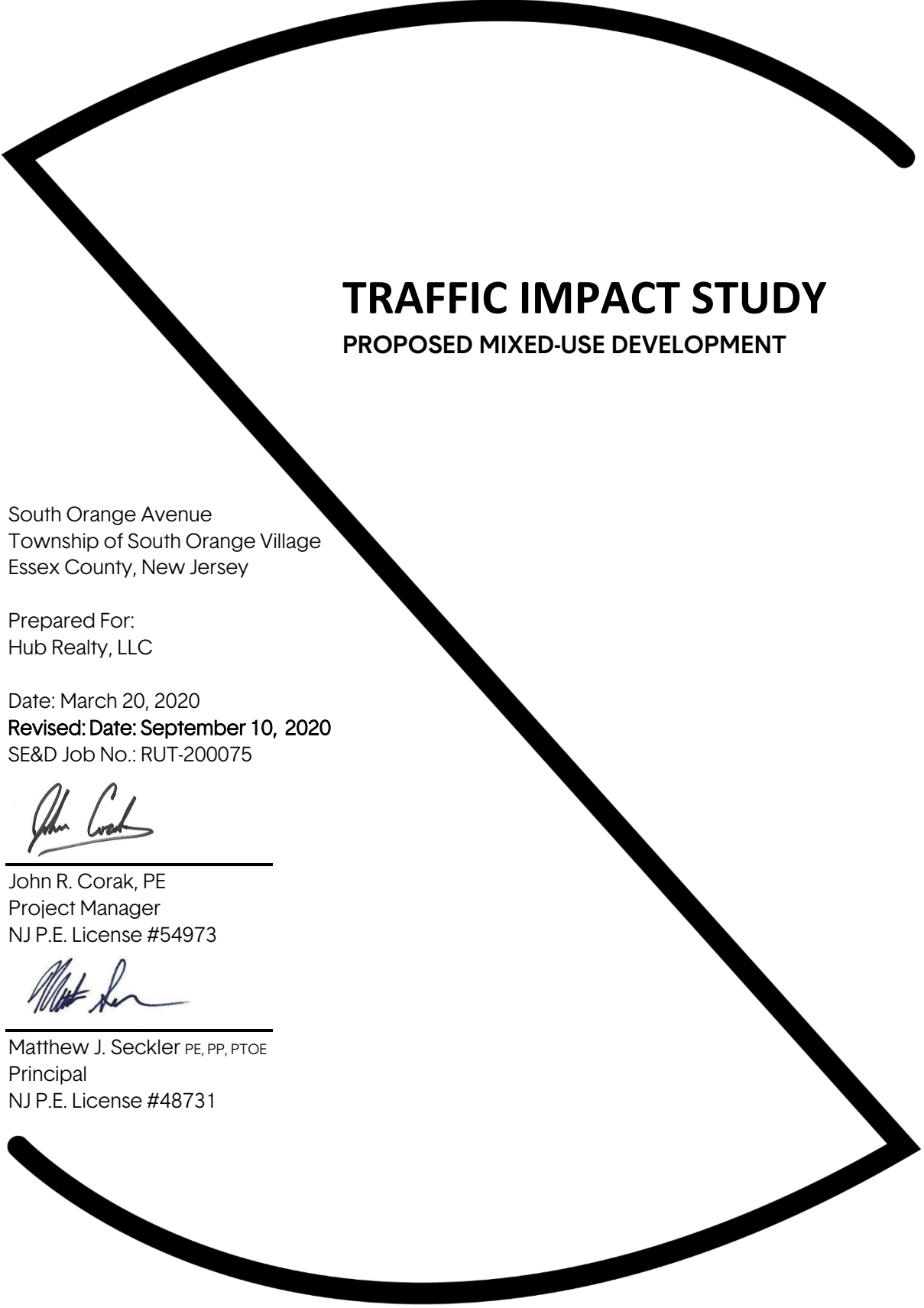




# TRAFFIC IMPACT STUDY

## PROPOSED MIXED-USE DEVELOPMENT

South Orange Avenue  
Township of South Orange Village  
Essex County, New Jersey

Prepared For:  
Hub Realty, LLC

Date: March 20, 2020  
**Revised: Date: September 10, 2020**  
SE&D Job No.: RUT-200075



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**STONEFIELD**

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## INTRODUCTION

This Traffic Impact Study was prepared to investigate the potential impacts of the proposed mixed-use development on the adjacent roadway network. The subject property is bounded by Scotland Road to the east, Vose Avenue to the west, Taylor Place to the north, and South Orange Avenue to the south in the Township of South Orange Village, Essex County, New Jersey. The site location is shown on appended **Figure I**.

