, east of Eau Claire Street, and west of Segoe Road. The state land north of University Avenue is not expected to be redeveloped as part of the Hill Farms project, but its use could change in the future. Figure A-1 shows the Hill Farms and Humana redevelopment sites.



### Proposed Development

Currently, the Hill Farms office complex provides approximately 400,000 square feet of office space. The preliminary redevelopment land uses and floor areas used for this addendum include the following:

- Approximately 1,500,000 square feet of Office land use
- Approximately 90,000 square feet of Retail land use
- Approximately 450 Residential units

Redevelopment of this site will significantly increase person trips into, out of, and within this part of the City. Table A1-1 shows the trip generation of the existing and proposed Hill Farms site.



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Time Period	Redevelopment Trips	Existing Trips	Net New Trips	Alternate Modes Reduction (15%)	Net New Vehicle Trips
<b>Daily</b>	23,734	(4,441)	19,293	(2,894)	<b>16,399</b>
<u>PM Peak-Hour</u>					
Entering	705	(102)	603	(90)	513
Exiting	2,117	(499)	1,618	(243)	1,375
<b>Total</b>	<b>2,821</b>	<b>(601)</b>	<b>2,220</b>	<b>(333)</b>	<b>1,887</b>

**Table A-1 Trip Generation for the Proposed Hill Farms Redevelopment**

The net new vehicle trips are found by forecasting the total trips after redevelopment, subtracting the trips that exist today, and applying an assumed reduction to account for the use of alternate modes. The Humana TIA determined that there is a relatively high mode split within this portion of the City. We've assumed the same mode split as that used for the Humana TIA, 15 percent. The calculations result in a forecast of about 16,400 new daily vehicle trips and about 1,900 new vehicle trips in the PM peak hour.

Discussion with City of Madison Traffic Engineering staff has indicated that some type of direct street connection to University Avenue is anticipated as part of the Hill Farms redevelopment. This connection should reduce vehicle traffic on Segoe Road and, depending on the final site layout, on Sheboygan Avenue. Less vehicular traffic on Segoe Road and Sheboygan Avenue will benefit all road users, particularly pedestrians and bicyclists.

This addendum assumes that a direct connection to University Avenue from the Hill Farms site will be part of the redevelopment plan.

**Impact to Recommendations for Humana Redevelopment Improvements**

The Humana TIA discusses transportation issues from several perspectives. The proposed redevelopment and densification of the Hill Farms site further confirms the need to plan for improvements to the surrounding transportation networks beyond typical vehicular capacity expansion and to encourage the use of alternative modes and other strategies to reduce single-occupant peak-hour vehicle trips. Recommendations for transportation improvements west of Segoe Road and internal to the Hill Farms site will need to be addressed as part of the TIA for that site.

The Humana TIA makes recommendations for improvements mainly along Segoe Road and to the east. The recommendations include accommodations for pedestrian, bicycle, and motor vehicle traffic. Following is a discussion of how those recommendations are impacted by the proposed Hill Farms redevelopment.



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A. Pedestrian Accommodations

The Hill Farms redevelopment should serve to significantly increase pedestrian activity in the area, particularly during the warm months. An increase in the presence of pedestrians tends to increase drivers' awareness of them and therefore provide a better pedestrian environment. This should be particularly helpful at the locations where roundabout intersections are proposed. The Humana TIA also recommends enhanced signalized pedestrian crossings of University Avenue at Segoe Road and of Segoe Road at Frey Street and at Sheboygan Avenue and an enhanced pedestrian/bicycle/motor vehicle access to the Hilldale area via Sawyer Terrace. These improvements seek to provide a more pedestrian friendly environment and encourage walking between the mixed land uses proposed in the general area.

The Hill Farms redevelopment will increase vehicle traffic on the area roadways. Higher traffic volumes often have a negative impact on pedestrian travel.

Considering the items discussed above, we feel the net impact of the Hill Farms redevelopment on the recommended Pedestrian Accommodations contained in the Humana TIA will be positive.

B. Bicycle Accommodations

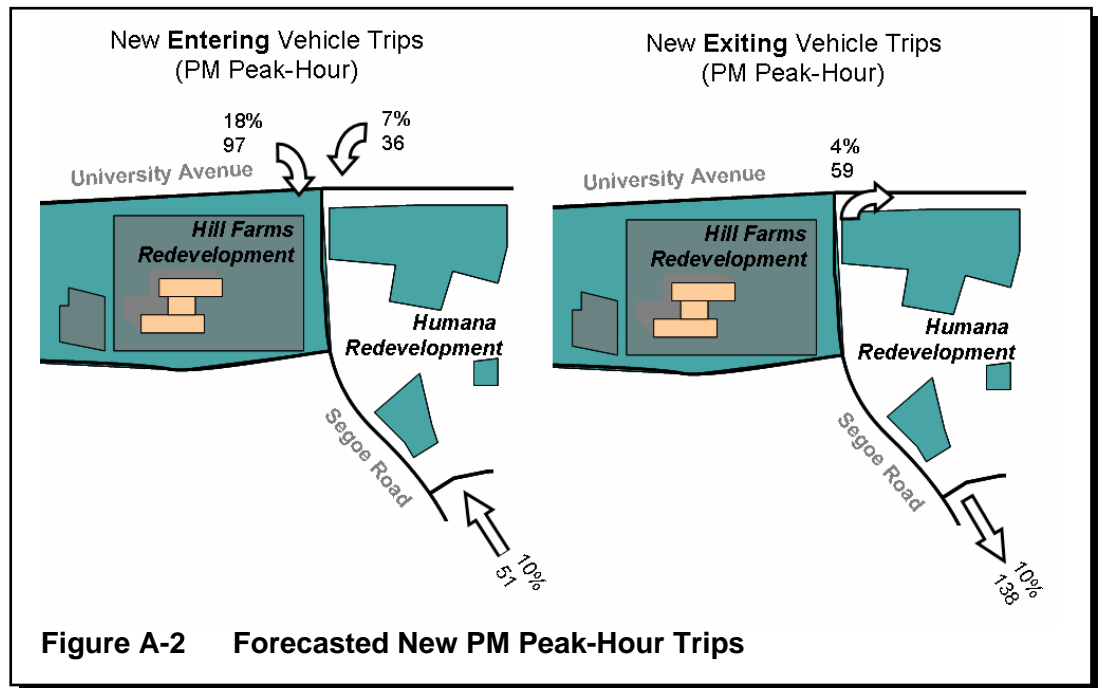
As mentioned, the Humana TIA recommends an enhanced pedestrian/bicycle/motor vehicle access to the Hilldale area via Sawyer Terrace. Discussion with City of Madison staff also indicates that bike lanes are being considered on Segoe Road and Sheboygan Avenue and that an enhanced crossing on the west side of the University Avenue and Segoe Road intersection is planned. These improvements will strengthen the area's connection with the Blackhawk bike path to the north. The Hill Farms redevelopment strengthens the case for the proposed improvements and should encourage the approval of their implementation. Additional improvements to the surrounding bicycle system will likely be recommended as part of the Hill Farms TIA.

The Hill Farms redevelopment will increase vehicle traffic on the area roadways. On streets in which bicyclists and motor vehicles share travel lanes, this has a negative impact on bicycle travel. On facilities with dedicated bike lanes, this negative impact is reduced but typically is still apparent.

Considering the items discussed above, we feel the net impact of the Hill Farms redevelopment on the recommended Bicycle Accommodations contained in the Humana TIA will be negligible.

C. Motor Vehicle Accommodations

New motor vehicle trips were distributed and assigned based on existing traffic patterns and the planned direct connection from the Hill Farms site to University Avenue. Figure A-2 shows the trip percentages and resulting volumes using Segoe Road and University Avenue. The remaining trips access the Hill Farms site via other routes, such as the new University Avenue connection, or Sheboygan Street to the west.



The trips shown in Figure A-2 were added to the 2015 PM peak-hour analysis completed for the Humana TIA to evaluate their impact on the motor vehicle improvements recommended in the report. In general, the improvements are able to accommodate the anticipated additional trips from the Hill Farms site. The intersection of University Avenue and Segoe Road falls from an overall LOS C to LOS D. The eastbound through movement falls from LOS D to LOS E.

The other study area intersections continue to operate acceptably. Figure A-3 shows a summary of the vehicular operations modeling.



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Considering the items discussed above, we feel the net impact of the Hill Farms redevelopment on the recommended Motor Vehicle Accommodations contained in the Humana TIA will be negligible.

**Conclusions**

The proposed redevelopment of the Hill Farms office campus will impact the surrounding transportation systems. For the most part, the impacts to Segoe Road and internal to the Humana Redevelopment site should be relatively small, and in some cases, a positive. This is not to say that the Hill Farms redevelopment will not require significant investment in transportation infrastructure. A formal TIA for the site will determine the measures necessary to provide reasonable access to and mobility within the general area.

Intersection	2015 with Humana Phase II and III and Existing Facilities	2015 with Humana Phase II and III and Recommendations	2015 with Humana Phase II and III, Hill Farms, and Recommendations
University/Segoe	E	C	D
Segoe/Frey	F*	B	B
Segoe/Sheboygan	E*	B#	B#
Sawyer Terrace/Segoe	A	A	A
Sawyer Terrace/Heather Crest	D*	B#	B#

Notes:  
 \* Unsignalized intersection LOS is that of the poorest opposed movement  
 # Roundabout LOS is from RODEL output using unsignalized intersection LOS scale

**Figure A-3 Summary of Operations Modeling**

Assuming that direct vehicle access to University Avenue is provided, the recommendations contained in the Humana TIA remain valid after consideration of the proposed Hill Farms redevelopment. Please contact me to discuss this addendum, or with any other questions or concerns you may have. Thank you for your continued assistance with this project.

Sincerely,

STRAND ASSOCIATES, INC.

Jeffrey S. Held, PE, PTOE

Report

**Humana  
Redevelopment  
Traffic Impact  
Analysis**

**Joseph Freed and  
Associates, LLC**

September 2006

Report for  
**Joseph Freed and Associates, LLC**

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Humana Redevelopment Traffic Impact Analysis

SIP No. 2

Prepared by:

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September 2006





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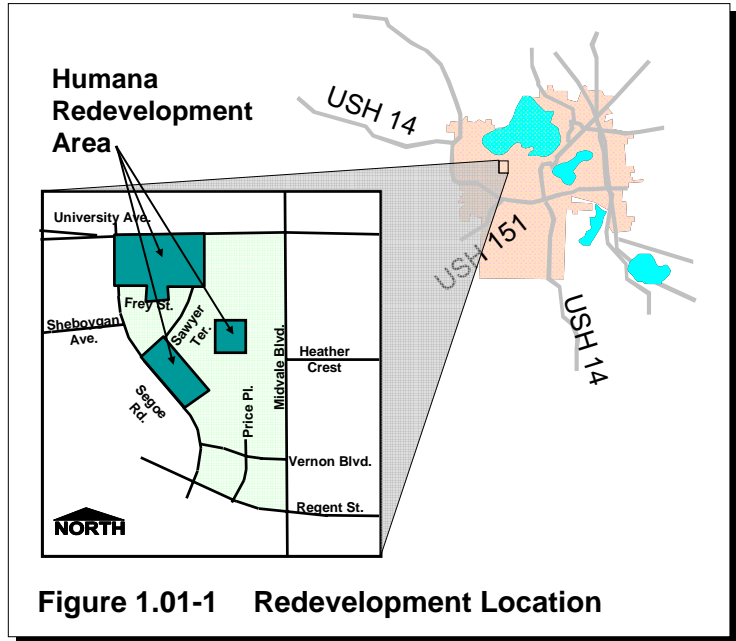
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**SECTION 1**  
**INTRODUCTION AND EXECUTIVE SUMMARY**

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**1.01 INTRODUCTION**

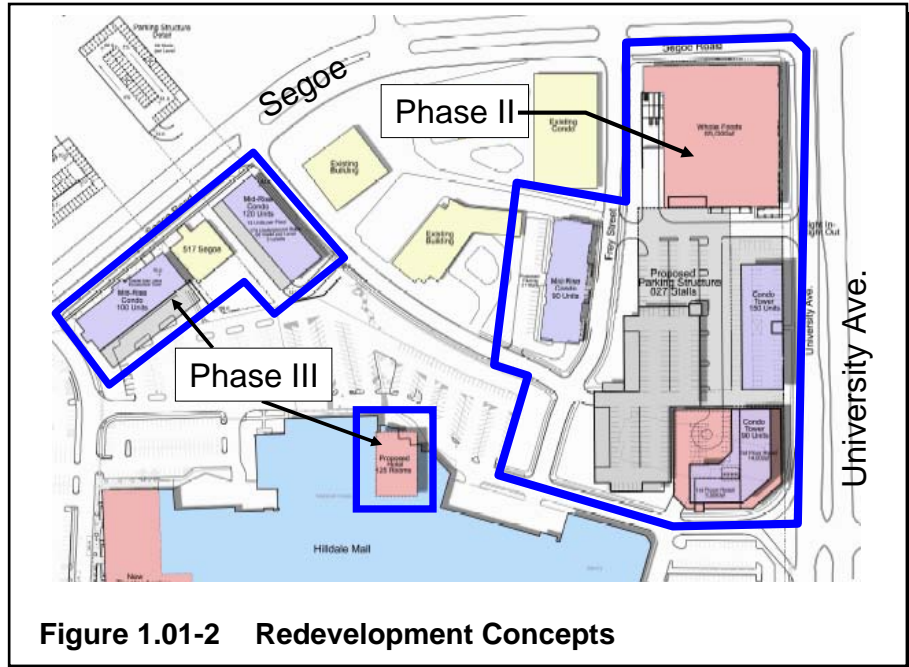
Joseph Freed and Associates LLC is proposing to redevelop the Humana site and adjacent retail land uses next to the Hilldale Shopping Center in Madison, Wisconsin. The redevelopment will replace a 97,400-square-foot office complex with a 65,000-square-foot grocery store. It also will replace a 30,000-square-foot banquet hall and 750-seat Theater with a 19,000-square-foot retail store, a 15,000-square-foot retail store, a 40,000-square-foot health club, and 330 residential units. The third phase of redevelopment will also include 220 residential units and 125 proposed hotel rooms that will be included in a separate site implementation plan (SIP) submittal. The redevelopment is anticipated to occur prior to 2015. Figure 1.01-1 shows the proposed development location.



**Figure 1.01-1 Redevelopment Location**

Figure 1.01-2 illustrates the redevelopment concept.

This Traffic Impact Analysis (TIA) is specifically for SIP No. 2 of this redevelopment proposal, as it falls within the broader framework of the Hilldale General Development Plan (GDP), approved by the planning commission in January 2005. This TIA acknowledges the anticipated changes in traffic from the Hilldale Phase I redevelopment and treats them as an existing condition. This TIA also acknowledges internal circulation between the Humana redevelopment and the Hilldale Shopping Center. Other than these considerations, this traffic



**Figure 1.01-2 Redevelopment Concepts**

impact study is for Phase II, separate and distinct from the Hilldale Phase I, and is evaluated as a separate development. Traffic impacts associated with Phase III have also been included to allow comprehensive recommendations for transportation improvements.

## 1.02 EXECUTIVE SUMMARY

### A. Transportation Demand Management

Transportation Demand Management (TDM) is a general term for strategies that result in more efficient use of transportation resources. TDM emphasizes the movement of people and goods, rather than motor vehicles, by giving priority to nonmotorized travel, ridesharing, and public transit. It also considers substitutes for viable travel options to reduce congestion.

A number of TDM measures have already been implemented through the development of the Phase II and Phase III site plans including:

- Mixed use development that encourages linked trips.
- Higher density development that provides clustered activities and increases transit service efficiency.
- Specific accommodations designed to encourage bicycle, pedestrian, and transit modes of travel.

In addition to these TDM strategies already integrated with the current Phase II and III proposals, we recommend consideration of the following:

- Encourage employers to consider opportunities for telework and flextime policies.
- Encourage formation of a Transportation Management Association among property owners to promote TDM strategies for residents and employees.

