University of Utah
Sutton Parking Garage
Traffic Study

Prepared for:
EDA Architects

September 2013

UT13-987

FEHR PEERS
# Table of Contents

**EXECUTIVE SUMMARY** ................................................................. 6  
  Traffic Conditions ............................................................................ 6  
  Study Intersections .......................................................................... 6  
  Traffic Volumes ................................................................................ 6  
  Existing Conditions ........................................................................... 6  
  Existing Plus ACC Conditions .......................................................... 6  
  Existing Plus ACC and Garage Conditions ......................................... 6  
  Future 2016 Conditions .................................................................... 7  
  Future 2016 Plus Garage Conditions .................................................. 7  
  Future 2025 Conditions .................................................................... 7  
  Future 2025 Plus Garage Conditions .................................................. 7  
  Conclusion ....................................................................................... 7  
  Recommendations ............................................................................ 8  
  LOS Summary .................................................................................. 8  

**INTRODUCTION** ........................................................................ 10  
  Purpose .......................................................................................... 10  
  Scope .............................................................................................. 10  
  Analysis Methodology ........................................................................ 10  
  Data Collection ................................................................................ 13  

**PROJECT DESCRIPTION** .............................................................. 14  
  Trip Generation ................................................................................ 14  
  Trip Distribution And Assignment .................................................... 16  

**EXISTING 2013 CONDITIONS** ...................................................... 18  
  Purpose .......................................................................................... 18  
  Traffic Volumes ................................................................................ 18  
  Level of Service Analysis ................................................................. 18  
  Mitigation Measures ......................................................................... 18
EXISTING 2013 PLUS ACC CONDITIONS ................................................................................................... 21
  Purpose ................................................................................................................................................................................. 21
  Traffic Volumes .................................................................................................................................................................. 21
  Level of Service Analysis ................................................................................................................................................ 21
  Mitigation Measures........................................................................................................................................................ 21

EXISTING 2013 PLUS ACC AND GARAGE CONDITIONS .......................................................................... 24
  Purpose ................................................................................................................................................................................. 24
  Traffic Volumes .................................................................................................................................................................. 24
  Level of Service Analysis ................................................................................................................................................ 24
  Mitigation Measures........................................................................................................................................................ 24

FUTURE 2016 CONDITIONS ........................................................................................................................ 27
  Purpose ................................................................................................................................................................................. 27
  Traffic Volumes .................................................................................................................................................................. 27
  Level of Service Analysis ................................................................................................................................................ 27
  Mitigation Measures........................................................................................................................................................ 27

FUTURE 2016 PLUS GARAGE CONDITIONS ............................................................................................... 30
  Purpose ................................................................................................................................................................................. 30
  Traffic Volumes .................................................................................................................................................................. 30
  Level of Service Analysis ................................................................................................................................................ 30
  Mitigation Measures........................................................................................................................................................ 30

FUTURE 2025 CONDITIONS ........................................................................................................................ 33
  Purpose ................................................................................................................................................................................. 33
  Traffic Volumes .................................................................................................................................................................. 33
  Level of Service Analysis ................................................................................................................................................ 33
  Mitigation Measures........................................................................................................................................................ 34

FUTURE 2025 PLUS GARAGE CONDITIONS ............................................................................................... 37
  Purpose ................................................................................................................................................................................. 37
  Traffic Volumes .................................................................................................................................................................. 37
  Level of Service Analysis ................................................................................................................................................ 37
Appendices

Appendix A: Resumes
List of Figures

Figure 1  Project Location ........................................................................................................................................................ 11
Figure 2  Site Plan ...................................................................................................................................................................... 15
Figure 3  Project-Generated AM and PM Peak Hour Trips.................................................................................................. 17
Figure 4  Existing Background AM and PM Peak Hour Traffic Conditions ........................................................... 19
Figure 5  Existing Plus ACC AM and PM Peak Hour Traffic Conditions ................................................................. 22
Figure 6  Existing Plus ACC and Garage AM and PM Peak Hour Traffic Conditions ........................................ 25
Figure 7  Future 2016 AM and PM Peak Hour Traffic Conditions ............................................................................ 28
Figure 8  Future 2016 Plus Garage AM and PM Peak Hour Traffic Conditions .................................................. 31
Figure 9  Future 2025 AM and PM Peak Hour Traffic Conditions ............................................................................ 35
Figure 10 Future 2025 plus Garage AM and PM Peak Hour Traffic Conditions .................................................. 38