The subject property is designated as Block 1006, Lots 1, 2, 3, 9, 10, 13, and 14 as depicted on the Township of South Orange Village Tax Map. The site has approximately 10 feet of frontage along Scotland Road, approximately 185 feet of frontage along Vose Avenue, approximately 250 feet of frontage along Taylor Place, and approximately 84 feet of frontage along South Orange Avenue. The existing site presently contains the Taylor Place municipal parking lot, one (1) two-story structure occupied by Little Stages Child Day Care and associated parking area, one (1) residential dwelling, one (1) two-story structure with multiple tenants, and two (2) one-story structures occupied by South Orange Village Center Alliance. Access is presently provided via two (2) full-movement driveways, one (1) ingress-only driveway, and one (1) egress-only driveway along Taylor Place, and one (1) full-movement driveway along Vose Avenue. Pedestrian walkways between the surrounding buildings are provided along South Orange Avenue and Scotland Road for access the municipal parking lot in the rear. Under the proposed development program, the existing structures would be razed and a five (5)-story mixed-use building consisting of 110 residential units, 9,940 square feet of office space, 12,105 square feet of retail space, and a two (2)-level parking garage would be constructed. Vehicular access is proposed via one (1) full-movement driveway along Taylor Place and one (1) full-movement driveway along Vose Avenue with the location of the pedestrian walkways to remain and provide access to the parking garage.

## METHODOLOGY

Stonefield Engineering & Design, LLC has prepared this Traffic Impact Study in accordance with the recommended guidelines and practices outlined by the Institute of Transportation Engineers (ITE) within Transportation Impact Analyses for Site Development. A detailed field investigation was performed to assess the existing conditions of the adjacent roadway network. A data collection effort was completed to identify the existing traffic volumes at the study intersections to serve as a base for the traffic analyses. Capacity analysis, a procedure used to estimate the traffic-carrying ability of roadway facilities over a range of defined operating conditions, was performed using the Highway Capacity Manual, 6<sup>th</sup> Edition (HCM) and the Synchro 10 Software for all study conditions to assess the roadway operations.

For an unsignalized intersection, Level of Service (LOS) A indicates operations with delay of less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle. For a signalized intersection, LOS A indicates operations with delay of less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 80 seconds per vehicle. The Technical Appendix contains the Highway Capacity Analysis Detail Sheets for the study intersections analyzed in this assessment. The traffic signal timing utilized within the signalized analysis is based on timing directives provided by Essex County.

## **2020 EXISTING CONDITION**

### **2020 EXISTING ROADWAY CONDITIONS**

The proposed mixed-use development is bounded by Scotland Road to the east, Vose Avenue to the west, Taylor Place to the north, and South Orange Avenue to the south in the Township of South Orange Village, Essex County, New Jersey. The subject property is designated as Block 1006, Lots 1, 2, 3, 9, 10, 13, and 14 as depicted on the Township of South Orange Village Tax Map. The site has approximately 10 feet of frontage along Scotland Road, approximately 185 feet of frontage along Vose Avenue, approximately 250 feet of frontage along Taylor Place, and approximately 84 feet of frontage along South Orange Avenue. Land uses in the area are a mix of uses.

South Orange Avenue (County Route 510) is classified as an Urban Principal Arterial roadway with a general east-west orientation and is under the jurisdiction of Essex County. Along the site frontage, the roadway generally provides one (1) lane of travel in each direction with additional lanes provided at key intersections to facilitate turning movements. South Orange Avenue has a posted speed limit of 30 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and metered on-street parking is provided along both sides of the roadway. South Orange Avenue provides east-west mobility within the Township of South Orange Village and surrounding municipalities for access to a mix of retail and residential uses along its length.