### B. Road Users within the Project Area

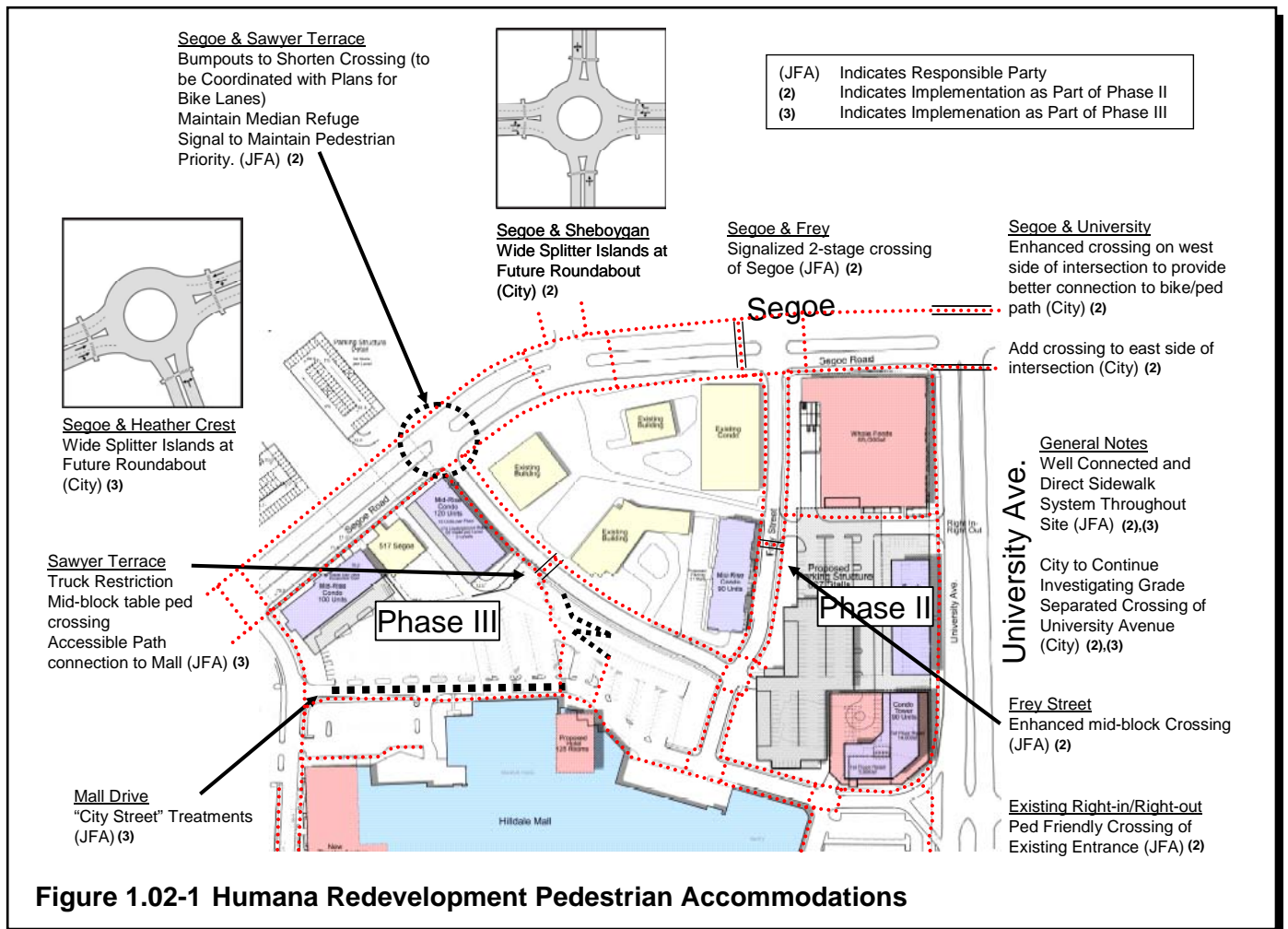
The neighborhood surrounding the Hilldale Mall is diverse. Sixty percent of Madison's elderly population lives within three miles of the Mall. There is also a large amount of commercial, retail, office, medium density multifamily, and low-density single-family land use in the area. The redevelopment of Hilldale to provide added retail, commercial, and residential land use to the Mall site continues the trend of mixed uses. One of the advantages of mixed land use is that it can provide people with an alternative to driving when making a trip. Encouraging alternate modes such as walking, cycling, or using transit services can reduce long-term congestion and have a positive effect on a community's livability and overall health.

Sometimes improvements made for one mode of travel, such as added turn lanes at an intersection to improve motor vehicle operations, have a negative impact on another mode by lengthening the crossing distance for pedestrians. The study team has worked closely with City of Madison Traffic Engineering staff to develop improvement recommendations to balance the needs of pedestrian, bicycle, and motor vehicle road users.

C. Recommended Improvements

1. Pedestrian Accommodations

Figure 1.02-1 shows the recommended improvements to accommodate pedestrian traffic, followed in parentheses by the party responsible for implementation/construction.



**Figure 1.02-1 Humana Redevelopment Pedestrian Accommodations**

Internal to the Phase II and Phase III sites, we recommend the following:

- Well connected and direct sidewalk system with marked crosswalks at intersections (Joseph Freed and Associates responsibility (JFA)).
- Enhanced mid-block crossing on Frey Street, east of Whole Foods entrance (JFA).
- Improved pedestrian crossing of existing Mall right-in/right-out on University Avenue (JFA).

- Truck restriction on Sawyer Terrace (JFA and City of Madison (City)).
- Mid-block pedestrian table crossing at existing stair access to/from mall (JFA).
- Improve accessibility of stair access to/from mall and provide alternative access via accessible ramp (JFA).
- “City Street” type improvements along Mall Road to reduce pedestrian-motor vehicle conflicts (JFA).

External to the Phase II and III sites, we recommend the following:

- City of Madison to continue investigating feasibility/location of grade separated crossing of University Avenue (City).
- Add marked crosswalk on the east side of the intersection of University Avenue and Segoe Road and modify existing signal to accommodate this crossing (City).
- Enhance existing crossing on the west side of the intersection of University Avenue and Segoe Road to provide a better link for pedestrians and bicyclists to the Blackhawk Path north of University Avenue (City).
- Signalized, actuated, two-stage pedestrian crossing at the intersection of Segoe Road and Frey Street (JFA).
- Construct modern roundabout at the intersection of Segoe Road and Sheboygan Avenue<sup>1</sup> with wide splitter islands to provide two-stage pedestrian crossings (City).
- Construct bumpouts at the intersection of Segoe Road and Sawyer Terrace, to be coordinated with City plans for the addition of Bike Lanes on Segoe Road, to shorten the pedestrian crossing distance on Segoe Road (JFA).
- Maintain median refuge on crossings and pedestrian priority at the existing signal at the intersection of Segoe Road and Sawyer Terrace (City).
- Construct modern roundabout at the intersection of Segoe Road and Heather Crest<sup>2</sup> with wide splitter islands to provide two-stage pedestrian crossings (City).

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<sup>1</sup> Recommendation per City staff. A neighborhood educational campaign is recommended to familiarize local residents with roundabout operations for all road users. Construction of the roundabout is expected to require purchase of right-of-way in all four quadrants of the intersection. Signalizing the intersection is an alternative to roundabout construction.

<sup>2</sup> Recommendation per City staff, see note above. Stop sign control on Heather Crest is an alternative to roundabout construction.

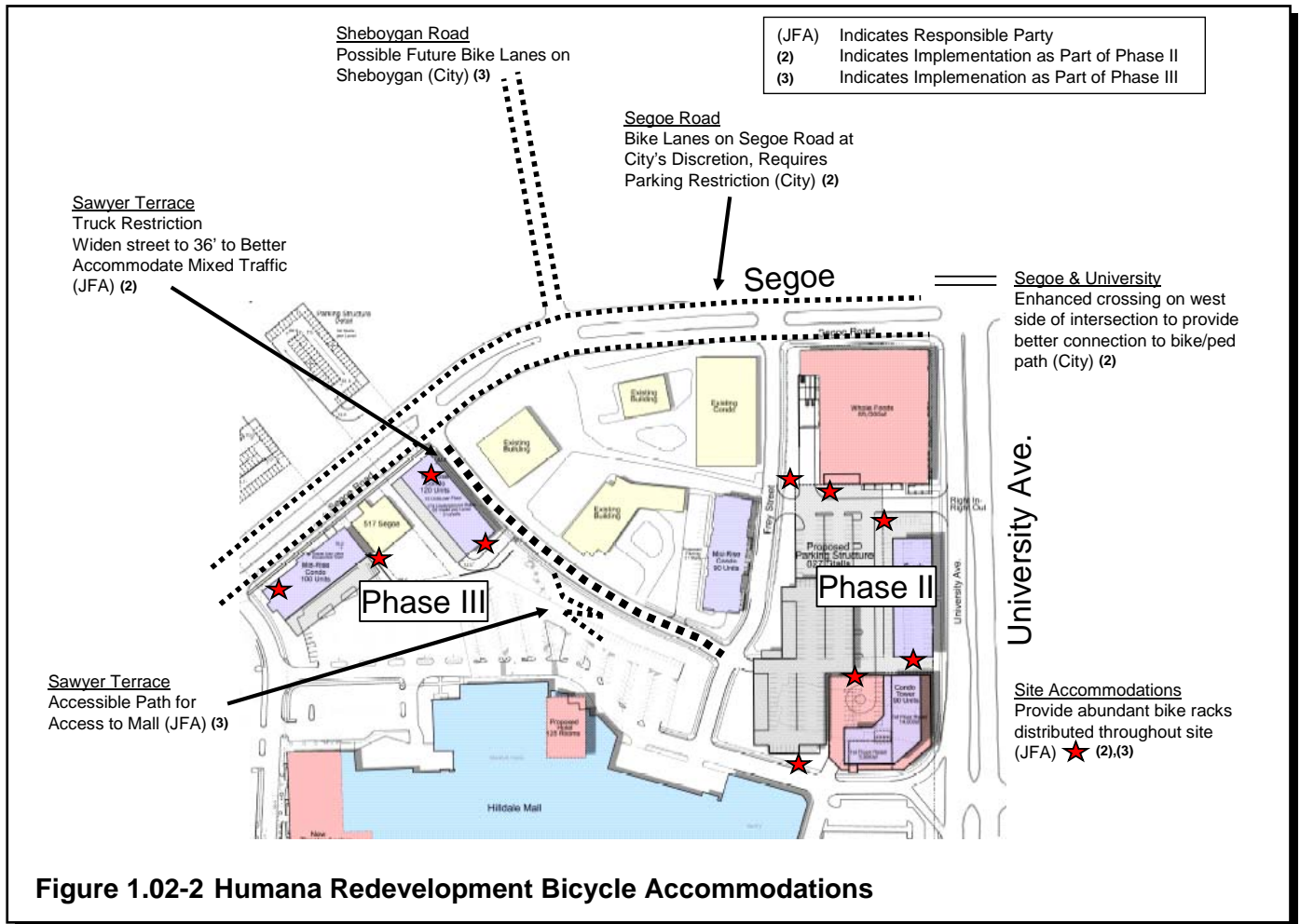
With the possible implementation of multilane roundabouts along Segoe Road the issue of pedestrian safety and roundabouts was considered. While roundabouts are sometimes perceived as less safe for pedestrians than signals, the installation of a roundabout generally improves pedestrian safety compared to a signalized intersection. Splitter islands on the roundabout approaches offer pedestrians the opportunity to make staged crossings. This means pedestrians only cross one direction of traffic at a time. Curb ramps are generally provided about 20 feet from the entrance yield line, encouraging pedestrians to cross to the rear of the first car waiting to enter the roundabout. This reduces the risk of a pedestrian not being seen by a driver that is focused on finding a gap in the circulating roadway.

Research underway by the Safe Community Coalition indicates that Madison drivers rarely yield to pedestrians in the roadway at uncontrolled crossings, even though pedestrians by law have the right-of-way. Efforts underway to educate drivers and enforce the law need to continue to improve driver compliance.



2. Bicycle Accommodations

Figure 1.02-2 shows the recommended improvements to accommodate bicycle traffic, followed in parentheses by the party responsible for implementation/construction.



**Figure 1.02-2 Humana Redevelopment Bicycle Accommodations**

Internal to the Phase II and Phase III sites, we recommend the following:

- Provide abundant bike racks distributed throughout the site (JFA).
- Restrict trucks on Sawyer Terrace (JFA and City).
- Widen Sawyer Terrace from 32 feet (face of curb to face of curb) to 36 feet to better accommodate mixed traffic (JFA).
- Provide accessible ramp from Sawyer Terrace to Mall (JFA)

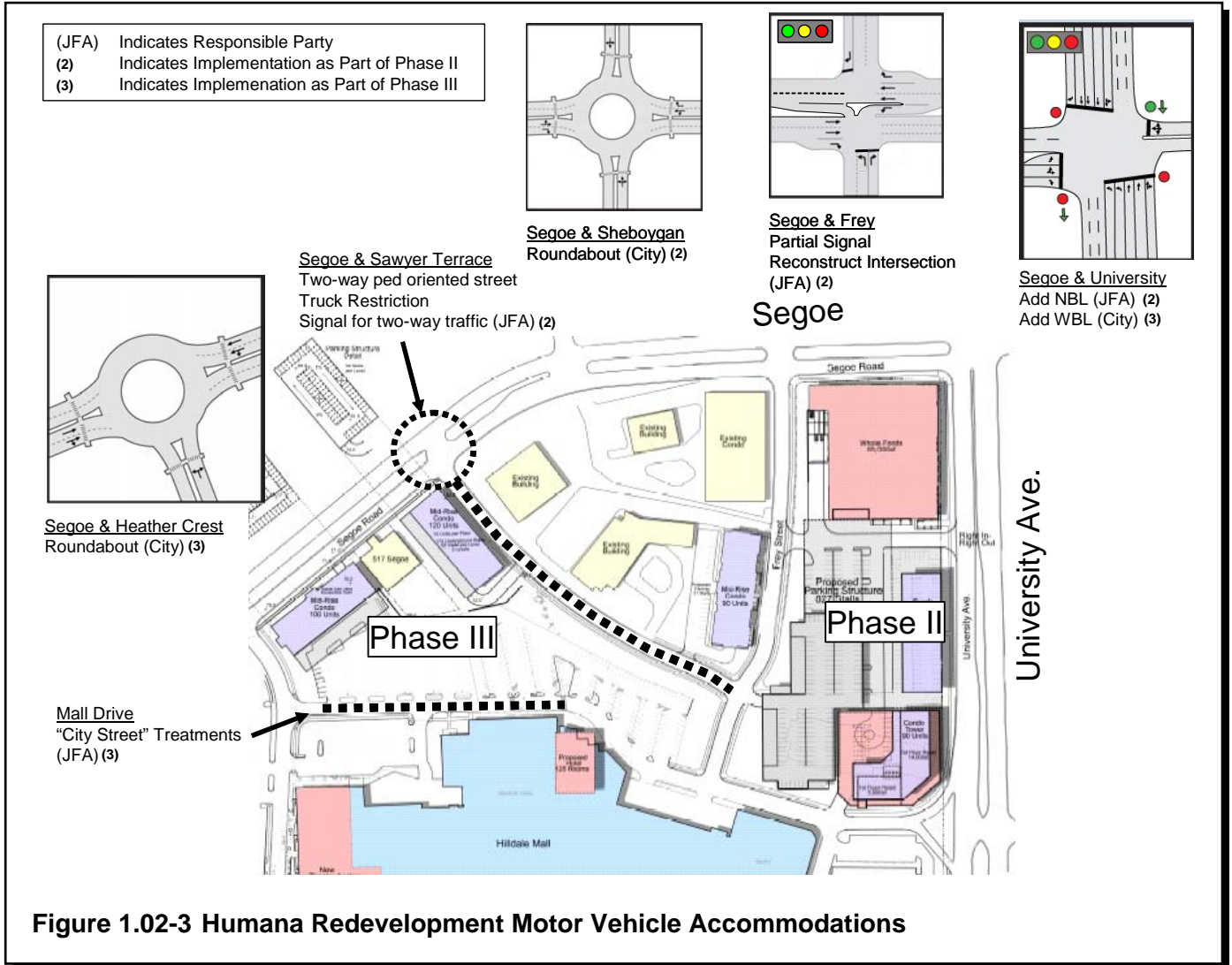
External to the Phase II and Phase III sites, we recommend the following:

- Enhance existing crossing on the west side of the intersection of University Avenue and Segoe Road to provide a better link for pedestrians and bicyclists to the Blackhawk Path north of University Avenue (City).
- Consider bike lanes on Segoe Road (requires parking restriction) (City).
- Consider bike lanes on Sheboygan Avenue (City).

The Hilldale Mall Phase I redevelopment provided additional bicycle connections to and through the mall area. The development constructed a new bicycle lane along realigned Heather Crest from Segoe Road to Midvale Boulevard. Phase I also provided a large amount of distributed bicycle parking, in excess of that required by City of Madison standards. Phases II and III build on these new facilities to continue increased encouragement of bicycle travel.

3. Motor Vehicle Accommodations

Figure 1.02-3 shows the recommended improvements to accommodate motor vehicle traffic, followed in parentheses by the party responsible for implementation/construction.



**Figure 1.02-3 Humana Redevelopment Motor Vehicle Accommodations**

Internal to the Phase II and Phase III sites, we recommend the following:

- Convert Sawyer Terrace to a two-way, pedestrian oriented street including modification of the existing signal at the intersection of Segoe Road and Sawyer Terrace (JFA).
- "City Street" type improvements along Mall Road creating a more open and connected street system to encourage Phase II and III vehicle traffic to use Mall Road in addition to Sawyer Terrace and Frey Street (JFA).

External to the Phase II and Phase III sites, we recommend the following:

- Add a northbound left-turn bay at the intersection of University Avenue and Segoe Road, which will provide a total of two, and modify signal equipment and settings (JFA).
- Add a westbound left-turn bay on University Avenue at Segoe Road, which will provide a total of two, and modify signal equipment and settings (City).
- Construct a “partial” signal at the intersection of Segoe Road and Frey Street to minimize delay and queuing for southbound Segoe Road traffic (JFA).
- Construct a modern roundabout at the intersection of Segoe Road and Sheboygan Avenue<sup>3</sup> (City).
- Construct a modern roundabout at the intersection of Segoe Road and Heather Crest<sup>4</sup> (City).
- “City Street” type improvements along Mall Road creating a more open and connected street system to encourage Phase II and III vehicle traffic to use Mall Road in addition to Sawyer Terrace and Frey Street (JFA).

Redevelopment of the Humana site and adjacent retail properties (Phases II and III) will result in the addition of about 960 vehicle trips during the evening peak hour. Both phases of the redevelopment are anticipated to be completed by 2015. The majority of these new trips will enter and exit the site via University Avenue. It has been estimated that about 20 percent of the development trips will use Sheboygan Avenue to/from the west and Segoe Road to/from the south to access the site.