List of Tables

Table 1 AM Level of Service Summary ......................................................................................................................................... 8
Table 2 PM Level of Service Summary ......................................................................................................................................... 9
Table 3 Level of Service Descriptions ........................................................................................................................................ 12
Table 4 Trip Generation Estimates for AM Peak ................................................................................................................... 14
Table 5 Trip Generation Estimates for PM Peak .................................................................................................................... 14
Table 6 Trip Distribution for AM and PM Peak ...................................................................................................................... 16
Table 7 Existing Background Conditions AM Peak Hour Level of Service .......................................................... 20
Table 8 Existing Background Conditions PM Peak Hour Level of Service .......................................................... 20
Table 9 Existing Plus ACC Conditions AM Peak Hour Level of Service ........................................................................ 23
Table 10 Existing Plus ACC Conditions PM Peak Hour Level of Service ................................................................. 23
Table 11 Existing Plus ACC and Garage Conditions AM Peak Hour Level of Service ............................................. 26
Table 12 Existing Plus ACC and Garage Conditions PM Peak Hour Level of Service ............................................. 26
Table 13 Future 2016 Conditions AM Peak Hour Level of Service ........................................................................ 29
Table 14 Future 2016 Conditions PM Peak Hour Level of Service ........................................................................ 29
Table 15 Future 2016 Plus Garage Conditions AM Peak Hour Level of Service ......................................................... 32
Table 16 Future 2016 Plus Garage Conditions PM Peak Hour Level of Service ......................................................... 32
Table 17 Future 2025 Conditions AM Peak Hour Level of Service ........................................................................ 36
Table 18 Future 2025 Conditions PM Peak Hour Level of Service ........................................................................ 36
Table 19 Future 2025 plus Garage Conditions AM Peak Hour Level of Service ....................................................... 39
Table 20 Future 2025 plus Garage Conditions PM Peak Hour Level of Service ....................................................... 39
Table 21 Future 2025 plus Garage Mitigated Conditions AM Peak Hour Level of Service ....................................... 40
Table 22 Future 2025 plus Garage Mitigated Conditions PM Peak Hour Level of Service ....................................... 40
EXECUTIVE SUMMARY

This study addresses the traffic impacts associated with the proposed Sutton Parking Garage on the University of Utah Campus in Salt Lake City, Utah. The Sutton Parking Garage is a 360-stall garage located at the intersection of 100 South and 1455 East. Traffic operations for existing conditions and plus garage conditions (after development of the proposed garage) were analyzed at key intersections and roadways in the vicinity of the garage.

TRAFFIC CONDITIONS

STUDY INTERSECTIONS

The following intersections were included in this study:

1) 100 South / University Street
2) 100 South / 1455 East

TRAFFIC VOLUMES

Traffic counts at the study intersections were collected to establish a baseline of existing conditions and operations for the area. AM and PM peak period traffic counts were recorded from 7:00 AM to 10:00 AM and 3:00 PM to 7:30 PM on Wednesday, April 17, 2013. Adjustment factors were not applied.

EXISTING CONDITIONS

In existing conditions, all study intersections operate at acceptable levels of delay in the AM and PM peak hours.

EXISTING PLUS ACC CONDITIONS

In existing plus Ambulatory Care Center (ACC) conditions, all intersections operate at acceptable levels of delay in the AM and PM peak hours.

EXISTING PLUS ACC AND GARAGE CONDITIONS

In existing plus ACC and garage conditions, all intersections operate at acceptable levels of delay in the AM and PM peak hours, including the garage access.
FUTURE 2016 CONDITIONS

In the future 2016 conditions (includes ACC traffic), all intersections operate at acceptable levels of delay in the AM and PM peak hours.

FUTURE 2016 PLUS GARAGE CONDITIONS

In the future 2016 plus garage conditions, all intersections operate at acceptable levels of delay in the AM and PM peak hours, including the garage access.

FUTURE 2025 CONDITIONS

In the future 2025 conditions (includes ACC traffic), all intersections operate at acceptable levels of delay in the AM and PM peak hours with the exception of the intersection of 100 South/University Street in the AM peak hour. The intersection of 100 South/University Street operates at LOS F in the AM peak hour due to the addition of ACC traffic.

FUTURE 2025 PLUS GARAGE CONDITIONS

In the future 2025 plus garage conditions, all intersections operate at acceptable levels of delay in the AM and PM peak hours with the exception of the intersection of 100 South/University Street in the AM peak hour and the Sutton Parking Garage access in the PM peak hour. The intersection of 100 South/University Street operates at LOS F in the AM peak hour due to the addition of ACC traffic. In the PM peak hour, high volumes in the west direction at the intersection of 100 South/1455 East/Wolcott Street limit the amount of green time that can be given to the north/south directions. This causes queues to back up past the garage, prohibiting vehicles from exiting the garage. An exclusive northbound left-turn lane at the intersection of 100 South/1455 East/Wolcott Street will alleviate the problems at the garage entrance.

CONCLUSION

The study intersections operate at acceptable levels of delay until 2025. Garage traffic does not significantly affect LOS at study intersections. In the 2025 plus garage PM peak hour, vehicles exiting the proposed garage will experience high levels of delay in the unmitigated condition.
RECOMMENDATIONS

An exclusive northbound left-turn lane is recommended at the intersection of 100 South/1455 East/Wolcott Street in 2025 plus garage. This will allow northbound queues to clear faster and prevent queues from forming within the garage.