Scotland Road (County Route 638) is classified as an Urban Minor Arterial roadway with a general north-south orientation and is under the jurisdiction of Essex County. Along the site frontage, the roadway provides one (1) lane of travel in each direction and has a posted speed limit of 25 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is not permitted. Scotland Road becomes Valley Street south of its intersection with South Orange Avenue and provides north-south mobility within the Township of South Orange Village and surrounding municipalities for access to a mix of uses along its length.

Valley Street (County Route 638) is classified as an Urban Minor Arterial roadway with a general north-south orientation and is under the jurisdiction of Essex County. In the vicinity of the site, the roadway provides one (1) lane of travel in each direction and has a posted speed limit of 25 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is not permitted within the immediate vicinity of the site. Valley Street becomes Scotland Road north of its intersection with South Orange Avenue and provides north-south mobility within the Township of South Orange Village and surrounding municipalities for access to predominately retail uses along its length.

Vose Avenue is a local roadway with a general north-south orientation and is under the jurisdiction of the Township of South Orange Village. Along the site frontage, the roadway provides one (1) lane of travel in each direction. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street metered parking is provided along both sides of the roadway within the immediate vicinity of the site. Vose Avenue provides north-south mobility within the Township of South Orange Village for access to predominantly residential uses along its length.

Taylor Place is a local roadway with a general east-west orientation and is under the jurisdiction of the Township of South Orange Village. Along the site frontage, the roadway provides one (1) lane of travel in each direction. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is not permitted. Taylor Place connects Scotland Road at its easterly terminus to Vose Avenue at its westerly terminus for access to predominantly municipal uses.

South Orange Avenue, Scotland Road, and Valley Street intersect to form a four (4)-leg intersection controlled by a four (4)-phase traffic signal operating on a 90-second fixed background cycle length. The eastbound approach of South Orange Avenue provides one (1) exclusive left-turn lane, one (1) exclusive through lane, and one (1) shared through/right-turn lane and the westbound approach of South Orange Avenue provides one (1) exclusive left-turn lane, one (1) exclusive through lane, and one (1) exclusive right-turn lane. The northbound approach of Valley Street provides one (1) exclusive left-turn lane, one (1) exclusive through lane, and one (1) exclusive right-turn lane and the southbound approach of Scotland Road provides one (1) exclusive left-turn lane, one (1) exclusive through lane, and one (1) shared through/right-turn lane. Crosswalks and pedestrian signals are provided across all legs of the intersection.

South Orange Avenue and Vose Avenue intersect to form a T-intersection controlled by a two (2)-phase traffic signal operating on a 90-second fixed background cycle length. The eastbound approach of South Orange Avenue provides one (1) exclusive left-turn lane and one (1) exclusive through lane and the westbound approach of South Orange Avenue provides one (1) exclusive through lane and one (1) exclusive right-turn lane. The southbound approach of Vose Avenue provides one (1) shared left-turn/right-turn lane. Crosswalks and pedestrian signals are provided across all legs of the intersection.

Taylor Place and Scotland Road intersect to form an unsignalized T-intersection with the eastbound approach of Taylor Place operating under stop control. The eastbound approach of Taylor Place provides one (1) shared left-turn/right-turn lane. The northbound approach of Scotland Road provides one (1) shared left-turn/through lane and the southbound approach of Scotland Road provides one (1) shared through/right-turn lane. Crosswalk is provided across the westerly leg of the intersection.

Taylor Place and Vose Avenue intersect to form an unsignalized T-intersection with the westbound approach of Taylor Place operating under stop control. The westbound approach of Taylor Place provides one (1) shared left-turn/right-turn lane. The northbound approach of Vose Avenue provides one (1) shared through/right-turn lane and the southbound approach of Scotland Road provides one (1) shared left-turn/through lane. Crosswalks are provided across the easterly and northerly legs of the intersection.