For the purpose of this report, the background annual traffic growth rate of the adjacent streets has been assumed to be 1 percent (supported by historic traffic data). Additionally, a 15 percent reduction has been applied to the forecasted trips generated by the development to account for alternative modes of travel. This value is supported by mode split data provided by the Madison Area Metropolitan Planning Organization that indicates a high proportion of residents adjacent to Hilldale choose to carpool, bike, walk, or use transit to and from work.

It is important to note that background traffic increases from 2006 to 2015 because of continued development and redevelopment in the greater Madison area and in western Dane County will be greater than the traffic generated by Phases II and III. For example, during the PM peak

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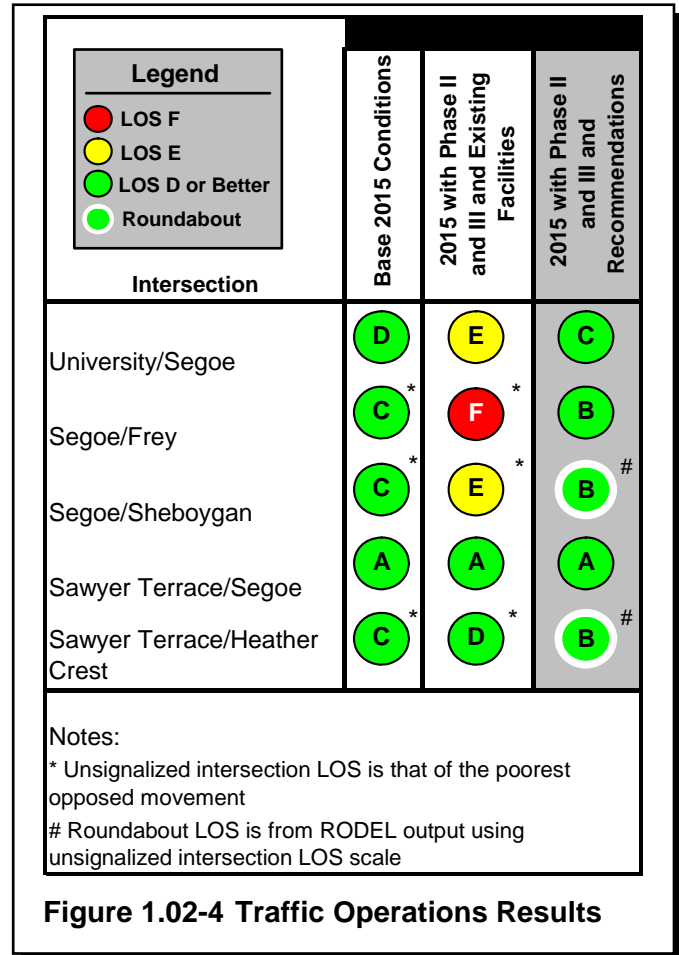
<sup>3</sup> Recommendation per City staff. A neighborhood educational campaign is recommended to familiarize local residents with roundabout operations for all road users. Construction of the roundabout is expected to require purchase of right-of-way in all four quadrants of the intersection. Signalizing the intersection is an alternative to roundabout construction.

<sup>4</sup> Recommendation per City staff, see note above. Stop sign control on Heather Crest is an alternative to roundabout construction.

hour in 2015 at the University Avenue and Segoe Road intersection, Phase II and III traffic contributes 460 vehicles while background growth alone from 2006 to 2015 adds 510 vehicles.

Figure 1.02-4 shows the results of traffic operations modeling at the key study area intersections.

This traffic study focuses on the intersection of University Avenue and Segoe Road and the Segoe Road corridor south of University Avenue. The intersection of University Avenue and Midvale Boulevard is also expected to be impacted by the proposed development, but not significantly so. In 2015 without the development, the intersection operates at LOS E overall with four movements operating at LOS F. Phase II and III traffic is expected to add about 280 vehicles to the intersection during the PM peak hour, an increase of about 4 percent. If the cycle length is extended the 2015 operations can remain at LOS E overall with four movements operating at LOS F.



With or without the proposed redevelopment, traffic growth will cause the Midvale Boulevard/University Avenue intersection to operate at LOS F during the PM peak hour in the near future if no changes are made. Queues today often reach upstream intersections, exacerbating congestion during the heaviest traffic periods.

It is expected that traffic increases, whether because of nearby redevelopment such as the Humana Site Redevelopment or continued land use changes and population growth throughout the region, will require significant public investment in the transportation systems of the greater Madison area, including the University Avenue corridor. Social and environmental impacts as well as the construction costs associated with accommodating the future traffic solely through traditional vehicular capacity expansion may make implementation difficult.

With or without traditional vehicular capacity expansion, further promotion and expansion of alternate modes of travel are recommended. Sheboygan Avenue and University Avenue are major routes for the Madison Metro bus system. Since this area provides excellent access to a

number of bus routes serving the surrounding areas, it will provide an ideal location for expansion of bus services if economically prudent. As traffic congestion increases, however, the need for improved transit service will become more apparent. Providing dedicated facilities, such as commuter express bus service or commuter rail service along existing rail corridors, will allow fast, direct, and reliable travel via transit providing a year-round alternative to driving that would likely see increased ridership as traffic congestion worsens.

In 2002 the Madison City Counsel endorsed the construction of a start-up commuter rail system in response to the Transport 2020 Alternatives Analysis that was completed for the Madison metropolitan area. The implementation of this rail system could increase accessibility to the site and decrease traffic congestion levels. Additional analysis is required to better understand the benefits versus costs of this or any large scale transit investment.

**SECTION 2**  
**DEVELOPMENT DESCRIPTION**

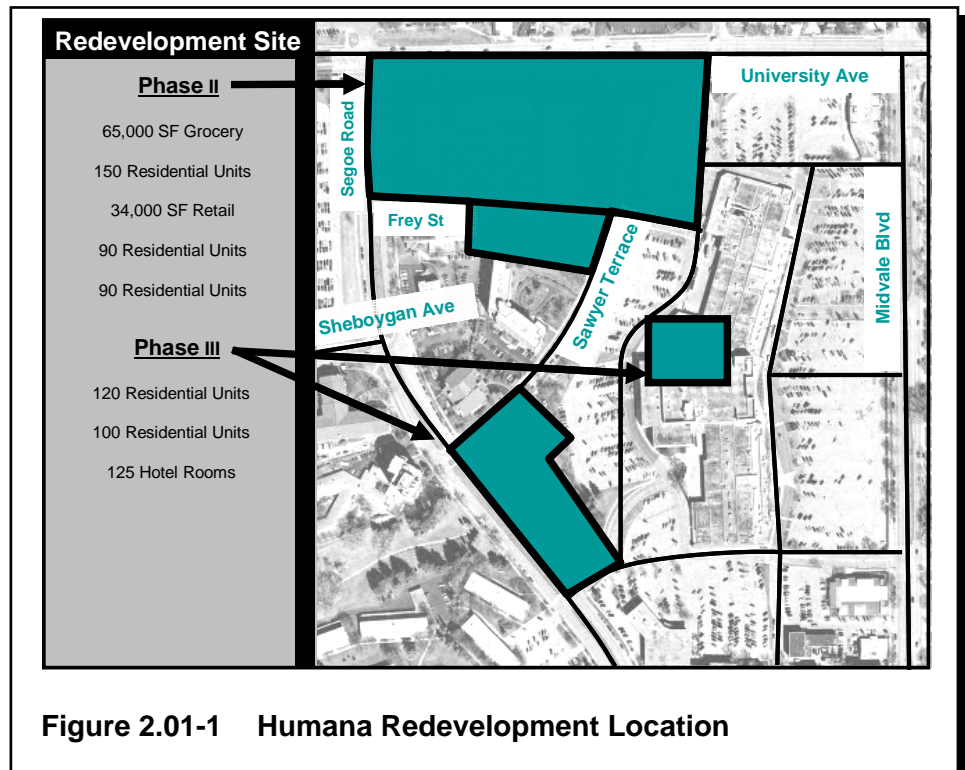
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**2.01 DEVELOPMENT DESCRIPTION**

JFA is proposing to redevelop the Humana campus and adjacent retail uses in the northwest portion of the Hilldale Mall in Madison, Wisconsin. This redevelopment, SIP No. 2, is separate and distinct from the Hilldale Mall SIP No. 1 (Phase I) redevelopment and consists of construction Phase II. Phase III of the Hilldale redevelopment has also been evaluated in this study. Construction of Phase II and Phase III is planned to take place by 2015.

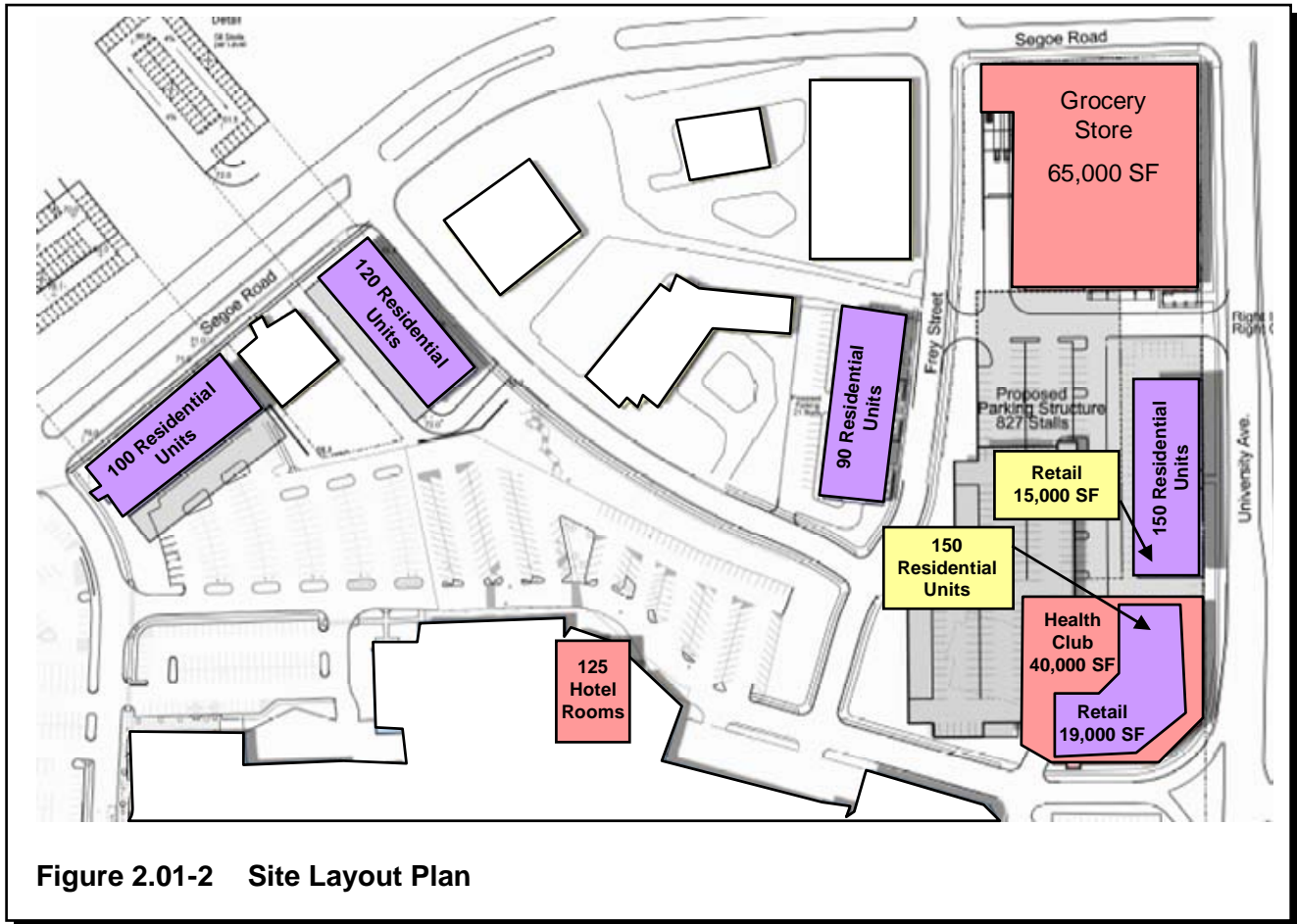
The redevelopment area for Phase II is bounded by University Avenue to the north, Segoe Road on the west, and the Hilldale Mall on the east. Access to the development will primarily be provided from Frey Street, Sawyer Terrace, and an additional right-in/right-out access to University Avenue. There will be no direct access from Segoe Road. The redeveloped area includes the former Humana Office Campus, a Chinese banquet hall and restaurant, and a 750-seat movie theater located just west of the Hilldale Mall. The redevelopment will provide approximately 99,000 square feet of new retail development and a 40,000-square-foot health club. It will also provide 330 residential units along Frey Street and University Avenue. The proposed retail land uses consist of a 65,000-square-foot grocery store and 34,000-square-foot retailer. Parking to serve both buildings of the development will be located within the SIP Area.

The redevelopment area for Phase III is bounded by Sawyer Terrace to the north, Segoe Road on the west, and Hilldale Mall to the east. Access to the development will be provided from Sawyer Terrace. This phase of the redevelopment will provide 220 residential units and 125 hotel rooms. Figure 2.01-1 schematically displays the Phase II and Phase III redevelopment and the proposed land uses and Figure 2.01-2 provides a more detailed site layout.



**Figure 2.01-1 Humana Redevelopment Location**





**SECTION 3**  
**BIKE, PEDESTRIAN, AND TRANSIT**

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### 3.01 GENERAL

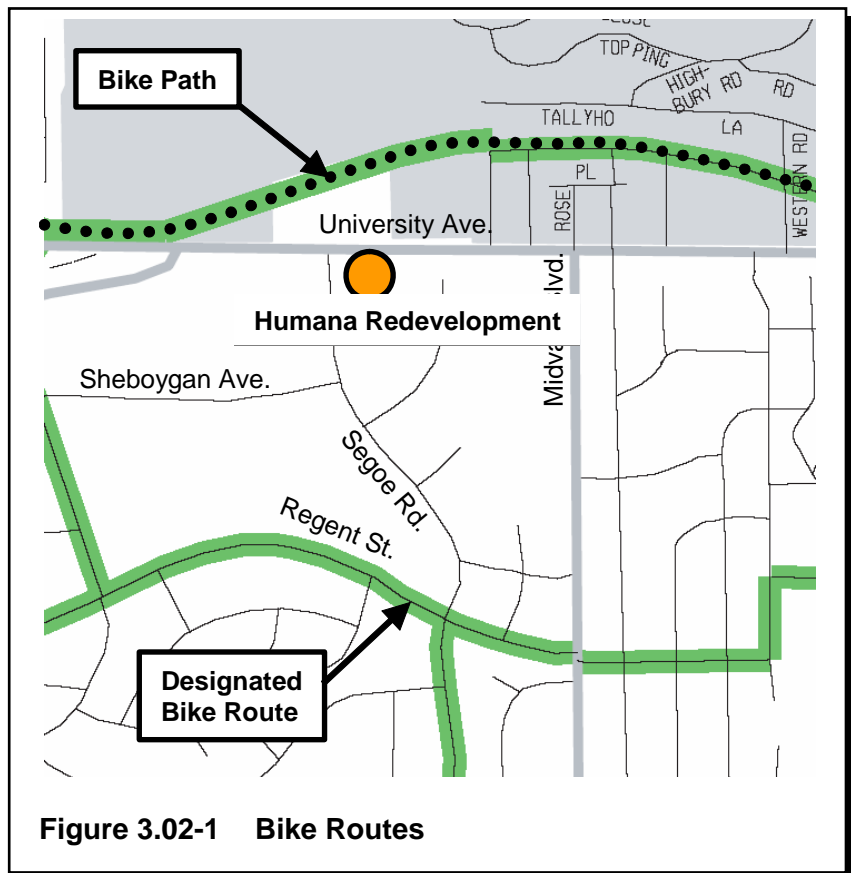
The Hilldale Mall SIP No. 1 Redevelopment TIA provided a detailed look at pedestrian, bicycle, and transit connections with the surrounding neighborhoods. The Humana Redevelopment SIP No. 2 differs from the Hilldale Mall SIP No. 1 in that it is oriented to University Avenue, Segoe Road, and Sheboygan Avenue. The following summarizes some of the accommodations and needs that surround the Humana Redevelopment site.

### 3.02 EXISTING BIKE CONNECTIONS

The Hilldale Mall SIP No. 1 provided additional bicycle connections to and through the mall area. The development constructed a new bicycle lane along realigned Hether Crest Road from Segoe Road to Midvale Boulevard. The SIP No. 1 plan also provided a large amount of distributed bicycle parking, in excess of that required by City of Madison standards.

Figure 3.02-1 shows the designated bike routes adjacent to the study area. These routes are connected to an overall system that serves the majority of the City of Madison and the metropolitan area. There are some longer range plans to provide bike lanes on University Avenue and to provide a grade-separated pedestrian/bike crossing of University Avenue west of Midvale Boulevard.

These existing connections currently provide reasonable access to both the Humana Redevelopment Site and Hilldale Mall. University Avenue represents a barrier that is difficult for bicyclists and pedestrians to cross. Additionally, traffic on Segoe Road can be heavy, making it difficult to cross at the Sheboygan Avenue intersection.