LOS SUMMARY

<table>
<thead>
<tr>
<th>Table 1 AM Level of Service Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ID</strong></td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
</tbody>
</table>

1. Overall intersection LOS and average delay (seconds/vehicle) for the signalized intersections and worst movement LOS and average delay for the unsignalized intersections.

Source: Fehr & Peers, August 2013
### TABLE 2 PM LEVEL OF SERVICE SUMMARY

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Existing Background</th>
<th>Existing Plus ACC</th>
<th>Existing Plus ACC and Garage</th>
<th>2016 Plus Background</th>
<th>2025 Plus Background</th>
<th>2025 Plus Mitigated Garage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LOS &amp; Sec/Veh.</td>
<td>LOS &amp; Sec/Veh.</td>
<td>LOS &amp; Sec/Veh.</td>
<td>LOS &amp; Sec/Veh.</td>
<td>LOS &amp; Sec/Veh.</td>
<td>LOS &amp; Sec/Veh.</td>
</tr>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>13.7 B</td>
<td>17.1 B</td>
<td>16.6 B</td>
<td>16.1 B</td>
<td>17.4 B</td>
<td>30.7 C</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>7.9 A</td>
<td>8.1 A</td>
<td>14.8 B</td>
<td>9.8 A</td>
<td>15.3 B</td>
<td>28.6 C</td>
</tr>
<tr>
<td>3</td>
<td>Sutton Parking Lot / 1455 East</td>
<td>&lt; 5.0 A</td>
<td>&lt; 5.0 A</td>
<td>N/A</td>
<td>&lt; 5.0 A</td>
<td>N/A</td>
<td>24.5 C</td>
</tr>
<tr>
<td>A</td>
<td>Sutton Garage / 1455 East</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>B</td>
<td>Surface Lots / 1455 East</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

1. Overall intersection LOS and average delay (seconds/vehicle) for the signalized intersections and worst movement LOS and average delay for the unsignalized intersections.

Source: Fehr & Peers, August 2013
INTRODUCTION

PURPOSE

The purpose of this study is to provide a summary of the transportation-related impacts from the proposed Sutton Parking Garage located on the University of Utah campus in Salt Lake City, Utah (see Figure 1 for a project location map).

This study analyzes the traffic operations and impacts for existing 2012, future 2016, and future 2025 conditions at key intersections, described below in the Scope section. Two scenarios were analyzed: background and plus garage. For existing 2012, a third scenario was analyzed: existing plus Ambulatory Care Center (ACC). For each of the evaluation periods, mitigation (roadway geometry changes or operational improvements) actions, if needed, were recommended and tested. If a recommended change was identified in the background scenario, it was included in the plus garage scenarios.

SCOPE

This study analyzes the traffic impacts of the garage in conjunction with adjacent intersections. Where changes are needed to maintain acceptable level of service (LOS), improvements are proposed. Impacts are specifically addressed at the following study intersections:

1) 100 South / University Street
2) 100 South / 1455 East / Wolcott Street
3) Parking lot entrance / 1455 East

ANALYSIS METHODOLOGY

LOS is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. Table 3 provides a brief description of each LOS letter designation and an accompanying average delay per vehicle for both signalized and unsignalized intersections. The Highway Capacity Manual 2000 (HCM 2000) methodology was used in this study to remain consistent with “state-of-the-practice” professional standards. This methodology has different quantitative evaluations for signalized and
unsignalized intersections. For signalized intersections, the LOS is provided for the overall intersection (weighted average of all approach delays).

### TABLE 3 LEVEL OF SERVICE DESCRIPTIONS

<table>
<thead>
<tr>
<th>LOS</th>
<th>Description</th>
<th>Signalized Intersections</th>
<th>Unsignalized Intersections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Avg. Delay (sec/veh)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Avg. Delay (sec/veh)&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>A</td>
<td><em>Free Flow / Insignificant Delay</em></td>
<td>&lt; 10.0</td>
<td>&lt; 10.0</td>
</tr>
<tr>
<td>B</td>
<td><em>Stable Operations / Minimum Delays</em></td>
<td>&gt; 10.0 to 20.0</td>
<td>&gt; 10.0 to 15.0</td>
</tr>
<tr>
<td>C</td>
<td><em>Stable Operations / Acceptable Delays</em></td>
<td>&gt; 20.0 to 35.0</td>
<td>&gt; 15.0 to 25.0</td>
</tr>
<tr>
<td>D</td>
<td><em>Approaching Unstable Flows / Tolerable Delays</em></td>
<td>&gt; 35.0 to 55.0</td>
<td>&gt; 25.0 to 35.0</td>
</tr>
<tr>
<td>E</td>
<td><em>Unstable Operations / Significant Delays Can Occur</em></td>
<td>&gt; 55.0 to 80.0</td>
<td>&gt; 35.0 to 50.0</td>
</tr>
<tr>
<td>F</td>
<td><em>Forced, Unpredictable Flows / Excessive Delays</em></td>
<td>&gt; 80.0</td>
<td>&gt; 50.0</td>
</tr>
</tbody>
</table>

1. Overall intersection LOS and average delay (seconds/vehicle) for all approaches.
2. Worst approach LOS and delay (seconds/vehicle) only.
3. Volume to capacity (v/c) rate, average values.