#### 2020 EXISTING TRANSIT SERVICE

The subject site is located within 350 feet (1-minute walk) from South Orange Train Station which serves NJ Transit's Hackettstown and Gladstone Lines and provides direct service to Newark Broad Street Station, Secaucus Junction, New York Penn Station, and Hoboken Terminal as well as transfer service to Newark Penn Station and other lines on the NJ Transit system. At Hoboken Terminal, transfers are available to the Port Authority Trans-Hudson (PATH) trains and NY Waterway ferries. Further, the proposed development is located within 800 feet (3-minute walk) from bus stops that service two (2) NJ Transit bus routes, a Coach USA bus route, each of the South Orange Jitney Routes, and the Livingston Express Shuttle, with the nearest stop located at the intersection of Valley Street and 1<sup>st</sup> Street. NJ Transit Bus Route 107 provides service to New York Port Authority and Coach USA Bus Route 31 provides service to Newark Penn Station with both NJ Transit bus routes and the Coach USA bus route providing service to various points of interest throughout Essex County. The Livingston Express Shuttle provides direct service between the Livingston Mall and the South Orange Train Station during peak commute hours and the South Orange Jitney Routes provide service between local stops throughout the Village and the South Orange Train Station. The non-vehicular transportation modes available in the general vicinity of the subject site are summarized on **Table I**.

**TABLE 1: PUBLIC TRANSPORTATION OPTIONS – FOR COMMUTING**

| <b>Travel Mode</b>         | <b>Proximity to Site</b> | <b>Peak Commuter Period Headways</b>        | <b>Destination(s)</b>                                                                   | <b>Time Travel to Major Destination</b>            |
|----------------------------|--------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------|
| South Orange Train Station | 350 feet                 | Inbound: 10 minutes<br>Outbound: 15 minutes | Newark Broad Street Station, Secaucus Junction, New York Penn Station, Hoboken Terminal | To New York Penn Station: 30 minutes               |
| NJ Transit Bus Route 92    | 400 feet                 | Inbound: 20 minutes<br>Outbound: 20 minutes | Orange, Bloomfield, Newark Light Rail at Branch Brook Park                              | Newark Light Rail at Branch Brook Park: 40 minutes |
| NJ Transit Bus Route 107   | 400 feet                 | Inbound: 20 minutes<br>Outbound: 30 minutes | Irvington Bus Terminal, Newark Liberty International Airport, New York Port Authority   | To New York Port Authority: 65 minutes             |
| Coach USA Route 31         | 800 feet                 | Inbound: 30 minutes<br>Outbound: 60 minutes | Grove Street, Broad Street & Market Street, Newark Penn Station                         | To Newark Penn Station: 35 minutes                 |
| Livingston Express Shuttle | 500 feet                 | Inbound: 30 minutes<br>Outbound: 35 minutes | Livingston Mall, South Orange Train Station                                             | Round Trip: 20 minutes                             |
| South Orange Jitney Routes | 500 feet                 | Inbound: 30 minutes<br>Outbound: 35 minutes | Local stops throughout the Village                                                      | Round Trip: 12 minutes                             |

**2020 EXISTING TRAFFIC VOLUMES**

Manual turning movement counts were collected during the typical weekday morning, weekday evening, and Saturday midday time periods to evaluate existing traffic conditions and identify the specific hours when traffic activity on the adjacent roadways is at a maximum and could be potentially impacted by the development of the site. Turning movement counts were collected at the following intersections:

- ◆ South Orange Avenue, Scotland Road & Valley Street
- ◆ South Orange Avenue & Vose Avenue
- ◆ Taylor Place & Scotland Road
- ◆ Taylor Place & Vose Avenue

Specifically, manual turning movement counts were conducted on the following dates and during the following times:

- ◆ Tuesday, March 3, 2020 from 7:00 a.m. to 9:00 a.m.
- ◆ Wednesday, March 4, 2020 from 4:00 p.m. to 7:00 p.m.
- ◆ Saturday, February 29, 2020, from 11:00 a.m. to 2:00 p.m.