Phases II and III of the Hilldale redevelopment will not impact any of the existing designated bike routes as they are adjacent to the study area.

Specific recommendations for bicycle accommodations are included in Section 3.06.

### 3.03 EXISTING PEDESTRIAN ACCOMMODATIONS

Figure 3.03-1 shows the existing sidewalk network encompassing the study area. There are no major gaps in this network; however, there are minor ones. A major gap can be a location where the lack of sidewalk forces a pedestrian to walk on or cross a street with high traffic volume or high traffic speed. A minor gap is any portion of a street where the addition of sidewalk may be desirable but is not necessary to provide reasonably safe access.

Currently, pedestrian connections between the Phase II site and the adjacent Chinese Banquet Hall and Theater are lacking except for Frey Street. This is primarily due to the challenging topography between the land uses. The

redeveloped area will provide pedestrian connections between all proposed land uses. Existing pedestrian connections between the Phase III residential sites and Hilldale Mall are limited, while connection to the Phase III site along Sawyer Terrace is reasonable.

As mentioned, sometimes it is difficult to cross Segoe Road. To accommodate pedestrians, the City of Madison installed a pedestrian actuated signal at Sawyer Terrace. However, to accommodate the high volume of traffic on Segoe Road and the pedestrian demand at Sheboygan Avenue, it is recommend that improvements to traffic control be made at the intersection of Sheboygan Avenue and Segoe Road. This intersection links a major government office complex with Hilldale Mall and will provide more pedestrian benefit than the signal at Sawyer Terrace. Prior to completion of Phase II, the Sheboygan Avenue intersection should be reconstructed as a roundabout or a signalized intersection<sup>1</sup>. Additionally, Sawyer Terrace should be converted to accommodate two-way traffic.

With the possible implementation of multi-lane roundabouts along Segoe Road the issue of pedestrian safety and roundabouts was addressed. Generally the installation of a roundabout improves pedestrian safety at an unsignalized intersection. Splitter islands on the roundabout approaches offer pedestrians

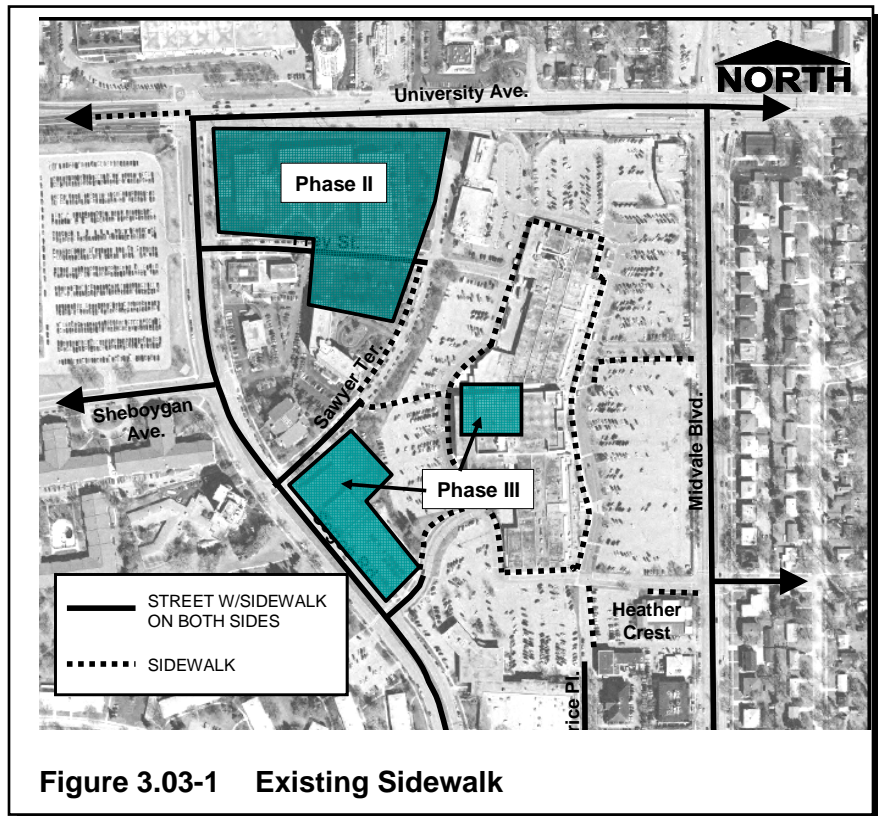


Figure 3.03-1 Existing Sidewalk

<sup>1</sup> At the time of this report, representatives from the City of Madison Traffic Engineering Department have indicated that their preference is to construct a roundabout intersection.

the opportunity to make staged crossings. Additionally, a median or pedestrian refuge can offer pedestrians similar opportunities for staged crossings. Curb ramps are generally provided about 20 feet from the entrance holding line, encouraging pedestrians to cross to the rear of the first car waiting to enter the roundabout. This distance reduces the risk of the pedestrian not being seen by a driver focused on finding a gap in the traffic.

Specific recommendations for pedestrian accommodations are included in Section 3.06.

### 3.04 EXISTING TRANSIT CONNECTIONS

Figure 3.04-1 shows the existing Madison Metro bus routes adjacent to the study area. Sheboygan Avenue and University Avenue are major routes for buses and currently serve fourteen routes during the evening peak hour. This high number of routes provides excellent access to the Madison Metro bus system through the bus stops along University Avenue adjacent to the study area. Because of the high number of routes present on University Avenue, about 25 buses make stops during the evening peak hour. Overall, the study area has excellent access to several bus routes providing an ideal location to take advantage of alternative modes of transportation.

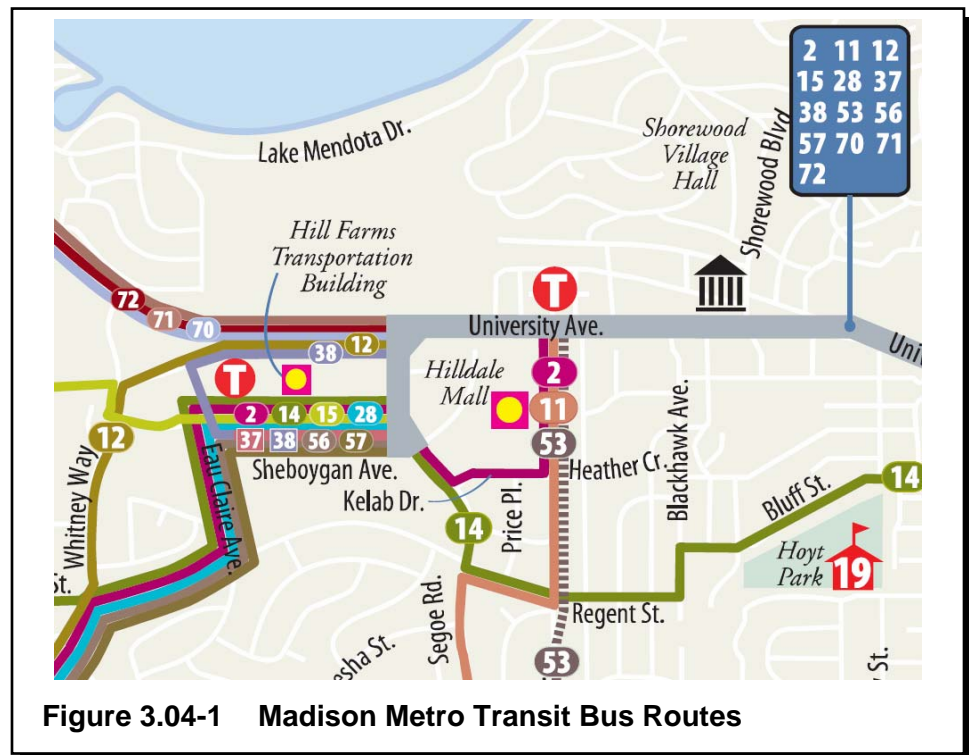


Figure 3.04-1 Madison Metro Transit Bus Routes

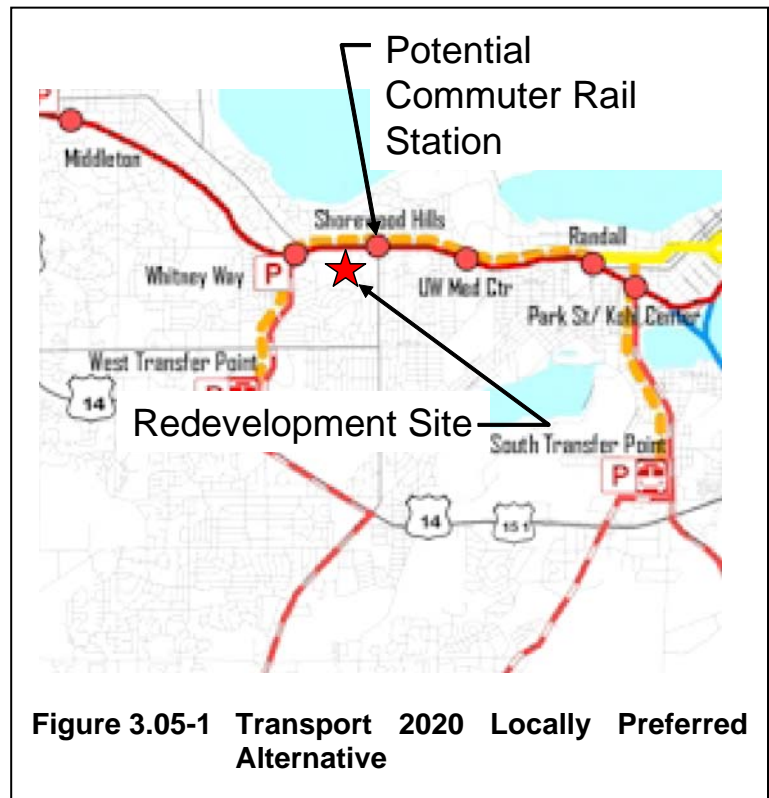
The following bus routes serve the area:

- Route 2—Provides weekday peak, off-peak, weekend, and holiday service between the North Transfer Point (NTP) and the West Transfer Point (WTP) including service to the UW Hospital and Capitol Square.
- Route 11—Provides weekday peak-period service between the WTP and the Dutch Mill Park and Ride near Stoughton Road and the Beltline including service to the UW Hospital, the UW Campus, and the Capitol Square.

- Route 12–Provides weekday peak-period service between the WTP and the Dutch Mill Parks and Ride including service to the Capitol Square.
- Route 14–Provides weekday peak and off-peak service between Memorial High School and the East Transfer Point (ETP) including service to the Capitol Square and the Far East Side.
- Route 15–Provides weekday peak and off-peak service between the Far West Side and the ETP including service to the Capitol Square and the Far East Side.
- Route 28–Provides weekday peak-period service between the WTP and the NTP including service to the UW Hospital and the UW Campus.
- Route 37–Provides weekday peak and off-peak service between the Hill Farms office complex and the City of Monona including service to the Capitol Square and the Dean Clinic East on Stoughton Road.
- Route 38–Provides weekday peak-period service between the Hill Farms office complex and the City of Monona including service to the UW Hospital and the UW Campus.
- Route 53–Provides weekday peak-period service between the UW Research Park and the UW Campus with service to the UW Hospital.
- Route 56–Provides weekday peak-period service between the WTP and the NTP including service to the far southwest side and the Capital Square.
- Route 57–Provides weekday peak-period service between the WTP and the NTP including service to the far southwest side and the Capital Square.
- Route 70–Provides weekday peak and off-peak service between Greenway Station in Middleton and the Capitol Square.
- Route 71–Provides weekday peak-period service between Greenway Station in Middleton and the Capitol Square.
- Route 72–Provides weekday peak-period service between the City of Middleton and the Capitol Square.

### 3.05 TRANSPORT 2020 PROPOSED CONNECTIONS

In 2002, a report detailing the findings and conclusions of the initial Transport 2020 Alternatives Analysis was completed. Transport 2020 is the transportation analysis for the Madison metropolitan area and Dane County. The main focus of this study was to examine alternatives in transit or capacity expansion that would help alleviate the increasing congestion on roadways and enhance access throughout Madison and Dane County. As part of this analysis, the construction of a start-up commuter rail system was picked as a preferred alternative and endorsed by the Madison City Council through a resolution on November 5, 2002. This initial line would link Greenway Center in Middleton and East Towne Mall in Madison. The proposed route of this initial commuter rail line would put it adjacent to University Avenue and the study area. As part of this line, a station is proposed in the area adjacent to the study area near the intersection of University Avenue and Midvale Boulevard.



The Transport 2020 committee has selected a consultant to prepare an Environmental Impact Statement (EIS) for the initiative. Stations will be located with this initiative. JFA supports a possible commuter rail transit station nearby and is willing to work with city and county officials in providing connection infrastructure when and if it is needed.

3.06 PROPOSED PEDESTRIAN AND BICYCLE IMPROVEMENTS

A. Pedestrian Accommodations

Figure 3.06-1 shows the recommended improvements to accommodate pedestrian traffic, followed in parentheses by the party responsible for implementation/construction.

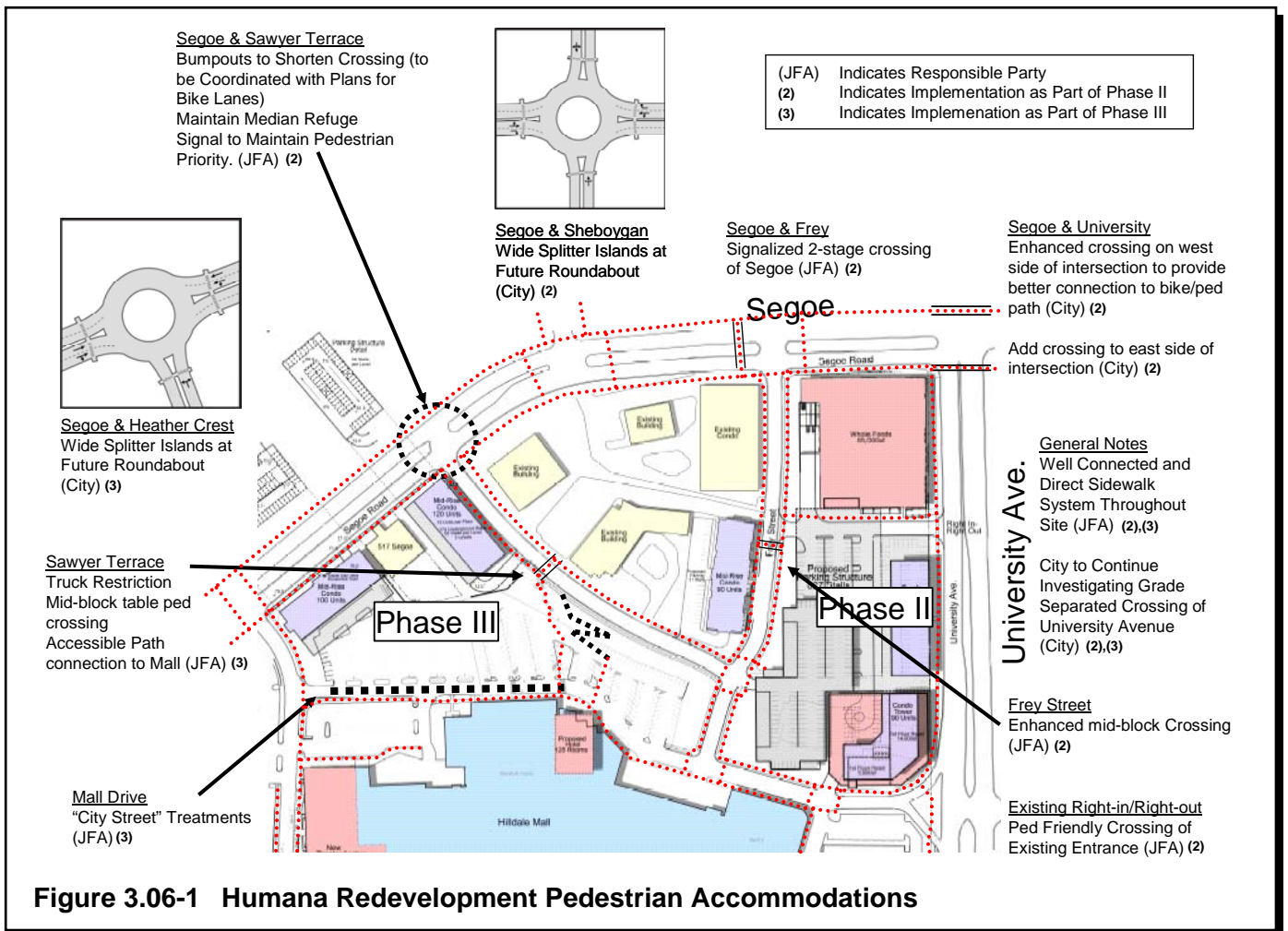


Figure 3.06-1 Humana Redevelopment Pedestrian Accommodations

Internal to the Phase II and Phase III sites, we recommend the following:

- Well connected and direct sidewalk system with marked crosswalks at intersections (JFA).
- Enhanced mid-block crossing on Frey Street, east of Whole Foods entrance (JFA).
- Improved pedestrian crossing of existing Mall right-in/right-out on University Avenue (JFA).
- Truck restriction on Sawyer Terrace (JFA City).



- Mid-block pedestrian table crossing at existing stair access to/from mall (JFA).
- Improve accessibility of stair access to/from mall and provide alternative access via accessible ramp (JFA).
- “City Street”-type improvements along Mall Road to reduce pedestrian-motor vehicle conflicts (JFA).