DATA COLLECTION

Fehr & Peers collected turning movement counts and parking utilization rates at and near the proposed parking garage. Traffic counts at the study intersections were collected to establish a baseline of existing conditions and operations for the area. AM and PM peak period traffic counts were recorded from 7:00 AM to 10:00 AM and 3:00 PM to 7:30 PM on Wednesday, April 17, 2013. Adjustment factors were not applied. Intersection data was collected at:

1) 100 South / University Street
2) 100 South / 1455 East / Wolcott Street
3) Parking lot entrance / 1455 East

Parking utilization rates were collected at 10:00 AM, 2:30 PM, and 7:30 PM on Wednesday, April 17, 2013 at the Sutton surface lot and the Naval Sciences surface lot.
PROJECT DESCRIPTION

The University of Utah has identified the southeast corner of the intersection of 100 South/1455 East/Wolcott Street as the location for a new parking garage. Currently, the project site is occupied by a surface parking lot with approximately 80 parking stalls. The proposed project would replace the current surface lot with a 360-stall parking garage. Access would be provided from 1455 East. A site plan is shown in Figure 2.

TRIP GENERATION

Project trip generation was estimated by direct application of parking utilization collected at the Sutton and Naval Sciences surface lots, as described above. Trip generation was estimated for the AM and PM peak hour. The trip generation estimates are presented in Tables 4 and 5.

<table>
<thead>
<tr>
<th>Parking Lot</th>
<th>Number of Stalls</th>
<th>Total Trips</th>
<th>Trips</th>
<th>Distribution</th>
<th>Trip Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Enter</td>
<td>Exit</td>
<td></td>
</tr>
<tr>
<td>Existing (Sutton + Naval Sciences)</td>
<td>149</td>
<td>80</td>
<td>52</td>
<td>28</td>
<td>65% 35%</td>
</tr>
<tr>
<td>Existing (Sutton)</td>
<td>81</td>
<td>47</td>
<td>31</td>
<td>16</td>
<td>66% 34%</td>
</tr>
<tr>
<td>Sutton Garage</td>
<td>360</td>
<td>193</td>
<td>126</td>
<td>68</td>
<td></td>
</tr>
</tbody>
</table>

Source: Fehr & Peers.

<table>
<thead>
<tr>
<th>Parking Lot</th>
<th>Number of Stalls</th>
<th>Total Trips</th>
<th>Trips</th>
<th>Distribution</th>
<th>Trip Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Enter</td>
<td>Exit</td>
<td></td>
</tr>
<tr>
<td>Existing (Sutton + Naval Sciences)</td>
<td>149</td>
<td>85</td>
<td>24</td>
<td>61</td>
<td>28% 72%</td>
</tr>
<tr>
<td>Existing (Sutton)</td>
<td>81</td>
<td>50</td>
<td>15</td>
<td>35</td>
<td>30% 70%</td>
</tr>
<tr>
<td>Sutton Garage</td>
<td>360</td>
<td>205</td>
<td>58</td>
<td>147</td>
<td></td>
</tr>
</tbody>
</table>

Source: Fehr & Peers.
TRIP DISTRIBUTION AND ASSIGNMENT

Project traffic was assigned to the roadway network based on the distribution of existing surface lot users. The project-generated trips were distributed to and from these directions, in the corresponding percentages shown in Table 6. These trip distribution assumptions were used to distribute project-generated traffic to the study area intersections. Figure 3 shows the resulting project-generated weekday AM and PM peak hour trips.