The study time periods were chosen as they are representative of the peak periods of both the adjacent roadway network and the proposed development. The traffic volume data was collected and analyzed to identify the design peak hour in accordance with HCM and ITE guidelines. Based on the review of the count data the weekday morning peak hour occurred from 8:00 a.m. to 9:00 a.m.; the weekday evening peak hour occurred from 5:30 p.m. to 6:30 p.m.; and the Saturday midday peak hour occurred from 12:00 p.m. to 1:00 p.m. The Technical Appendix contains a summary of the turning movement count data. The 2020 Existing weekday morning, weekday evening, and Saturday midday peak-hour volumes are summarized on appended **Figure 2**.

### 2020 EXISTING LOS/CAPACITY ANALYSIS

A Level of Service and Volume/Capacity analysis was conducted for the 2020 Existing Condition during the weekday morning, weekday evening, and Saturday midday peak hours at the study intersections. Under the existing condition, the signalized intersection of South Orange Avenue, Scotland Road, and Valley Street is calculated to operate at overall Level of Service C during each of the peak hours studied with the southbound left-turn approach calculated to operate at Level of Service E during the weekday evening peak hour. The signalized intersection of South Orange Avenue and Vose Avenue is calculated to operate at overall Level of Service A during each of the peak hours studied. The turning movements of the unsignalized intersection of Taylor Place and Scotland Road are calculated to operate at Level of Service C or better during each of the peak hours studied. The turning movements of the unsignalized intersection of Taylor Place and Vose Avenue are calculated to operate at Level of Service B or better during each of the peak hours studied.

Under the existing condition, the calculated 95<sup>th</sup> percentile queue at the southbound approach at the intersection of South Orange Avenue and Vose Avenue blocks existing driveways along Vose Avenue at the subject property during each of the peak hours studied. Based on field observations, the queues at this approach typically clear with each signal cycle and as such, there is sufficient space to make left-turn maneuvers from the site. Further, southbound queuing does not restrict right-turn egress movements from the subject site. The surrounding roadway network is a grid-style layout, and access to both directions of travel along South Orange Avenue is available via right-turn egress from the site.

## **2023 NO-BUILD CONDITION**

### BACKGROUND GROWTH

The 2020 Existing Condition traffic volume data was grown to a future horizon year of 2023, which is a conservative estimate for when the proposed mixed-use development is expected to be fully constructed. In accordance with industry guidelines, the existing traffic volumes at the study intersections were increased by

2.00% annually for three (3) years to generate the 2023 Base Traffic Volumes. These volumes are summarized on appended **Figure 3**. The 2.00% background growth rate was obtained from the New Jersey Department of Transportation (NJDOT) Annual Background Growth Rate Table.

#### OTHER PLANNED DEVELOPMENT PROJECTS

To evaluate the future traffic conditions, it is important to consider the potential site-generated traffic of other projects that could influence the traffic volume at the study intersections. Other planned development projects include those that are either in the entitlement process or have recently been approved for building permits in proximity to the proposed development. Based on consultations with Sal Renda, the Township of South Orange Village's Engineer, the following developments are anticipated to impact traffic volumes within the study area:

- ◆ Restaurant & Beer Garden – 12,692-square-foot restaurant located directly across Scotland Road at 101 South Orange Avenue
- ◆ The Learning Experience – 16,327-square-foot day care center located along South Orange Avenue near its intersection with Church Street to the west of the site

Appended **Figure 4** illustrates the site-generated traffic associated with the restaurant and day care center projects assigned to the study area network.

#### 2023 NO-BUILD TRAFFIC VOLUMES

The site-generated trips associated with the restaurant and day care center projects were added to the 2023 Base Traffic Volumes to calculate the 2023 No-Build Traffic Volumes for the weekday morning, weekday evening, and Saturday midday peak hours. It is noted the restaurant and beer garden would not be in operation during the weekday morning peak period and the day care center would not be in operation during the Saturday midday peak period and as such, these developments would not increase the traffic volumes on the surrounding roadway network during these respective time periods. These volumes are summarized on appended **Figure 5**.