External to the Phase II and III sites, we recommend the following:

- City of Madison to continue investigating feasibility/location of grade separated crossing of University Avenue (City).
- Add marked crosswalk on the east side of the intersection of University Avenue and Segoe Road and modify existing signal to accommodate this crossing (City).
- Enhance existing crossing on the west side of the intersection of University Avenue and Segoe Road to provide a better link for pedestrians and bicyclists to the Blackhawk Path north of University Avenue (City).
- Signalized, actuated, two-stage pedestrian crossing at the intersection of Segoe Road and Frey Street (JFA).
- Construct modern roundabout at the intersection of Segoe Road and Sheboygan Avenue<sup>2</sup> with wide splitter islands to provide two-stage pedestrian crossings (City).
- Construct bumpouts at the intersection of Segoe Road and Sawyer Terrace (to be coordinated with City plans for the addition of Bike Lanes on Segoe Road) to shorten the pedestrian crossing distance on Segoe Road (JFA).
- Maintain median refuge on crossings and pedestrian priority at the existing signal at the intersection of Segoe Road and Sawyer Terrace (City).
- Construct modern roundabout at the intersection of Segoe Road and Heather Crest<sup>3</sup> with wide splitter islands to provide two-stage pedestrian crossings (City).

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<sup>2</sup> Recommendation per City staff. A neighborhood educational campaign is recommended to familiarize local residents with roundabout operations for all road users. Construction of the roundabout is expected to require purchase of right-of-way in all four quadrants of the intersection. Signalizing the intersection is an alternative to roundabout construction.

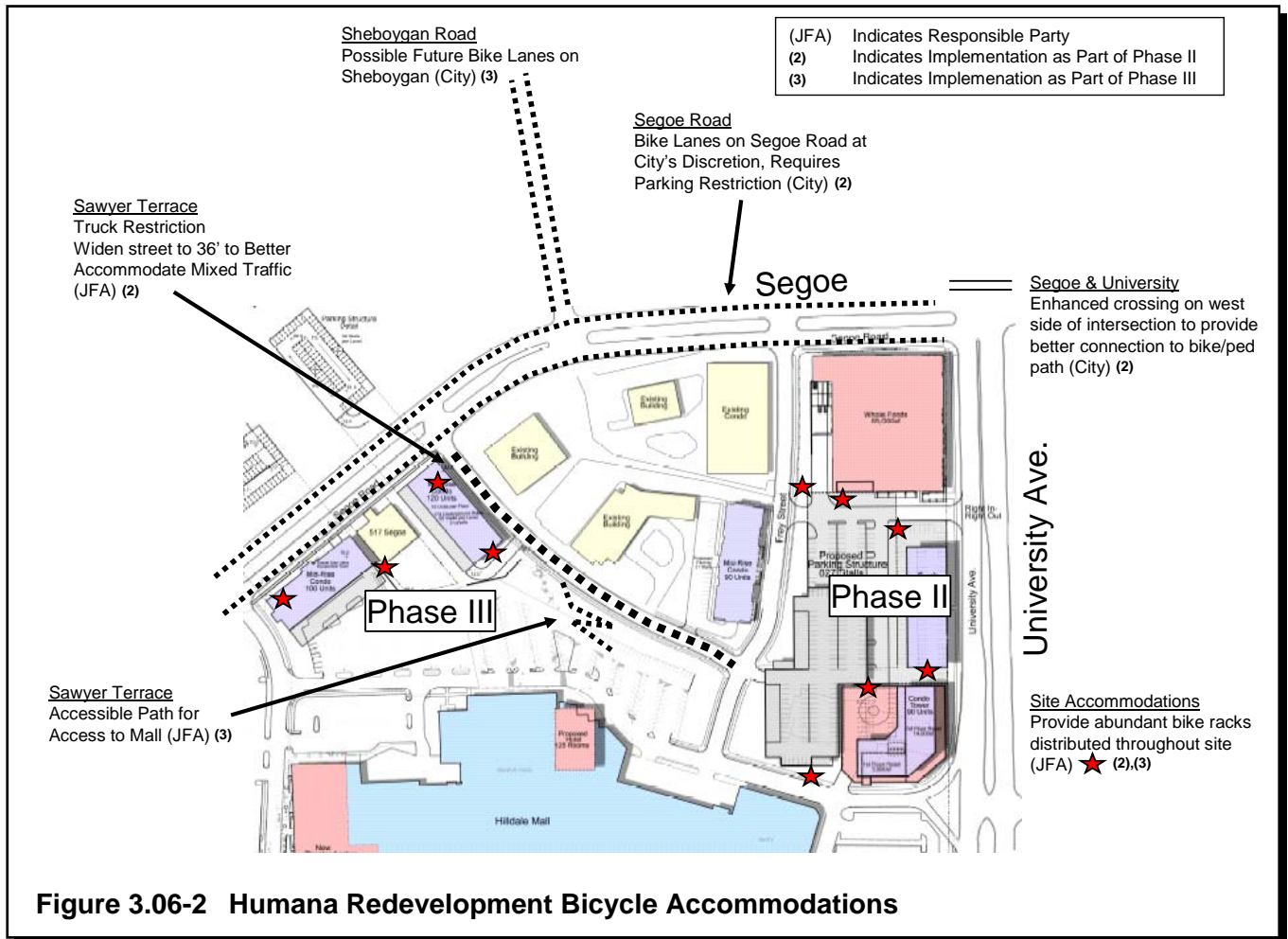
<sup>3</sup> Recommendation per City staff, see note above. Stop sign control on Heather Crest is an alternative to roundabout construction.

With the possible implementation of multilane roundabouts along Segoe Road the issue of pedestrian safety and roundabouts was considered. While roundabouts are sometimes perceived as less safe for pedestrians than signals, the installation of a roundabout generally improves pedestrian safety compared to a signalized intersection. Splitter islands on the roundabout approaches offer pedestrians the opportunity to make staged crossings. This means pedestrians only cross one direction of traffic at a time. Curb ramps are generally provided about 20 feet from the entrance yield line, encouraging pedestrians to cross to the rear of the first car waiting to enter the roundabout. This reduces the risk of a pedestrian not being seen by a driver that is focused on finding a gap in the circulating roadway.

Research underway by the Safe Community Coalition indicates that Madison drivers rarely yield to pedestrians in the roadway at uncontrolled crossings, even though pedestrians by law have the right-of-way. Efforts underway to educate drivers and enforce the law need to continue to improve driver compliance.

B. Bicycle Accommodations

Figure 3.06-2 shows the recommended improvements to accommodate bicycle traffic, followed in parentheses by the party responsible for implementation/construction.



Internal to the Phase II and Phase III sites, we recommend the following:

- Provide abundant bike racks distributed throughout the site (JFA).
- Restrict trucks on Sawyer Terrace (JFA and City).
- Widen Sawyer Terrace from 32 feet (face of curb to face of curb) to 36 feet to better accommodate mixed traffic (JFA).
- Provide accessible ramp from Sawyer Terrace to Mall (JFA).

External to the Phase II and Phase III sites, we recommend the following:

- Enhance existing crossing on the west side of the intersection of University Avenue and Segoe Road to provide a better link for pedestrians and bicyclists to the Blackhawk Path north of University Avenue (City).
- Consider bike lanes on Segoe Road (requires parking restriction) (City).
- Consider bike lanes on Sheboygan Avenue (City).

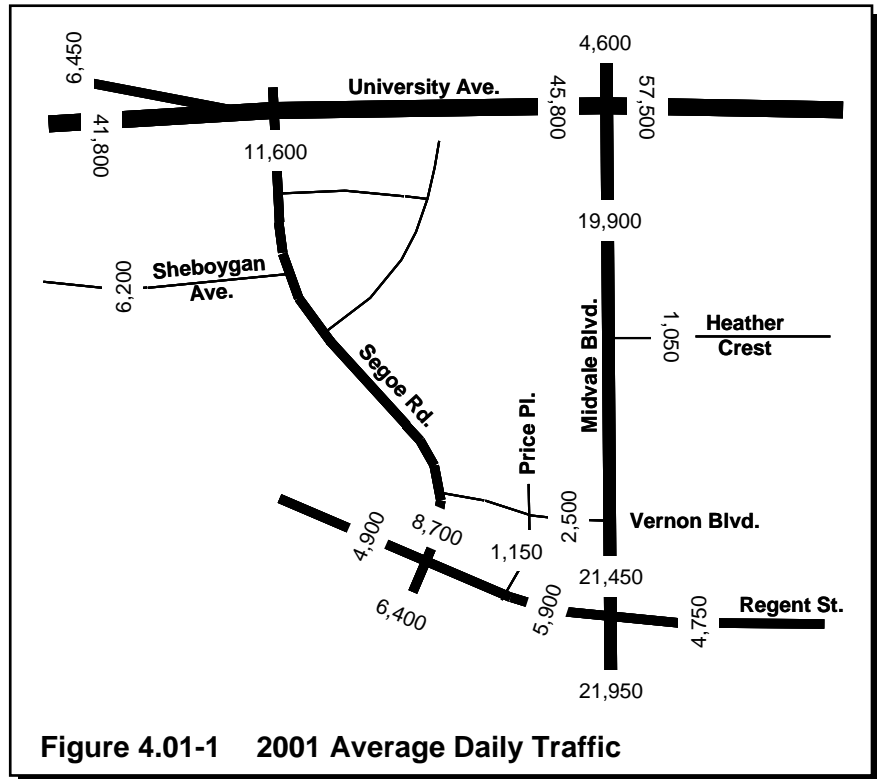
The Hilldale Mall Phase I redevelopment provided additional bicycle connections to and through the mall area. The development constructed a new bicycle lane along realigned Heather Crest from Segoe Road to Midvale Boulevard. Phase I also provided a large amount of distributed bicycle parking, in excess of that required by City of Madison standards. Phases II and III build on these new facilities to continue increased encouragement of bicycle travel.

**SECTION 4**  
**VEHICULAR TRAFFIC**

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**4.01 EXISTING TRAFFIC**

Figure 4.01-1 shows the 2001 average daily traffic on the study area roadways obtained from the Wisconsin Department of Transportation Highway Traffic Volume Data book. The figure shows the sections of University Avenue, Midvale Boulevard, Segoe Road, and Regent Street that serve the study area. University Avenue from Midvale Boulevard to Segoe Road is a six-lane urban roadway that carries up to 45,800 vehicles per day (vpd). Midvale Boulevard from University Avenue to Regent Street is a four-lane urban roadway that carries up to 21,450 vpd. Segoe Road is also a four-lane urban roadway from Regent Street to University Avenue that carries up to 11,600 vpd. The University Avenue/Midvale Boulevard intersection serves more vehicles during the evening peak hour than any other intersection in the study area.

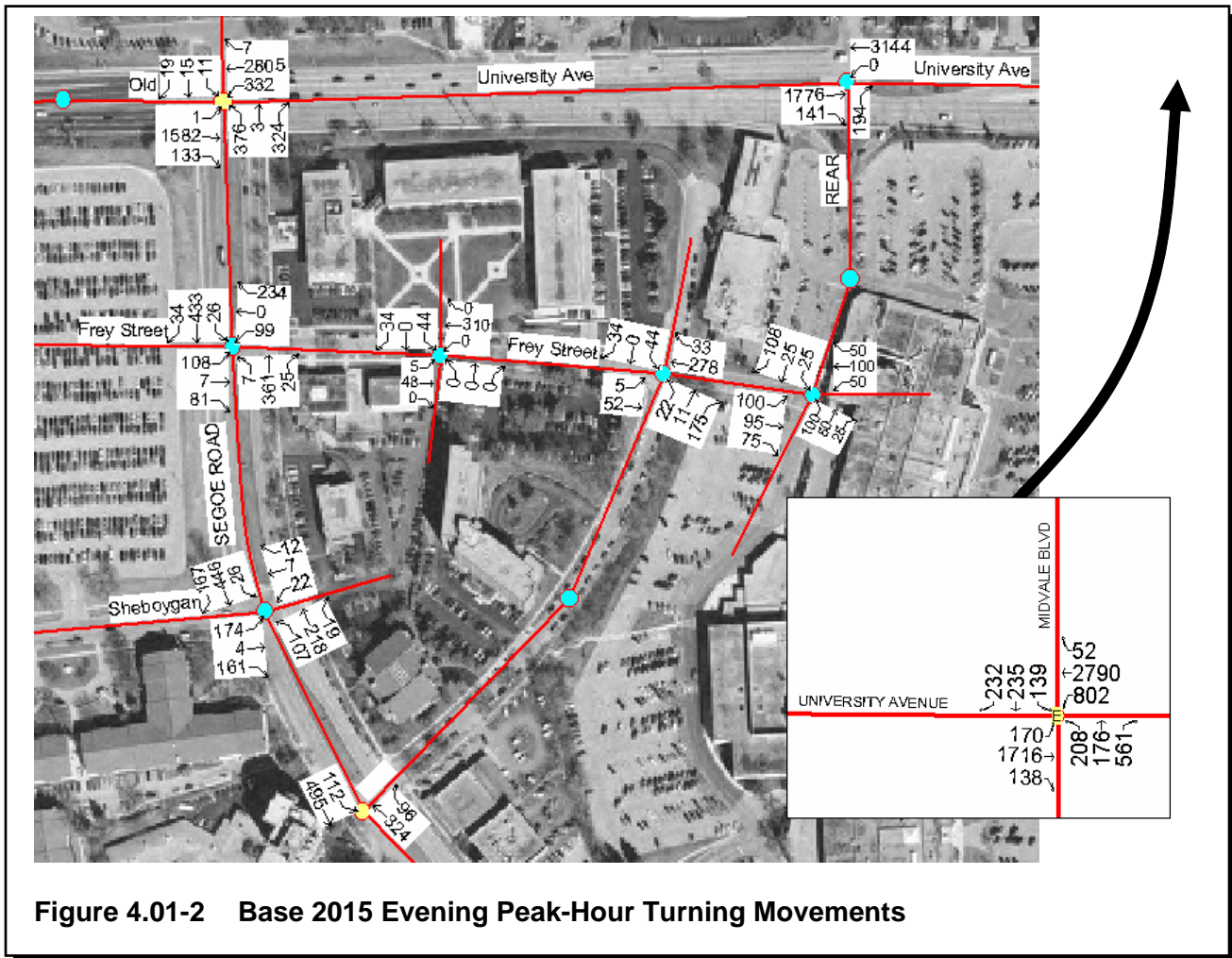


**Figure 4.01-1 2001 Average Daily Traffic**

The University Avenue/Midvale Boulevard intersection serves more vehicles during the evening peak hour than any other intersection in the study area.

Because the proposed Phase II development is significantly retail-oriented, the evening peak hour is the controlling traffic period. The study team performed evening peak-hour turning-movement counts in September 2004 for key intersections in the Hilldale Mall SIP No. 1 study area, which included the intersections of University Avenue with Segoe Road, the right-in/right-out mall access, and Midvale Boulevard. Also included were certain intersections along Midvale Boulevard, Segoe Road, and Regent Street. These counts were used in conjunction with the new trips generated by the Hilldale SIP No. 1 redevelopment to obtain the baseline traffic with the Hilldale Phase I redevelopment. These traffic projections determined in the Hilldale SIP No. 1 TIA were used as the base traffic condition for the Humana Phase II and III redevelopment. For the purpose of this report, the background annual traffic growth rate of the adjacent streets has been assumed to be 1 percent, which is supported by historic traffic data.

The projected evening peak-hour turning movements from the Hilldale SIP No. 1 TIA are shown in Figure 4.01-2.



The University Avenue/Segoe Road intersection carries over 5,000 vehicles during the evening peak hour. Very high movements for the intersection include the left-turning movement onto Segoe Road from westbound University Avenue and the through movement on westbound University Avenue. These two movements account for almost 60 percent of the total intersection volume.

## 4.02 TRIP GENERATION

### A. Phase II Redevelopment (SIP No. 2)

The additional traffic generated by Phase II of the Humana Redevelopment was projected with the aid of *The Institute of Transportation Engineers (ITE) Trip Generation*, 6th Edition. The ITE manual provides a range of trip generation rates observed for different land use types. The PM peak-hour trip generation rates were used since the evening rush was the controlling analysis period. The Humana Redevelopment traffic models were assembled with the Hilldale Mall SIP No. 1 traffic projections as the base condition. As part of the SIP No. 1 traffic study, the existing traffic counts were compared to the ITE trip generation tables for the existing land uses to assess the accuracy of the projections and calibrate the traffic model.

Phase II involves the addition of new land uses as well as the redevelopment of some land uses that were included in the SIP No. 1 traffic model. The new development consists of condominium units, a grocery store, a health club, and other specialty retail shops. The Chinese restaurant and theater will be redeveloped into retail shops as part of this project. The loss of trips generated by the restaurant and theater was taken into account when determining the net trips generated by Phase II.

The ITE trip generation manual lists an average trip generation rate of 10.9 trips per 1,000 square feet of gross floor area (GFA) for a restaurant such as the existing one. The data compiled by the manual has a standard deviation of 9.4 trips, which indicates that the trip generation of restaurants varies greatly depending on the specific site. The data further suggests that restaurants with larger square footages, such as this Chinese restaurant, may generate fewer trips per 1,000 square feet. Since the restaurant is probably not generating the average trip generation rate of 10.9, a trip generation rate of 5 trips per 1,000 GFA was used to provide a realistic traffic volume for this establishment. This rate would estimate the evening peak-hour trips as 143 with about 87 entering and 56 exiting the restaurant. The lower trip rate for the restaurant will provide a conservative review of traffic impacts, since the total generation for new land uses is reduced by the restaurant and theater trips to determine the net trip increase.