### Table 6 Trip Distribution for AM and PM Peak

<table>
<thead>
<tr>
<th>Parking Lot</th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>North (using Wolcott Street)</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>East (using 100 South)</td>
<td>15%</td>
<td>40%</td>
</tr>
<tr>
<td>West (using 100 South)</td>
<td>65%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Source: Fehr & Peers.
FIGURE 3

PROJECT-GENERATED AM AND PM PEAK HOUR TRIPS

Legend

- AM (PM) Project Volumes
- Signal
- Stop Sign

<table>
<thead>
<tr>
<th>Location</th>
<th>AM Project Volumes</th>
<th>PM Project Volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td>University St</td>
<td>0 (0) 0 (0) 0 (0)</td>
<td>0 (0) 0 (0) 0 (0)</td>
</tr>
<tr>
<td>1455 East</td>
<td>0 (0) 0 (0) 0 (0)</td>
<td>0 (0) 0 (0) 0 (0)</td>
</tr>
<tr>
<td>200 South</td>
<td>0 (0) 0 (0) 0 (0)</td>
<td>0 (0) 0 (0) 0 (0)</td>
</tr>
<tr>
<td>100 South</td>
<td>0 (0) 0 (0) 0 (0)</td>
<td>0 (0) 0 (0) 0 (0)</td>
</tr>
<tr>
<td>1300 East</td>
<td>0 (0) 0 (0) 0 (0)</td>
<td>0 (0) 0 (0) 0 (0)</td>
</tr>
</tbody>
</table>
EXISTING 2013 CONDITIONS

PURPOSE

The purpose of the 2013 existing conditions analysis is to study the pertinent intersections and roadways during the peak travel periods of the day under existing traffic and geometric conditions. Through this analysis, existing traffic operational deficiencies can be identified and potential mitigation measures recommended.

TRAFFIC VOLUMES

Traffic volumes were collected as described in the Introduction. The existing background weekday AM and PM peak hour traffic volumes are shown in Figure 4.

LEVEL OF SERVICE ANALYSIS

Using Synchro/SimTraffic simulation software and the HCM 2000 delay thresholds introduced previously, the existing background weekday AM and PM peak hour LOS was computed for each study intersection. The results of this analysis for the AM and PM peak hours are reported in Tables 7 and 8 (see Appendix for the detailed LOS report).

As shown in Tables 7 and 8, all of the study intersections operate at a LOS C or better for the existing conditions during the PM peak hour.

MITIGATION MEASURES

No mitigation measures are needed to accommodate the existing conditions.
TABLE 7 EXISTING BACKGROUND CONDITIONS AM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>16.6</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>16.5</td>
<td>B</td>
</tr>
<tr>
<td>3</td>
<td>Sutton Parking Lot / 1455 East</td>
<td>Side-Stop</td>
<td>NE</td>
<td>5.2</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through
Source: Fehr & Peers.

TABLE 8 EXISTING BACKGROUND CONDITIONS PM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>13.7</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>7.9</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>Sutton Parking Lot / 1455 East</td>
<td>Side-Stop</td>
<td>NE</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through
Source: Fehr & Peers.
EXISTING 2013 PLUS ACC CONDITIONS

PURPOSE

The purpose of the 2013 existing plus ACC conditions analysis is to study the pertinent intersections and roadways during the peak travel periods of the day under existing traffic and geometric conditions with projected traffic from the ACC. Through this analysis, existing plus ACC traffic operational deficiencies can be identified and potential mitigation measures recommended.

TRAFFIC VOLUMES

The ACC is a new health center on Mario Capecchi Drive and is proposed to be built in two phases. For the existing condition, only phase 1 of the ACC was included. Phase 1 assumes the addition of 775 peak hour trips, 35% of which will go through the Sutton Parking Garage study area. ACC-generated traffic was added to the background volumes (Figure 4) to yield “existing plus ACC” weekday AM and PM peak hour traffic volumes at the study intersections. The resulting traffic volumes are displayed in Figure 5.

LEVEL OF SERVICE ANALYSIS

Using Synchro/SimTraffic simulation software and the HCM 2000 delay thresholds introduced previously, the existing plus ACC weekday AM and PM peak hour LOS was computed for each study intersection. The results of this analysis for the AM and PM peak hours are reported in Tables 9 and 10 (see Appendix for the detailed LOS report). These results serve as a base for the analysis of the impacts of the proposed garage.

As shown in Tables 9 and 10, all of the study intersections operate at a LOS C or better for the existing conditions during the PM peak hour.

MITIGATION MEASURES

No mitigation measures are needed to accommodate the existing conditions.
EXISTING PLUS ACC PHASE 1 AM AND PM PEAK HOUR CONDITIONS

FIGURE 5
### TABLE 9 EXISTING PLUS ACC CONDITIONS AM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement³</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)²</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>23.6</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>14.7</td>
<td>B</td>
</tr>
<tr>
<td>3</td>
<td>Sutton Parking Lot / 1455 East</td>
<td>Side-Stop</td>
<td>NE</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through

Source: Fehr & Peers.

### TABLE 10 EXISTING PLUS ACC CONDITIONS PM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement³</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)²</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>17.1</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>8.1</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>Sutton Parking Lot / 1455 East</td>
<td>Side-Stop</td>
<td>NE</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through

Source: Fehr & Peers.
EXISTING 2013 PLUS ACC AND GARAGE CONDITIONS

PURPOSE

The purpose of the 2013 existing plus ACC and garage conditions analysis is to evaluate the impact of garage traffic on the surrounding roadway network. In order to analyze this impact, the peak hour background plus ACC traffic volumes were combined with volumes generated by the proposed garage for the peak hours. Intersection LOS analyses were then performed and compared to the results of the background traffic volumes. This comparison shows the impact of the proposed garage.