#### 2023 NO-BUILD LOS/CAPACITY ANALYSIS

A Level of Service and Volume/Capacity analysis was also conducted for the 2023 No-Build Condition during the weekday morning, weekday evening, and Saturday midday peak hours at the study intersections. The signalized intersection of South Orange Avenue, Scotland Road, and Valley Street is calculated to operate generally consistent with the findings of the Existing Condition during each of the peak hours studied. It is noted the southbound left-turn approach is calculated to deteriorate to Level of Service E during the weekday morning peak hour and to under capacity constraints during the weekday evening peak hour. The signalized

intersection of South Orange Avenue and Vose Avenue is calculated to operate generally consistent with the findings of the Existing Condition during each of the peak hours studied. The turning movements of the unsignalized intersection of Taylor Place and Scotland Road are calculated to operate generally consistent with the findings of the Existing Condition during each of the peak hours studied. The turning movements of the unsignalized intersection of Taylor Place and Vose Avenue are calculated to operate generally consistent with the findings of the Existing Condition during each of the peak hours studied.

## **2023 BUILD CONDITION**

The site-generated traffic volume of the proposed mixed-use development was estimated to identify the potential impacts of the project. For the purpose of this analysis, a complete project “build out” is assumed within three (3) years of the preparation of this study.

### **TRIP GENERATION**

Trip generation projections for the proposed mixed-use development were prepared utilizing the ITE’s Trip Generation Manual, 10<sup>th</sup> Edition. Trip generation rates associated with Land Use 221 “Multifamily Housing (Mid-Rise),” Land Use 710 “General Office Building,” and Land Use 820 “Shopping Center” were cited for the 110 residential units, 9,940 square feet of office space, and 12,105 square feet of retail space, respectively.

The subject property is presently developed with numerous retail and office uses, a single-family dwelling, and the Little Stages Child Day Care, which each generate traffic to the surrounding roadway network. However, no trip reduction was applied for the site-generated trips associated with the uses currently in operation on the subject site. There is presently public parking available on-site via the Taylor municipal parking lot. Public parking on-site would continue to be provided on the subject property in the Build Condition, and existing traffic volumes associated with the municipal lot are anticipated to be maintained. **Table 2** provides the weekday morning, weekday evening, and Saturday midday trip generation volumes associated with the proposed development.

**TABLE 2 – PROPOSED TRIP GENERATION**

| Land Use                                                           | Weekday Morning Peak Hour |           |           | Weekday Evening Peak Hour |           |            | Saturday Midday Peak Hour |           |            |
|--------------------------------------------------------------------|---------------------------|-----------|-----------|---------------------------|-----------|------------|---------------------------|-----------|------------|
|                                                                    | Enter                     | Exit      | Total     | Enter                     | Exit      | Total      | Enter                     | Exit      | Total      |
| 110 Unit Multifamily Housing (Mid-Rise)<br><i>ITE Land Use 221</i> | 10                        | 30        | 40        | 29                        | 19        | 48         | 24                        | 24        | 48         |
| 9,940 SF General Office Building<br><i>ITE Land Use 710</i>        | 10                        | 2         | 12        | 2                         | 9         | 11         | 3                         | 2         | 5          |
| 12,105 SF Shopping Center<br><i>ITE Land Use 820</i>               | 7                         | 4         | 11        | 55                        | 59        | 114        | 61                        | 56        | 117        |
| <b>Total</b>                                                       | <b>27</b>                 | <b>36</b> | <b>63</b> | <b>86</b>                 | <b>87</b> | <b>173</b> | <b>88</b>                 | <b>82</b> | <b>170</b> |

As stated within Chapter 6 of ITE's Trip Generation Handbook, 3rd Edition, internally captured trips can be a component of the travel patterns at mixed-use developments, such as the one proposed. When combined within a single development, individual land uses tend to interact, and thus attract a portion of each other's trip generation, such as residents visiting the retail stores. Therefore, based on the nature of the proposed uses, an internal capture credit should be considered for this site. Utilizing published NJDOT data, internal trips were calculated between the proposed uses during the weekday morning, weekday evening, and Saturday midday peak hours. It is noted the published data for the Saturday midday peak hour is limited with respect to the land uses within the proposed development. For the purpose of this analysis, the Saturday midday peak hour internal trips were calculated using the published weekday evening peak hour rates. The internal capture portion of the site-generated traffic is shown in **Table 3**.