The new trips generated by Phase II were reduced by the number of trips eliminated by the redevelopment of the restaurant and theater. Additionally, a 15 percent reduction has been applied to the forecasted trips generated by the development to account for alternative modes of travel. This value is supported by mode split data provided by the Madison Area Metropolitan Planning Organization that indicates a high proportion of residents adjacent to Hilldale choose to carpool, bike, walk, or use transit to and from work.

Since the Humana office buildings were not occupied when the traffic counts were performed, no trip reduction was performed for the Humana Site. It should be noted the Humana Buildings could be occupied and producing 144 trips during the evening peak hour in absence of this redevelopment.



The proposed Phase II retail and residential land uses will produce approximately 1,116 trips during the evening peak hour. Since the restaurant and theater were already generating about 200 trips, and it can be estimated that 15 percent of these new trips will occur by an alternate mode, the Phase II development will create approximately 780 new evening peak-hour vehicle trips. Table 4.02-1 contains the evening peak-hour trip generation for the specific land uses in Phase II.

Hilldale PROPOSED PHASE II Trip Generation									
Land Use	Size	Unit	Rate	PM Trips	PM Entering	PM Total Entering	Exiting	PM Total Exiting	
Whole Foods- Supermarket	65,000	1000 GFA	10.45	679	51%	346	49%	333	
Retail - Specialty	19,000	1000 GFA	2.71	51	44%	22	56%	29	
Retail - Specialty	15,000	1000 GFA	2.71	41	44%	18	56%	23	
Health Club	40,000	1000 GFA	4.05	162	51%	83	49%	79	
Mid rise Condos	90	Units	0.55	50	62%	31	38%	19	
Condo tower	90	Units	0.55	50	62%	31	38%	19	
High Rise Condos	150	Units	0.55	83	62%	51	38%	32	
				1,116		582		534	
Credited Trips from Phase I									
Chinese Restaurant	28,500	1000 GFA	5	143	61%	87	39%	56	
Theater	750	Seats	0.07	53	39%	21	61%	32	
Total				196		108		88	
Trip Generation for Phase II				920		474		446	
Trip Reduction for Alt. Forms of Transportation				-15%	-138	-71		-67	
<b>Trip Generation for Phase II After Reduction</b>				<b>782</b>		<b>403</b>		<b>379</b>	

**Table 4.02-1 Humana Redevelopment Phase II Trip Generation**

B. Phase III Redevelopment

Phase III redevelopment land uses will produce approximately 210 additional trips during the evening peak hour. Taking into consideration bike, pedestrian, and city transit alternatives, a 15 percent reduction was taken from the number of trips generated during the evening peak hour. This reduction resulted in approximately 180 new evening peak-hour vehicle trips. The resulting increase in evening peak-hour vehicle trips from Phase II and Phase III development combined is anticipated to be approximately 960 trips. Table 4.02-2 contains the evening peak-hour trip generation for the specific land uses in Phase II and Phase III.

Hilldale PROPOSED PHASE III Trip Generation							PM	PM
Land Use	Size	Unit	PM Rate	PM Trips	Entering	Total Entering	Exiting	Total Exiting
Mid rise Condos	120 Units		0.55	66	62%	41	38%	25
Mid rise Condos	100 Units		0.55	55	62%	34	38%	21
Hotel	125 Rooms		0.7	88	49%	43	51%	45
Trip Generation for Phase III					209	118		91
Trip Reduction for Alt. Forms of Transportation				-15%	-31	-18		-14
<b>Trip Generation for Phase II After Reduction</b>					<b>178</b>	<b>100</b>		<b>77</b>

Hilldale PROPOSED PHASE II & III Trip Generation			
	PM Trips	PM Total Entering	PM Total Exiting
Trip Generation for Phase II After Reduction	782	403	379
Trip Generation for Phase II After Reduction	178	100	77
<b>Trip Generation for Phase II &amp; III</b>	<b>960</b>	<b>503</b>	<b>456</b>

**Table 4.02-2 Humana Redevelopment Phase III Trip Generation**

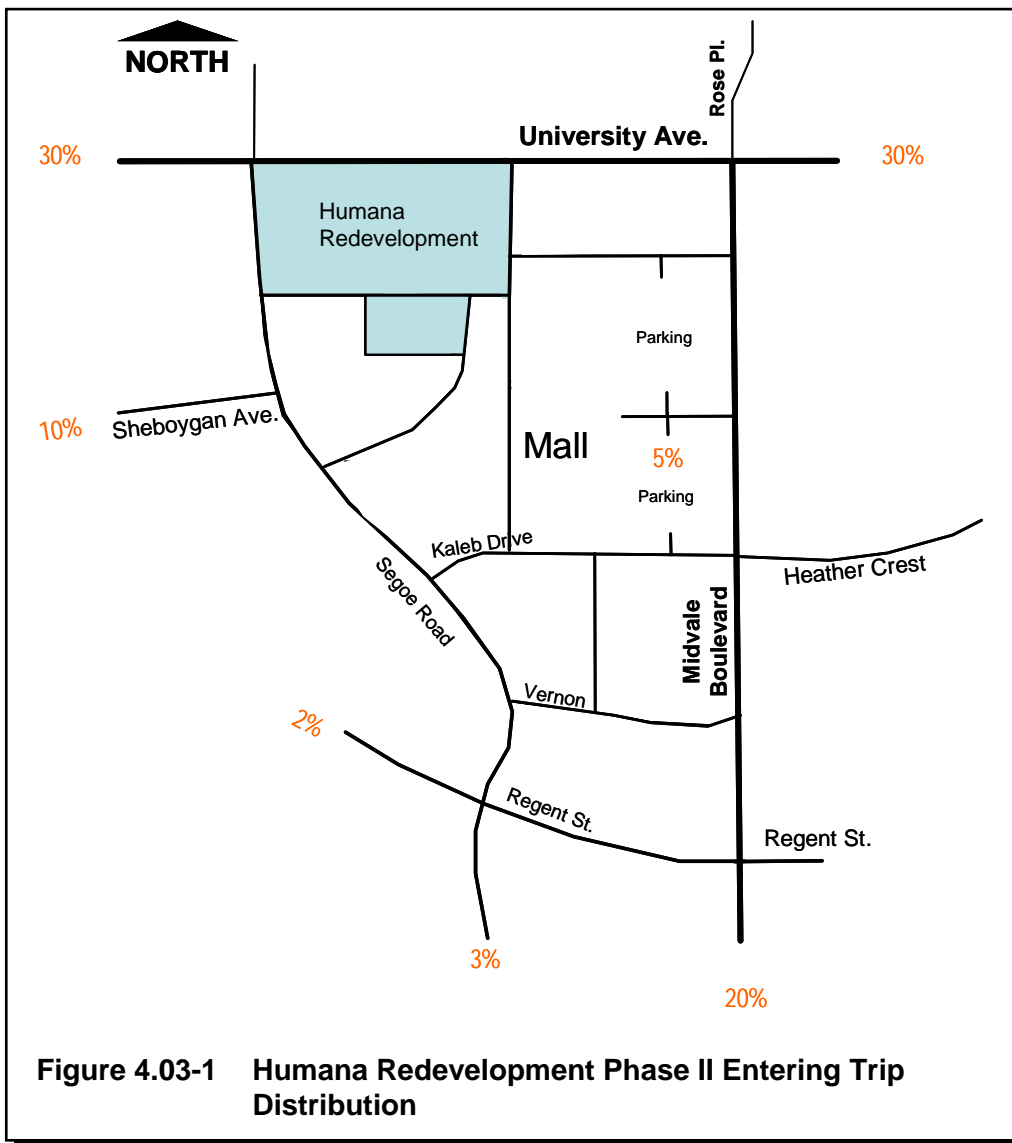
#### 4.03 TRIP DISTRIBUTION FOR PHASE II

##### A. Phase II Redevelopment (SIP No. 2)

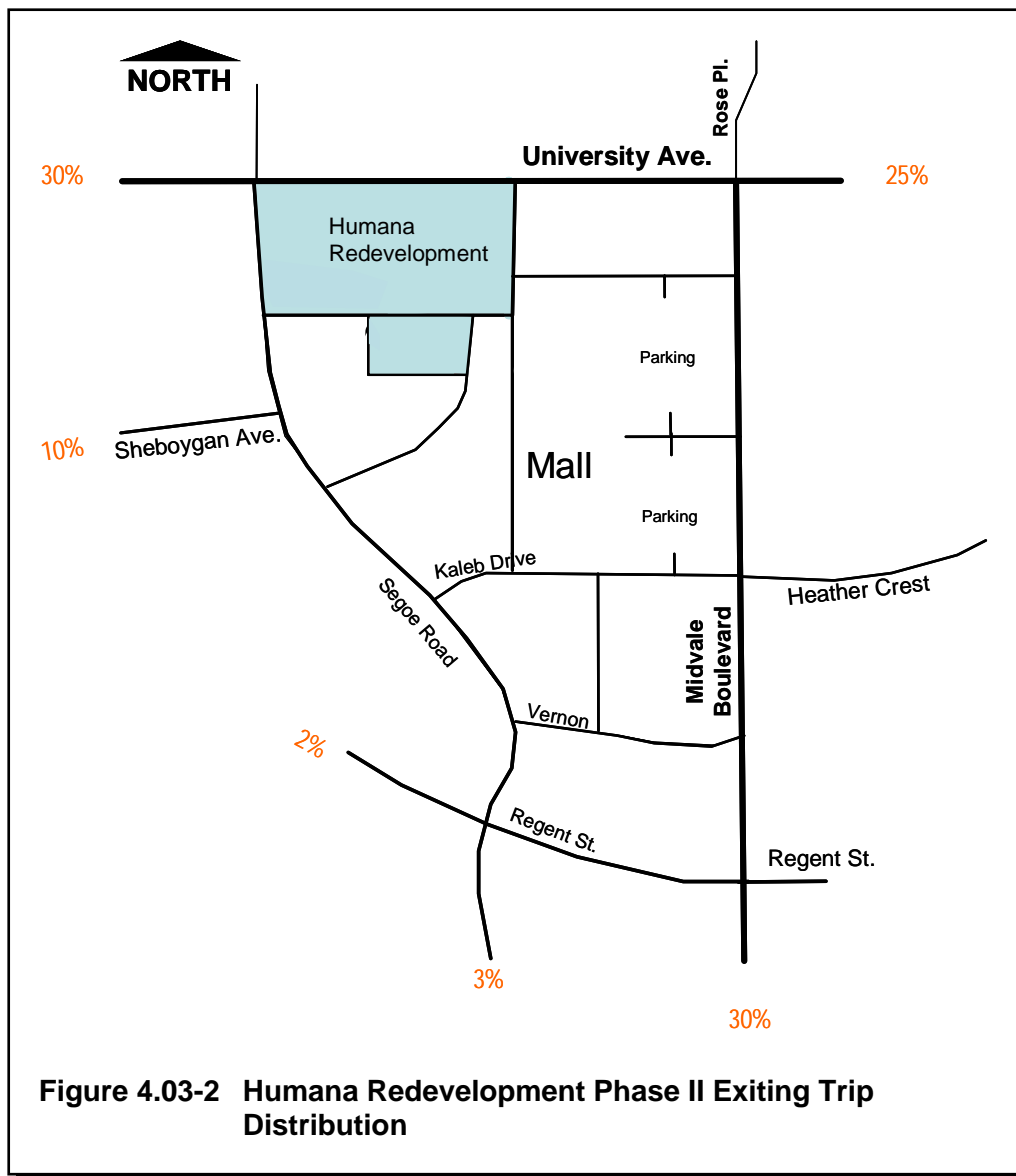
The trips generated by Phase II of the Humana Redevelopment will primarily come from the east and west on University Avenue and from the south on Midvale Boulevard. The development is also expected to draw some trips from Segoe Road and Sheboygan Avenue. The general orientation of trips entering the new development was estimated as follows:

- 30 percent of the trips would come from the west, primarily on University Avenue.
- 30 percent of the trips would come from the east, primarily on University Avenue.
- 20 percent would come from the south on Midvale Boulevard.
- 10 percent would come from the west on Sheboygan Avenue.
- 5 percent would come from the south and west on Segoe Road and Regent Street.
- 5 percent would come from the Hilldale Mall parking lots southeast of the development.

Most of the traffic from the east and west was expected to enter the SIP No. 2 development by taking University Avenue to Segoe Road while most of the traffic from the south was expected to take Midvale Boulevard to Regent Street to Segoe Road. Overall, the majority of the Phase II Humana Redevelopment traffic is expected to enter the development from Segoe Road, mostly from the north portion. The remainder of the new traffic will enter the development via the right-in/right-out off University Avenue, Sawyer Terrace, or through the Hilldale Mall SIP No. 1 development. Figure 4.03-1 shows the assumed distribution of trips entering the SIP No. 2 development.



Traffic exiting Phase II of the new development in the evening peak hour is expected to follow a distribution slightly different than the incoming traffic. More exiting traffic is expected to be oriented to the south on Midvale Boulevard, and less to the east toward downtown on University Avenue. The assumed distribution of traffic exiting the development is shown in Figure 4.03-2.

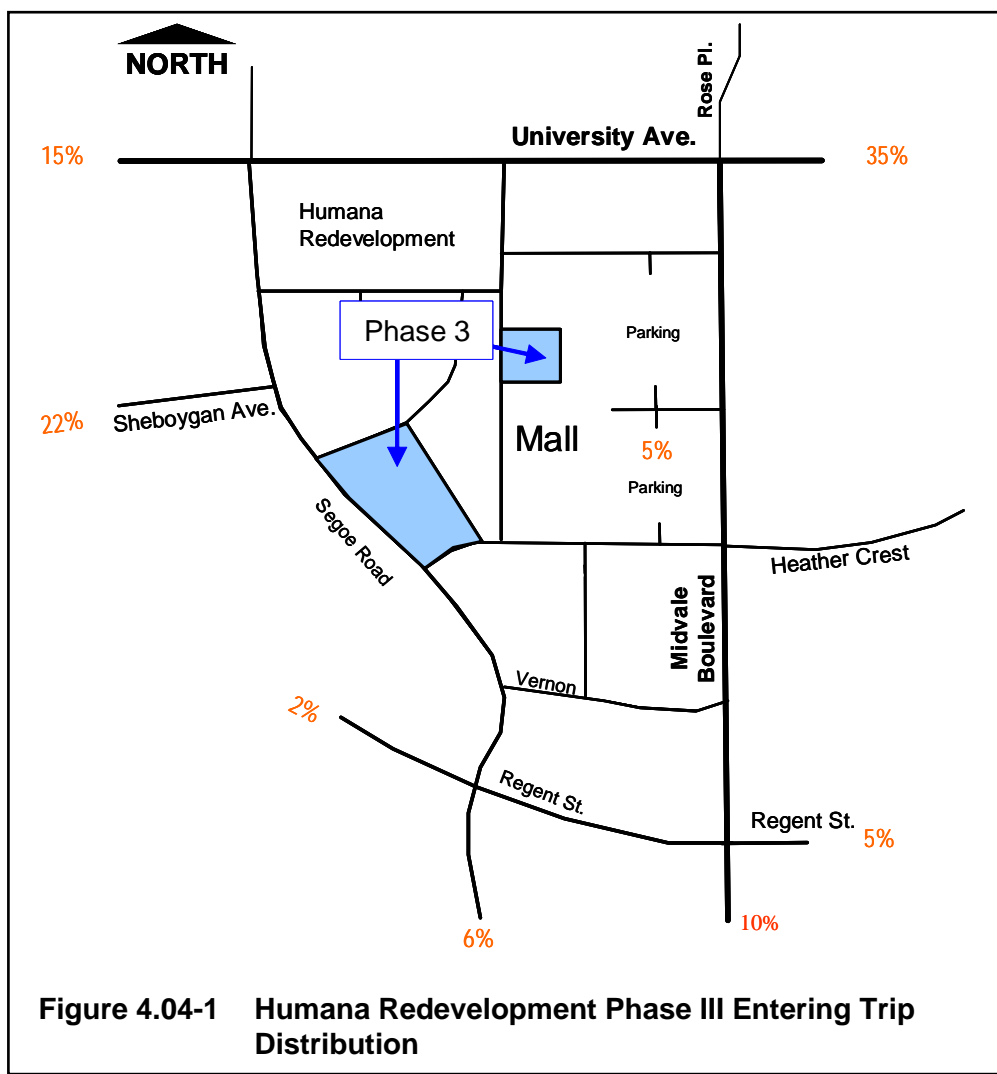


The peak-hour turning movements for the traffic model were developed using the trip distribution and the trip generation values.