TRAFFIC VOLUMES

Project-generated traffic (Figure 3) was added to the background plus ACC volumes (Figure 5) to yield "existing plus ACC and garage" weekday AM and PM peak hour traffic volumes at the study intersections. The resulting traffic volumes are displayed in Figure 6.

LEVEL OF SERVICE ANALYSIS

Using Synchro/SimTraffic simulation software and the HCM 2000 delay thresholds introduced previously, the existing plus ACC weekday AM and PM peak hour LOS was computed for each study intersection. The results of this analysis for the AM and PM peak hours are reported in Tables 11 and 12 (see Appendix for the detailed LOS report). As shown in Tables 11 and 12, all of the study intersections operate at a LOS C or better for the existing plus ACC and garage conditions during the PM peak hour.

MITIGATION MEASURES

No mitigation measures are needed to accommodate the existing conditions.
EXISTING PLUS ACC AND GARAGE AM AND PM PEAK HOUR CONDITIONS

FIGURE 6
### TABLE 11 EXISTING PLUS ACC AND GARAGE CONDITIONS AM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement³</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)²</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>29.9</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>15.8</td>
<td>B</td>
</tr>
<tr>
<td>A</td>
<td>Sutton Garage / 1455 East</td>
<td>Side-Stop</td>
<td>WB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>Surface Parking / 1455 East</td>
<td>Side-Stop</td>
<td>EB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through

Source: Fehr & Peers.

### TABLE 12 EXISTING PLUS ACC AND GARAGE CONDITIONS PM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement³</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)²</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>16.6</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>14.8</td>
<td>B</td>
</tr>
<tr>
<td>A</td>
<td>Sutton Garage / 1455 East</td>
<td>Side-Stop</td>
<td>WB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>Surface Parking / 1455 East</td>
<td>Side-Stop</td>
<td>EB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through

Source: Fehr & Peers.
FUTURE 2016 CONDITIONS

PURPOSE

The purpose of the 2012 existing plus ACC conditions analysis is to study the pertinent intersections and roadways during the peak travel periods of the day under existing traffic and geometric conditions with projected traffic from the ACC. Through this analysis, existing plus ACC traffic operational deficiencies can be identified and potential mitigation measures recommended.

TRAFFIC VOLUMES

For the future 2016 condition, only phase 1 of the ACC was included. Phase 1 assumes the addition of 775 peak hour trips, 35% of which will go through the Sutton Parking Garage study area. ACC-generated traffic was added to the future background 2016 volumes to yield “future 2016 plus ACC” weekday AM and PM peak hour traffic volumes at the study intersections. The resulting traffic volumes are displayed in Figure 7.

LEVEL OF SERVICE ANALYSIS

Using Synchro/SimTraffic simulation software and the HCM 2000 delay thresholds introduced previously, the future 2016 weekday AM and PM peak hour LOS was computed for each study intersection. The results of this analysis for the AM and PM peak hours are reported in Tables 13 and 14 (see Appendix for the detailed LOS report). These results serve as a base for the analysis of the impacts of the proposed garage.

As shown in Tables 12 and 14, all of the study intersections operate at a LOS C or better for the existing conditions during the PM peak hour.

MITIGATION MEASURES

No mitigation measures are needed to accommodate the existing conditions.
2016 PLUS ACC PHASE 1 AM AND PM PEAK HOUR CONDITIONS

FIGURE 7

Legend

AM (PM) Project Volumes
Signal
Stop Sign
Level of Service

ABCDEF

XX (XX)

Not to Scale
TABLE 13 FUTURE 2016 CONDITIONS AM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>23.8</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>13.7</td>
<td>B</td>
</tr>
<tr>
<td>3</td>
<td>Sutton Parking Lot / 1455 East</td>
<td>Side-Stop</td>
<td>NE</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).

TABLE 14 FUTURE 2016 CONDITIONS PM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>16.1</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>9.8</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>Sutton Parking Lot / 1455 East</td>
<td>Side-Stop</td>
<td>NE</td>
<td>5.3</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
FUTURE 2016 PLUS GARAGE CONDITIONS

PURPOSE

The purpose of the future 2016 plus garage conditions analysis is to evaluate the impact of garage traffic on the surrounding roadway network. In order to analyze this impact, the peak hour future 2016 traffic volumes were combined with volumes generated by the proposed garage for the peak hours. Intersection LOS analyses were then performed and compared to the results of the background traffic volumes. This comparison shows the impact of the proposed garage.