**TABLE 3 – INTERNAL TRIP CAPTURE REDUCTION**

| Land Use                                                           | Weekday Morning Peak Hour |           |           | Weekday Evening Peak Hour |           |            | Saturday Midday Peak Hour |           |            |
|--------------------------------------------------------------------|---------------------------|-----------|-----------|---------------------------|-----------|------------|---------------------------|-----------|------------|
|                                                                    | Enter                     | Exit      | Total     | Enter                     | Exit      | Total      | Enter                     | Exit      | Total      |
| 110 Unit Multifamily Housing (Mid-Rise)<br><i>ITE Land Use 221</i> | 10                        | 30        | 40        | 29                        | 19        | 48         | 24                        | 24        | 48         |
| <i>Internal Trip Capture Reduction</i>                             | --                        | --        | --        | -13                       | -7        | -20        | -11                       | -7        | -18        |
| Subtotal                                                           | 10                        | 30        | 40        | 16                        | 12        | 28         | 13                        | 17        | 30         |
| 9,940 SF General Office Building<br><i>ITE Land Use 710</i>        | 10                        | 2         | 12        | 2                         | 9         | 11         | 3                         | 2         | 5          |
| <i>Internal Trip Capture Reduction</i>                             | 0                         | -1        | -1        | -1                        | -2        | -3         | -2                        | 0         | -2         |
| Subtotal                                                           | 10                        | 1         | 11        | 1                         | 7         | 8          | 1                         | 2         | 3          |
| 12,105 SF Shopping Center<br><i>ITE Land Use 820</i>               | 7                         | 4         | 11        | 55                        | 59        | 114        | 61                        | 56        | 117        |
| <i>Internal Trip Capture Reduction</i>                             | -1                        | 0         | -1        | -8                        | -13       | -21        | -6                        | -12       | -18        |
| Subtotal                                                           | 6                         | 4         | 10        | 47                        | 46        | 93         | 55                        | 44        | 99         |
| <b>Total New Trips</b>                                             | <b>26</b>                 | <b>35</b> | <b>61</b> | <b>61</b>                 | <b>64</b> | <b>129</b> | <b>69</b>                 | <b>63</b> | <b>132</b> |

Factors such as transit use and walkability have been found to significantly decrease the trip generation of the residential portion of mixed-use developments located proximate to transit. Based on American Community Survey data provided by the U.S. Census Bureau, approximately 43% of the Township of South Orange Village residents living in Census Tract 193, where the site is located, use public transportation, walk, or use means other than single-passenger vehicles to commute to work. Based on the available transit options within walking distance to the subject site and commuter characteristic data provided by the U.S. Census Bureau, a 25% reduction in external site-generated traffic originating and departing from the residential use was applied to account for transit use. The transit portion of the residential site-generated traffic is shown in **Table 4**.

**TABLE 4 – RESIDENTIAL TRANSIT REDUCTION – POST INTERNAL CAPTURE**

| Land Use                                                           | Weekday Morning Peak Hour |           |           | Weekday Evening Peak Hour |           |            | Saturday Midday Peak Hour |           |            |
|--------------------------------------------------------------------|---------------------------|-----------|-----------|---------------------------|-----------|------------|---------------------------|-----------|------------|
|                                                                    | Enter                     | Exit      | Total     | Enter                     | Exit      | Total      | Enter                     | Exit      | Total      |
| 110 Unit Multifamily Housing (Mid-Rise)<br><i>ITE Land Use 221</i> | 10                        | 30        | 40        | 16                        | 12        | 28         | 13                        | 17        | 30         |
| <i>Residential Transit Reduction</i>                               | -3                        | -8        | -11       | -4                        | -3        | -7         | -3                        | -4        | -7         |
| Subtotal                                                           | 7                         | 22        | 29        | 12                        | 9         | 21         | 10                        | 13        | 23         |
| 9,940 SF General Office Building<br><i>ITE Land Use 710</i>        | 10                        | 1         | 11        | 1                         | 7         | 8          | 1                         | 2         | 3          |
| 12,105 SF Shopping Center<br><i>ITE Land Use 820</i>               | 6                         | 4         | 10        | 47                        | 46        | 93         | 55                        | 44        | 99         |
| <b>Total</b>                                                       | <b>23</b>                 | <b>27</b> | <b>50</b> | <b>60</b>                 | <b>62</b> | <b>122</b> | <b>66</b>                 | <b>59</b> | <b>125</b> |