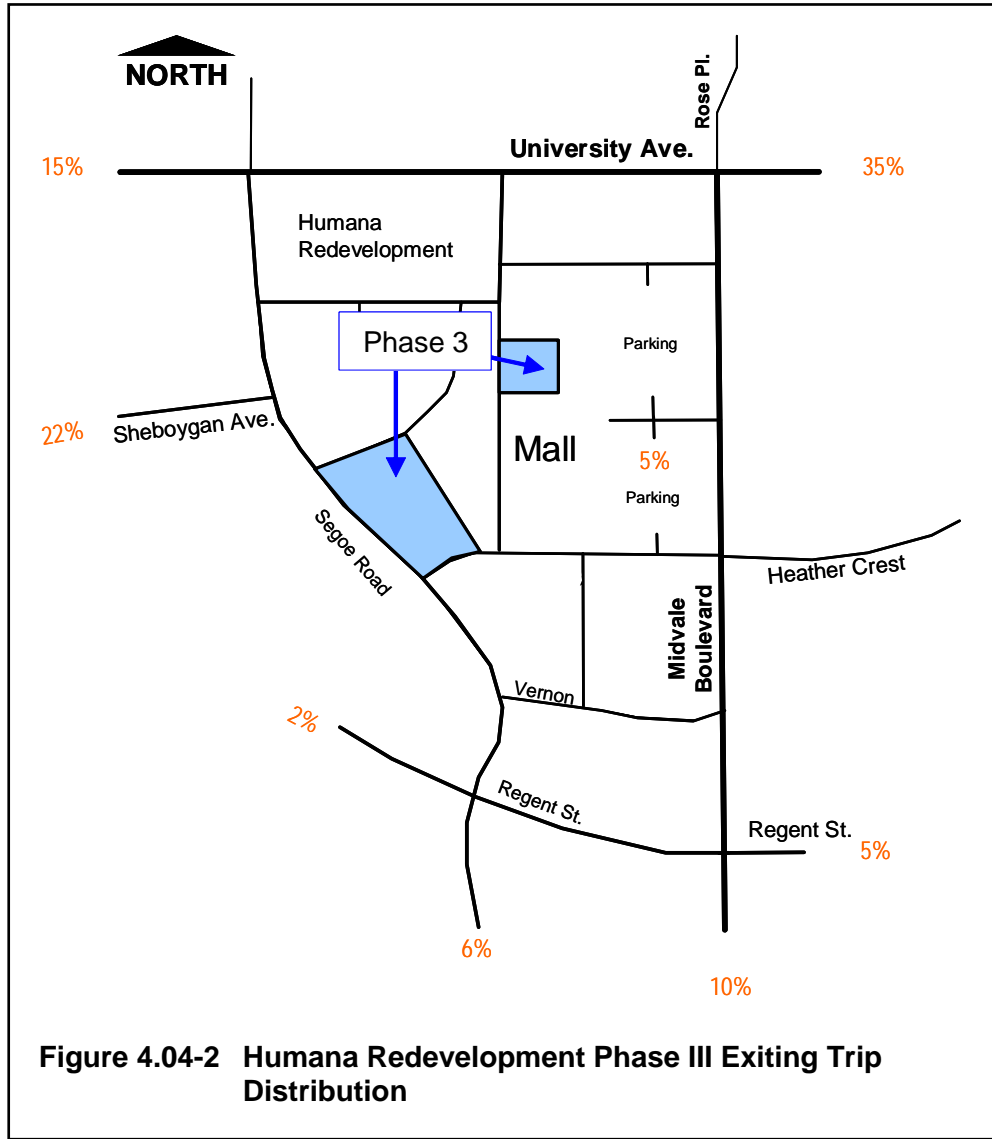
### 4.04 TRIP DISTRIBUTION FOR PHASE III

The trips generated by Phase III of the Humana Redevelopment will primarily come from the east and west on University Avenue and from the south on Midvale Boulevard. The development is also expected to draw some trips from Segoe Road and Sheboygan Avenue. The general orientation of trips entering the new development was estimated to be similar to Phase II.

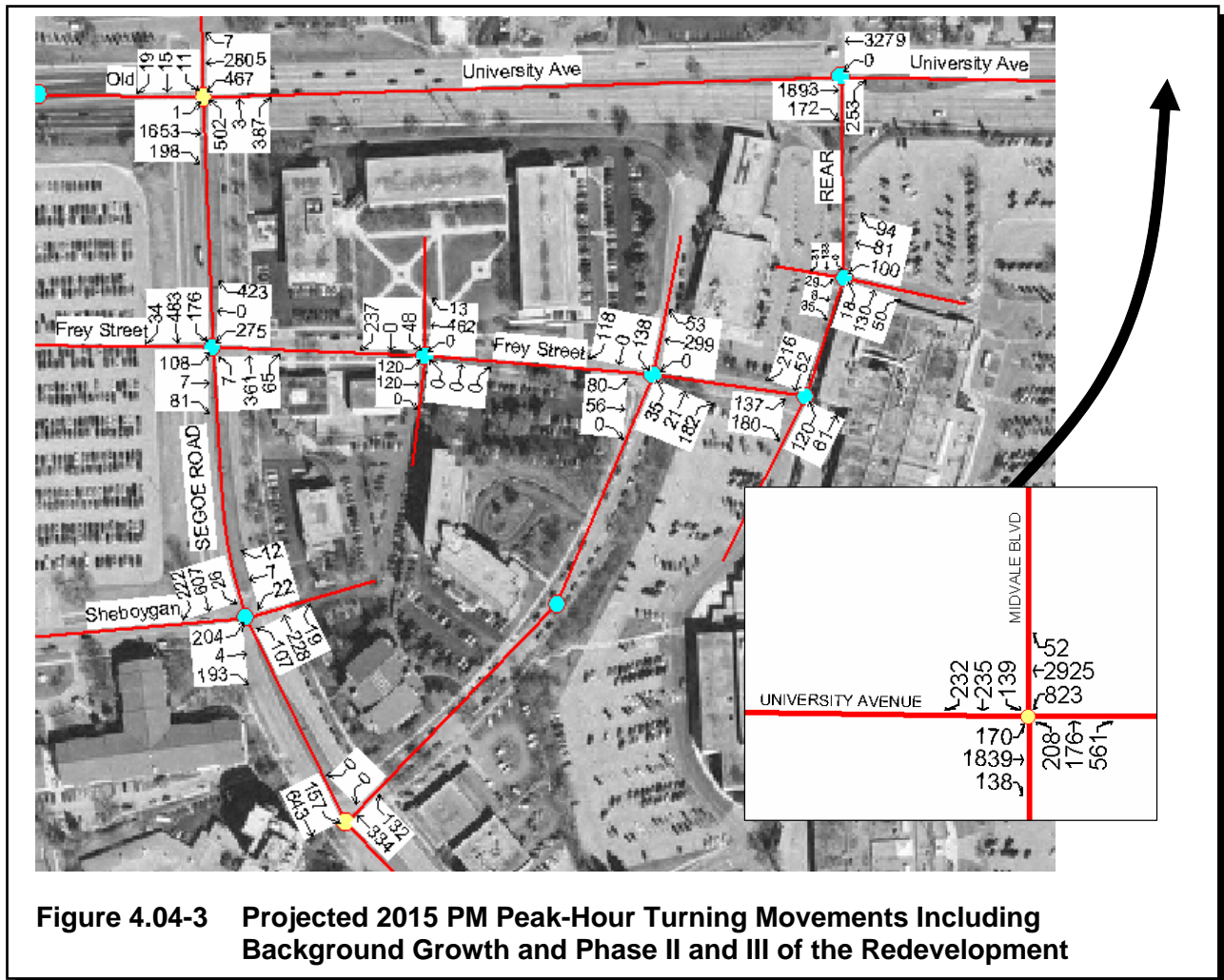
Most of the traffic from the east and west was expected to enter the Phase III development by taking University Avenue to Segoe Road while most of the traffic from the south was expected to take Midvale Boulevard to Regent Street to Segoe Road. Overall, the large majority of the Phase III traffic is expected to enter the development from Segoe Road, from the north and south. Figure 4.04-1 shows the assumed distribution of trips entering the SIP No. 2 development.



Traffic exiting Phase III of the new development in the evening peak hour is expected to follow the same distribution as entering traffic. The assumed distribution of traffic exiting the development is shown in Figure 4.04-2.



The peak-hour turning movements for the traffic model were developed using the trip distribution and the trip generation values. Figure 4.04-3 shows the 2015 turning movements after development of Phases II and III. These volumes include background growth (1 percent/year).



It is important to note that background traffic increases from 2006 to 2015 due to continued development and redevelopment in the greater Madison area and in western Dane County will be greater than the traffic generated by Phases II and III. For example, during the PM peak hour in 2015 at the University Avenue and Segoe Road intersection, Phase II and III traffic contributes 460 vehicles while background growth alone from 2006 to 2015 adds 510 vehicles.

**SECTION 5**  
**VEHICULAR OPERATIONS ANALYSIS**

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## 5.01 DESCRIPTION OF OPERATING LEVELS

The operation of a roadway (level of congestion) is typically described as "Level of Service" (LOS). The LOS rating system describes the traffic flow conditions of a roadway or intersection and ranges from A (free flow conditions) to F (over capacity). The following paragraphs describe the characteristics of LOS for intersections.

LOS is determined by the average delay, in seconds, of all vehicles entering the intersection. The average delay is based on the peak 15-minute period of the peak hour being analyzed. Since this delay is an average value, some vehicles will experience greater delay and some will experience less delay. Intersections with short average delays have high LOS; conversely, intersections with long average delays have low LOS. LOS E is considered the limit of acceptable delay. An LOS F for the total intersection is considered an indication of the need for improvement. Many communities establish a delay of up to 55 seconds for signalized intersections and 35 seconds for unsignalized intersections, both corresponding to LOS D, as their minimum standard. Sometimes this standard is difficult to achieve in congested urban corridors.

LOS characteristics are different for signalized and unsignalized intersections. Drivers anticipate longer delays at signalized intersections that carry large amounts of traffic. However, drivers generally feel unsignalized intersections should have less delay. Additionally, several driver behavior considerations combine to make delays at unsignalized intersections less desirable than at signalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on the minor approaches to unsignalized intersections must remain attentive to identify acceptable gaps for entry. Typically, LOS is only calculated for the legs of an unsignalized intersection that have to yield to other movements (stop control or left turns).

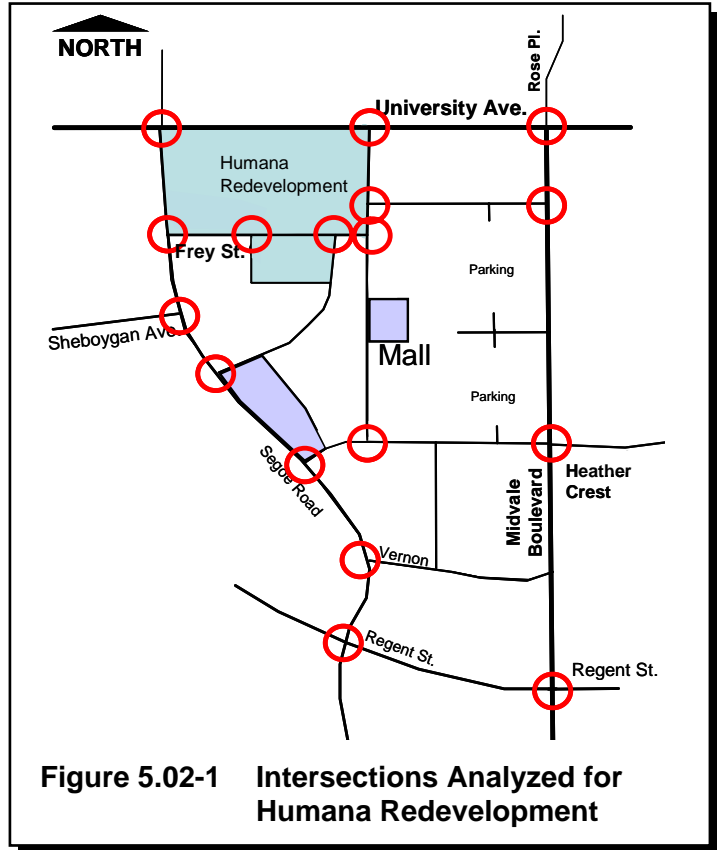
## 5.02 ANALYSIS PROCESS

The measures of effectiveness were determined by modeling the street network with the traffic software Synchro. Synchro is a macroscopic network optimization program that utilizes the algorithms used in the *2000 Highway Capacity Manual*, Chapter 16. Synchro can optimize traffic signal cycle lengths and splits and can model actuation. The Hilldale SIP No. 1 Synchro model was used as the base to construct the Humana Redevelopment traffic model. The new trips generated by Humana Redevelopment were added to the model and distributed as discussed in the previous section. The base year of the Hilldale SIP No. 1 model was 2004, so background traffic growth was added to the model to represent the build year (2015) traffic conditions.

The vehicular traffic operations were analyzed with and without the proposed Phase II and III development, and with and without capacity expansion of the study area roads and intersections. The analysis of projected 2015 traffic volumes with existing geometries and no new development was used as the basis for evaluating intersection operations with projected volumes and proposed geometric modifications. Many intersections surrounding the Humana Redevelopment area were analyzed. The projected traffic impacted the operation of a number of intersections; however, the effect was negligible

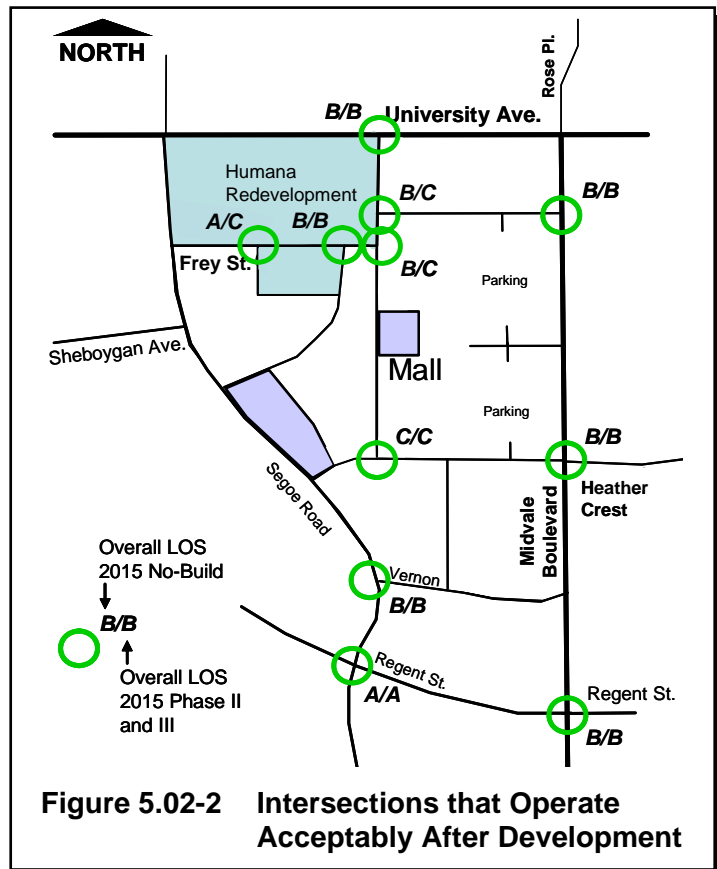
on many intersections in the area. The intersections evaluated by this study are listed below and the locations are indicated in Figure 5.02-1.

- University Avenue/Segoe Road
- University Avenue /right-in/right-out
- University Avenue /Midvale Boulevard
- Midvale Boulevard/North Mall Drive
- Midvale Boulevard/Regent Street
- Regent Street/Segoe Road
- Segoe Road/Vernon Boulevard
- Segoe Road/Heather Crest
- Segoe Road/Sawyer Terrace
- Segoe Road/Sheboygan Avenue
- Segoe Road/Frey Street
- Frey Street/Retail Entrances
- Frey Street/Sawyer Terrace
- Frey Street/Rear Mall Driveway
- Rear Mall Driveway/North Mall Driveway
- Rear Mall Driveway/Heather Crest



As noted in Section 4, the study team collected evening peak-hour turning movements for these intersections in September 2004. Since the study area is primarily retail stores, which are not generally open during the morning rush hour, the morning peak-hour turning movements were not collected.

Operations modeling completed as part of an earlier draft submittal of this report indicated that many of the intersections above would continue to operate acceptably after construction of Phase II and III without any capacity expansion. These results are shown in figure 5.02-2. Since the earlier report drafts contained more conservative (higher) estimates of the trips generated, it can be reasoned that these intersections do not require further study in this final report.



### 5.03 2015 OPERATIONS WITH BACKGROUND TRAFFIC ONLY

By 2015 both Phase II and III are expected to be complete. The background traffic volumes were based on the Hilldale SIP No. 1 traffic projections for the year 2004 with an assumed background growth of 1 percent per year. The existing geometry and existing signal timings were used in the model, except as noted below.

University Avenue carries a high volume during the peak hours resulting in significant delays at the Segoe Road and Midvale Boulevard intersections. Both intersections operate near capacity because of the high volumes traveling east and west on University Avenue. The delay at each of these intersections results in an LOS E assuming the existing signal timings remain. However, Synchro results indicate that lengthening the cycle length retiming the splits at Segoe Road could improve the overall operations to LOS D. Table 5.03-1 includes the intersection delay for optimized signal timings.