TRAFFIC VOLUMES

For the future 2025 condition, both phases 1 and 2, or full build out, of the ACC was included. Full build out assumes the addition of 3,565 peak hour trips, 35% of which will go through the Sutton Parking Garage study area. ACC-generated traffic was added to the future background 2025 volumes to yield “future 2025 plus ACC” weekday AM and PM peak hour traffic volumes at the study intersections. The resulting traffic volumes are displayed in Figure 8.

LEVEL OF SERVICE ANALYSIS

Using Synchro/SimTraffic simulation software and the HCM 2000 delay thresholds introduced previously, the future 2016 plus garage weekday AM and PM peak hour LOS was computed for each study intersection. The results of this analysis for the AM and PM peak hours are reported in Tables 11 and 12 (see Appendix for the detailed LOS report). As shown in Tables 11 and 12, all of the study intersections operate at a LOS C or better for the existing plus ACC and garage conditions during the PM peak hour.

MITIGATION MEASURES

No mitigation measures are needed to accommodate the existing conditions.
### TABLE 15 FUTURE 2016 PLUS GARAGE CONDITIONS AM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement(^3)</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)(^2)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>28.6</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>17.5</td>
<td>B</td>
</tr>
<tr>
<td>A</td>
<td>Sutton Garage / 1455 East</td>
<td>Side-Stop</td>
<td>WB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>Surface Parking / 1455 East</td>
<td>Side-Stop</td>
<td>EB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through
Source: Fehr & Peers.

### TABLE 16 FUTURE 2016 PLUS GARAGE CONDITIONS PM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement(^3)</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)(^2)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>17.4</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>15.3</td>
<td>B</td>
</tr>
<tr>
<td>A</td>
<td>Sutton Garage / 1455 East</td>
<td>Side-Stop</td>
<td>WB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>Surface Parking / 1455 East</td>
<td>Side-Stop</td>
<td>EB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through
Source: Fehr & Peers.
FUTURE 2025 CONDITIONS

PURPOSE

The purpose of the 2012 existing plus ACC conditions analysis is to study the pertinent intersections and roadways during the peak travel periods of the day under existing traffic and geometric conditions with projected traffic from the ACC. Through this analysis, existing plus ACC traffic operational deficiencies can be identified and potential mitigation measures recommended.

TRAFFIC VOLUMES

For the future 2025 condition, phases 1 and 2 of the ACC were included. Phase 1 assumes the addition of 3,565 peak hour trips, 35% of which will go through the Sutton Parking Garage study area. ACC-generated traffic was added to the future background 2025 volumes to yield “future 2025 plus ACC” weekday AM and PM peak hour traffic volumes at the study intersections. The existing background weekday PM peak hour traffic volumes are shown in Figure 9.

LEVEL OF SERVICE ANALYSIS

Using Synchro/SimTraffic simulation software and the HCM 2000 delay thresholds introduced previously, the future 2025 weekday AM and PM peak hour LOS was computed for each study intersection. The results of this analysis for the AM and PM peak hours are reported in Tables 17 and 18 (see Appendix for the detailed LOS report). These results serve as a base for the analysis of the impacts of the proposed garage.

As shown in Tables 17 and 18, future conditions deteriorate significantly with the addition of the full build out of the ACC. In the AM peak hour, the intersection of 100 South / University Street operates at LOS F. This is primarily due to the high volume of eastbound traffic to the ACC. Remaining intersections operate at acceptable levels of delay in the AM peak hour. In the PM peak hour, all intersections operate at LOS C, with the exception of the intersection of the Sutton Parking Lot / 1455 East. At this intersection, high volumes in the westbound direction limit the amount of time that can be given for the minor north/southbound movements. Thus, queues form in the northbound direction, affecting vehicles exiting the existing Sutton parking lot.
MITIGATION MEASURES

No mitigation measures are recommended. The University should consider TDM measures for the ACC project.
### TABLE 17 FUTURE 2025 CONDITIONS AM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>&gt; 80.0</td>
<td>F</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>35.6</td>
<td>D</td>
</tr>
<tr>
<td>3</td>
<td>Sutton Parking Lot / 1455 East</td>
<td>Side-Stop</td>
<td>NE</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through

### TABLE 18 FUTURE 2025 CONDITIONS PM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>30.7</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>28.6</td>
<td>C</td>
</tr>
<tr>
<td>3</td>
<td>Sutton Parking Lot / 1455 East</td>
<td>Side-Stop</td>
<td>SW</td>
<td>46.1</td>
<td>E</td>
<td>24.5</td>
<td>C</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through
FUTURE 2025 PLUS GARAGE CONDITIONS

PURPOSE

The purpose of the future 2025 plus garage conditions analysis is to evaluate the impact of garage traffic on the surrounding roadway network. In order to analyze this impact, the peak hour future 2025 traffic volumes were combined with volumes generated by the proposed garage for the peak hours. Intersection LOS analyses were then performed and compared to the results of the future 2025 traffic volumes. This comparison shows the impact of the proposed garage.

TRAFFIC VOLUMES

Project-generated traffic (Figure 3) was added to the future 2025 volumes (Figure 9) to yield “future 2025 plus garage” weekday AM and PM peak hour traffic volumes at the study intersections. The resulting traffic volumes are displayed in Figure 10.

LEVEL OF SERVICE ANALYSIS

Using Synchro/SimTraffic simulation software and the HCM 2000 delay thresholds introduced previously, the future 2025 plus garage weekday AM and PM peak hour LOS was computed for each study intersection. The results of this analysis for the AM and PM peak hours are reported in Tables 19 and 20 (see Appendix for the detailed LOS report).

As shown in Tables 19 and 20, all of the study intersections operate at the same levels of delay as the future 2025 conditions. However, the proposed garage access in the PM peak hour operates at LOS F. In the PM peak hour, high volumes in the west direction at the intersection of 100 South/1455 East/Wolcott Street limit the amount of green time that can be given to the north/south directions. This causes queues to back up past the garage, prohibiting vehicles from exiting the garage.

MITIGATION MEASURES

It is recommended that an exclusive northbound left-turn lane be provided at the intersection of 100 South/1455 East/Wolcott Street. Traffic operations for the mitigated condition are shown in Tables 21 and 22.
### TABLE 19 FUTURE 2025 PLUS GARAGE CONDITIONS AM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement 3</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>&gt; 80.0</td>
<td>F</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>40.7</td>
<td>D</td>
</tr>
<tr>
<td>A</td>
<td>Sutton Garage / 1455 East</td>
<td>Side-Stop</td>
<td>WB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>Surface Parking / 1455 East</td>
<td>Side-Stop</td>
<td>EB</td>
<td>&lt; 5.0</td>
<td>A</td>
<td>&lt; 5.0</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through

Source: Fehr & Peers.

### TABLE 20 FUTURE 2025 PLUS GARAGE CONDITIONS PM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>ID</th>
<th>Location</th>
<th>Control</th>
<th>Movement 3</th>
<th>Delay (sec/veh)</th>
<th>LOS</th>
<th>Avg. Delay (sec/veh)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>27.8</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>32.9</td>
<td>C</td>
</tr>
<tr>
<td>A</td>
<td>Sutton Garage / 1455 East</td>
<td>Side-Stop</td>
<td>WB</td>
<td>&gt; 50.0</td>
<td>F</td>
<td>&gt; 50.0</td>
<td>F</td>
</tr>
<tr>
<td>B</td>
<td>Surface Parking / 1455 East</td>
<td>Side-Stop</td>
<td>EB</td>
<td>20.4</td>
<td>C</td>
<td>9.4</td>
<td>A</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through

Source: Fehr & Peers.
### TABLE 21 FUTURE 2025 PLUS GARAGE MITIGATED CONDITIONS AM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Worst Movement¹</th>
<th>Overall Intersection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>Location</td>
<td>Control</td>
</tr>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
</tr>
<tr>
<td>A</td>
<td>Sutton Garage / 1455 East</td>
<td>Side-Stop</td>
</tr>
<tr>
<td>B</td>
<td>Surface Parking / 1455 East</td>
<td>Side-Stop</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through
Source: Fehr & Peers.

### TABLE 22 FUTURE 2025 PLUS GARAGE MITIGATED CONDITIONS PM PEAK HOUR LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Worst Movement¹</th>
<th>Overall Intersection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>Location</td>
<td>Control</td>
</tr>
<tr>
<td>1</td>
<td>100 South / University Street</td>
<td>Signal</td>
</tr>
<tr>
<td>2</td>
<td>100 South / 1455 East / Wolcott Street</td>
<td>Signal</td>
</tr>
<tr>
<td>A</td>
<td>Sutton Garage / 1455 East</td>
<td>Side-Stop</td>
</tr>
<tr>
<td>B</td>
<td>Surface Parking / 1455 East</td>
<td>Side-Stop</td>
</tr>
</tbody>
</table>

1. This represents the worst movement LOS and delay (seconds/vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds/vehicle).
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound, LT=Left-turn, RT=Right-turn, and TH=Through
Source: Fehr & Peers.
2025 PLUS ACC AND GARAGE AM AND PM PEAK HOUR CONDITIONS - MITIGATED

FIGURE 11
CONCLUSION

For all existing and future conditions, all study intersections operate within acceptable LOS (LOS A to LOS D) in both the AM and PM peak hour. With the full-build out of the ACC, conditions begin to deteriorate in the future 2025 scenario. Garage traffic does not significantly impact intersection LOS. However, in the future 2025 plus garage conditions, the northbound queue prohibits exiting vehicles. An exclusive northbound left-turn lane be provided at the intersection of 100 South / 1455 East / Wolcott Street is recommended to mitigate queuing problems.