TABLE 5.03-1

HUMANA REDEVELOPMENT–BASE 2015 CONDITIONS

University Avenue/Midvale Boulevard				University Avenue/Segoe Road				Segoe Road/Frey Street				Sheboygan Road/Segoe Road				Segoe Road/Sawyer Terrace				Segoe Road/Heather Crest				
Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (Unsig)	Approach & Movement	Delay (sec)	v/c	LOS (Unsig)	Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (Unsig)	
NB L	51	0.58	D	NB T/L	68	0.87	E	NB T/L	0	0.01	A	NB L	9	0.12	A	NB T	0	0.06	A					
NB T	46	0.59	D	NB R	16	0.36	B									NB R	0	0.06	A					
NB R	1	0.40	A																					
EB L	83	0.97	F	EB L	28	0.02	C	EB L/T	17	0.40	C	EB T/L	22	0.60	C									
EB T	59	1.01	E	EB T/R	58	0.98	E	EB R	17	0.40	C	EB R	22	0.60	C									
EB R	3	0.17	A																					
SB L	53	0.60	D	SB T/R/L	39	0.30	D	SB L/T	0	0.02	A	SB T/L	0	0.02	A	SB T	0	0.14	A					
SB T	95	0.97	F													SB L	0	0.11	A	SBL	8	0.70	A	
SB R	61	0.91	E																					
WB L	88	1.06	F	WB L	50	0.80	D	WB L/T	13	0.29	B	WB L/T/R	17	0.13	C									
WB T/R	91	1.13	F	WB T/R	34	0.95	C	WB R	13	0.29	B													
Int Tot	70		E	Int Tot	44		D	Int Tot	17		C	Int Tot	17		C	Int Tot	0		A	Int Tot	18		C	

#### **5.04 2015 OPERATIONS WITH PROJECTED PHASE II AND III HUMANA REDEVELOPMENT TRAFFIC AND EXISTING INTERSECTION GEOMETRIES**

The additional trips generated by Humana Redevelopment will impact a number of intersections. The modeling indicates that the University Avenue intersections at both Midvale Boulevard and Segoe Road will require longer cycle lengths and reoptimized splits to avoid overall LOS F operations. The Segoe Road intersections at Frey Street and Sheboygan Avenue will also have movements that operate at LOS F and LOS E, respectively. At each location, increased traffic on Segoe Road results in fewer gaps for traffic trying to enter from the side streets.

Table 5.04-1 displays the overall 2015 PM peak-hour levels of service of the intersections with Phase II and III of the Humana Redevelopment complete, and the existing intersection geometries in place.

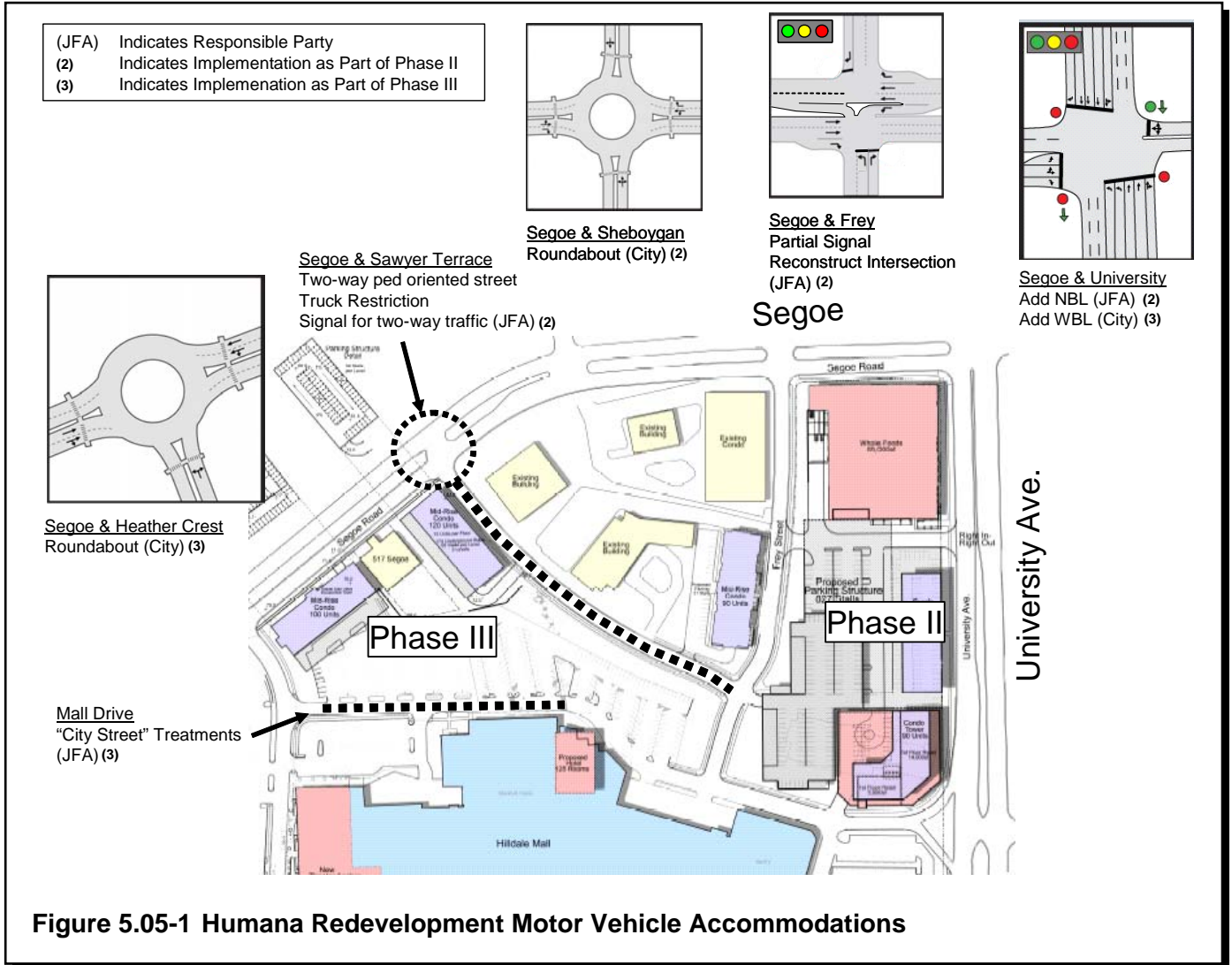
TABLE 5.04-1

HUMANA REDEVELOPMENT–2015 WITH PHASE II AND III AND EXISTING GEOMETRIES

University Avenue/Midvale Boulevard				University Avenue/Segoe Road				Segoe Road/Frey Street				Segoe Road/Sheboygan Avenue				Segoe Road/Sawyer Terrace				Segoe Road/Heather Crest				
Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (Unsig)	Approach & Movement	Delay (sec)	v/c	LOS (Unsig)	Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (Unsig)	
NB L	81	0.73	F	NB T/L	87	1.00	F	NB T/L	0	0.01	A	NB L	11	0.15	B	NB T	0	0.10	A	NB T/L	0	0.10	A	
NB T	70	0.75	E	NB R	15	0.42	B									NB R	0	0.09	A					
NB R	1	0.39	A																					
EB L	93	0.97	F	EB L	30	0.02	C	EB L/T	102	0.97	F	EB R	41	0.86	E									
EB T	50	0.95	D	EB T/R	108	1.13	F	EB R	102	0.97	F	EB T/L	41	0.86	E									
EB R	3	0.15	A																					
SB L	70	0.66	E	SB T/R/L	39	0.30	D	SB L/T	2	0.16	A	SB T/L	0	0.02	A	SB L	0	0.16	A	SB L/T	9	0.11	A	
SB T	130	1.06	F													SB T	0	0.19	A					
SB R	95	1.02	F																					
WB L	72	0.97	E	WB L	151	1.21	F	WB L/T	283	1.55	F	WB L/T/R	21	0.16	C					WB L/T	26	0.35	D	
WB T/R	59	1.05	E	WB T/R	52	1.02	D	WB R	283	1.55	F									WB R	10	0.15	B	
<b>Int Tot</b>	<b>58</b>		<b>E</b>	<b>Int Tot</b>	<b>77</b>		<b>E</b>	<b>Int Tot</b>	<b>283</b>		<b>F</b>	<b>Int Tot</b>	<b>41</b>		<b>E</b>	<b>Int Tot</b>	<b>0</b>		<b>A</b>	<b>Int Tot</b>	<b>26</b>		<b>D</b>	

**5.05 INTERSECTION IMPROVEMENT RECOMMENDATIONS FOR PHASE II AND III**

Figure 5.05-1 shows the recommended improvements to accommodate motor vehicle traffic, followed in parentheses by the party responsible for implementation/construction.



**Figure 5.05-1 Humana Redevelopment Motor Vehicle Accommodations**

Internal to the Phase II and Phase III sites, we recommend the following:

- Convert Sawyer Terrace to a two-way, pedestrian oriented street including modification of the existing signal at the intersection of Segoe Road and Sawyer Terrace (JFA).
- “City Street”-type improvements along Mall Road creating a more open and connected street system to encourage Phase II and III vehicle traffic to use Mall Road in addition to Sawyer Terrace and Frey Street (JFA).

External to the Phase II and Phase III sites, we recommend the following:

- Add a northbound left turn bay at the intersection of University Avenue and Segoe Road (to provide two total) and modify signal equipment and settings (JFA).
- Add a westbound left turn bay on University Avenue at Segoe Road (to provide two total) and modify signal equipment and settings (City).
- Construct a “partial” signal at the intersection of Segoe Road and Frey Street to minimize delay and queuing for southbound Segoe Road traffic (JFA).
- Construct a modern roundabout at the intersection of Segoe Road and Sheboygan Avenue<sup>1</sup> (City).
- Construct a modern roundabout at the intersection of Segoe Road and Heather Crest<sup>2</sup> (City).
- “City Street”-type improvements along Mall Road creating a more open and connected street system to encourage Phase II and III vehicle traffic to use Mall Road in addition to Sawyer Terrace and Frey Street (JFA).

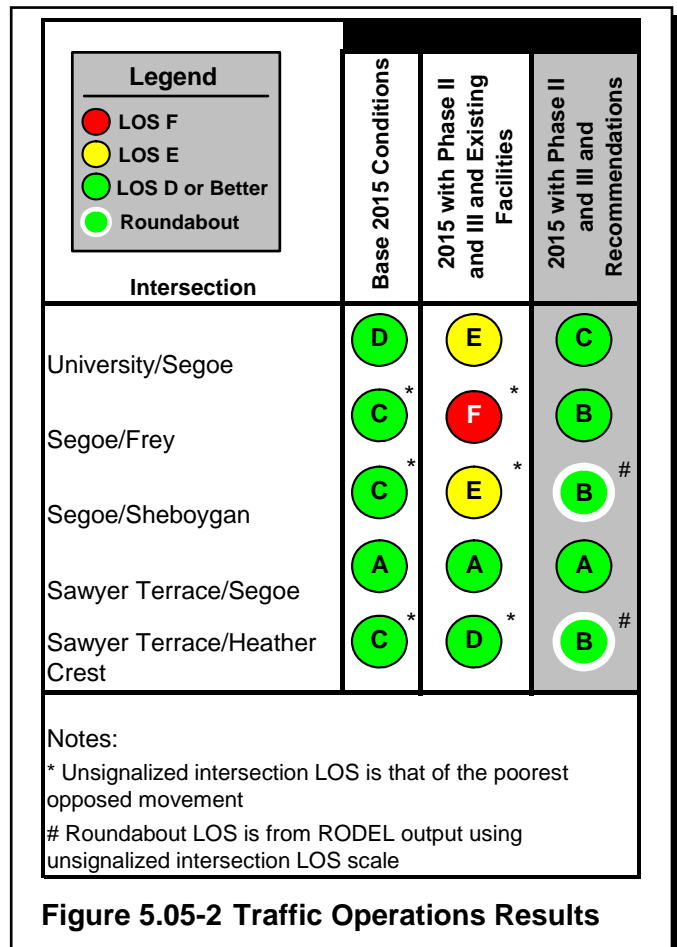


Table 5.05-1 displays the overall 2015 PM peak-hour levels of service of the intersections with Phase II and III of the Humana Redevelopment complete, and the recommended improvements in place. Figure 5.05-2 shows a summary of the results of traffic operations modeling at the key study area intersections.

<sup>1</sup> Recommendation per City staff. A neighborhood educational campaign is recommended to familiarize local residents with roundabout operations for all road users. Construction of the roundabout is expected to require purchase of right-of-way in all four quadrants of the intersection. Signalizing the intersection is an alternative to roundabout construction.

<sup>2</sup> Recommendation per City staff, see note above. Stop sign control on Heather Crest is an alternative to roundabout construction.



TABLE 5.05-1

HUMANA REDEVELOPMENT–2015 WITH PHASE II AND III AND RECOMMENDED GEOMETRIES

University Avenue/Midvale Boulevard				University Avenue/Segoe Road				Segoe Road/Frey Street				Segoe Road/Sheboygan Avenue				Segoe Road/Sawyer Terrace				Segoe Road/Heather Crest			
Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (RAB)	Approach & Movement	Delay (sec)	v/c	LOS (Sig)	Approach & Movement	Delay (sec)	v/c	LOS (RAB)
NB L	81	0.73	F	NB L	52	0.74	D	NB T/L	13	0.30	B	NB	10	0.19	A	NB T	3	0.13	A	NB	11	0.27	B
NB T	70	0.75	E	NB T	52	0.75	D	NB R	5	0.09	A					NB R	1	0.11	A				
NB R	1	0.39	A	NB R	24	0.50	C																
EB L	93	0.97	F	EB L	33	0.01	C					EB	12	0.52	B								
EB T	50	0.95	D	EB T/R	40	0.87	D																
EB R	3	0.15	A																				
SB L	70	0.66	E	SB T/R/L	42	0.30	D	SB L	8	0.32	A	SB	10	0.18	A	SB L	4	0.21	A	SB	10	0.35	A
SB T	129	1.06	F													SB T	3	0.23	A				
SB R	95	1.02	F					WB L	22	0.51	C	WB	13	0.19	B	WB L	10	0.21	B	WB	13	0.24	B
WB L	72	0.97	E	WB L	52	0.79	D	WB R	6	0.66	A					WB R	6	0.08	A				
WB T/R	59	1.05	E	WB T/R	25	0.88	C																
<b>Int Tot</b>	<b>58</b>		<b>E</b>	<b>Int Tot</b>	<b>34</b>		<b>C</b>	<b>Int Tot</b>	<b>11</b>		<b>B</b>	<b>Int Tot</b>	<b>11</b>		<b>B</b>	<b>Int Tot</b>	<b>3</b>		<b>A</b>	<b>Int Tot</b>	<b>11</b>		<b>B</b>

This traffic study focuses on the intersection of University Avenue and Segoe Road and the Segoe Road corridor south of University Avenue. The intersection of University Avenue and Midvale Boulevard is also expected to be impacted by the proposed development, but not significantly so. In 2015, without the development, the intersection operates at LOS E overall with four movements operating at LOS F. Phase II and III traffic is expected to add about 280 vehicles to the intersection during the PM peak hour, an increase of about 4 percent. If the cycle length is extended the 2015 operations can remain at LOS E overall with four movements operating at LOS F.
































































With or without the proposed redevelopment, traffic growth will cause the Midvale Boulevard/University Avenue intersection to operate at LOS F during the PM peak hour in the near future if no changes are made. Queues today often reach upstream intersections, exacerbating congestion during the heaviest traffic periods.

It is expected that ultimately, traffic increases whether because nearby redevelopment such as the Humana Site Redevelopment or continued land use changes and population growth throughout the region, will require significant public investment in the transportation systems of the greater Madison area, including the University Avenue corridor. Social and environmental impacts and the construction costs associated with accommodating the future traffic solely through traditional vehicular capacity expansion may make implementation difficult.

With or without traditional vehicular capacity expansion, further promotion and expansion of alternate modes of travel are recommended. Sheboygan Avenue and University Avenue are major routes for the Madison Metro bus system. Since this area provides excellent access to a number of bus routes serving the surrounding areas, it will provide an ideal location for expansion of bus services if economically prudent. As traffic congestion increases, however, the need for improved transit service will become more apparent. Providing dedicated facilities (such as commuter express bus service or commuter rail service along existing rail corridors) will allow fast, direct, and reliable travel via transit providing a year-round alternative to driving that would likely see increased ridership as traffic congestion worsens.

In 2002 the Madison City Council endorsed the construction of a start-up commuter rail system in response to the Transport 2020 Alternatives Analysis that was completed for the Madison metropolitan area. The implementation of this rail system could increase accessibility to the site and decrease traffic congestion levels. Additional analysis is required to better understand the benefits versus costs of this or any large scale transit investment.

## 2015 - Sheboygan Avenue and Segoe Road Vehicular Operations

Redevelopment Scenario:	NONE	HUMANA ONLY			HUMANA and WisDOT <sup>1</sup>			HUMANA and WisDOT (25% Exiting at Sheboygan) <sup>1</sup>		
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>Legend</b>   LOS F   LOS E   LOS D or Better                 </div>	2-way Stop Control (existing) 	2-way Stop Control (existing) 	Signal Control 	Roundabout Control 	2-way Stop Control (existing) 	Signal Control 	Roundabout Control 	2-way Stop Control (existing) 	Signal Control 	Roundabout Control 
Overall Intersection LOS <sup>2,3</sup>										
NB Segoe Road										
WB Sheboygan Avenue										
SB Segoe Road										
EB Sheboygan Avenue										
Maximum Queue	100' - EB	228' - EB	233' - EB	25' - SB 25' - EB	>1,000' - EB	378' - SB	25' - SB 25' - EB	>1,000' - EB	347' - SB 418' - EB	25' - SB 50' - EB
Notes: <sup>1</sup> Analysis assumes main access to WisDOT site will be from a new, direct connection to University Avenue <sup>2</sup> Unsignalized intersection overall LOS is that of the poorest opposed movement <sup>3</sup> Roundabout LOS is from RODEL 85th percentile output using unsignalized intersection LOS scale										