As stated within Chapter 10 of ITE's Trip Generation Handbook, 3<sup>rd</sup> Edition, there are instances when the total number of trips generated by a site is different from the amount of new traffic added to the street system by the generator. Retail uses are specifically located on or adjacent to busy streets to attract motorists already on the roadway. Therefore, the proposed retail uses associated with the proposed development would be expected to attract a portion of its trips from the traffic passing the site on the way from an origin to an ultimate destination. These trips do not add new traffic to the adjacent roadway system and are referred to as pass-by trips.

Based upon published NJDOT data for Land Use 820 "Shopping Center", 34% of the site-generated traffic during the weekday evening peak hour and 26% of the site-generated traffic during the Saturday midday peak hour are comprised of pass-by traffic. **Table 5** shows the additional site generated traffic for the proposed development in terms of newly generated traffic and pass-by traffic.

**TABLE 5 – PASS-BY TRIP CALCULATIONS – POST RESIDENTIAL TRANSIT REDUCTION**

| Land Use                                                           | Weekday Morning Peak Hour |           |           | Weekday Evening Peak Hour |           |           | Saturday Midday Peak Hour |           |            |
|--------------------------------------------------------------------|---------------------------|-----------|-----------|---------------------------|-----------|-----------|---------------------------|-----------|------------|
|                                                                    | Enter                     | Exit      | Total     | Enter                     | Exit      | Total     | Enter                     | Exit      | Total      |
| 110 Unit Multifamily Housing (Mid-Rise)<br><i>ITE Land Use 221</i> | 7                         | 22        | 29        | 12                        | 9         | 21        | 10                        | 13        | 23         |
| 9,940 SF General Office Building<br><i>ITE Land Use 710</i>        | 10                        | 1         | 11        | 1                         | 7         | 8         | 1                         | 2         | 3          |
| 12,105 SF Shopping Center<br><i>ITE Land Use 820</i>               | 6                         | 4         | 10        | 47                        | 46        | 93        | 55                        | 44        | 99         |
| <i>Pass-by Reduction</i>                                           | --                        | --        | --        | -16                       | -16       | -32       | -11                       | -11       | -22        |
| Subtotal                                                           | 6                         | 4         | 10        | 31                        | 30        | 61        | 44                        | 33        | 77         |
| <b>Total</b>                                                       | <b>23</b>                 | <b>27</b> | <b>50</b> | <b>44</b>                 | <b>46</b> | <b>90</b> | <b>55</b>                 | <b>48</b> | <b>103</b> |

At the site driveways, the calculated number of pass-by trips is shown as a negative number at the through movement as the vehicles are temporarily diverted from the through travel stream into and out of the site access point. **Table 6** summarizes the total number of internally captured trips, transit trips, pass-by trips, and new trips.

**TABLE 6 – PROPOSED TRIP GENERATION (ADJUSTED)**

| Land Use Code                            | Land Use                       | Amount    | Weekday Morning Peak Hour |           |           | Weekday Evening Peak Hour |           |            | Saturday Midday Peak Hour |           |            |
|------------------------------------------|--------------------------------|-----------|---------------------------|-----------|-----------|---------------------------|-----------|------------|---------------------------|-----------|------------|
|                                          |                                |           | Enter                     | Exit      | Total     | Enter                     | Exit      | Total      | Enter                     | Exit      | Total      |
| 221                                      | Multifamily Housing (Mid-Rise) | 110 Units | 10                        | 30        | 40        | 29                        | 19        | 48         | 24                        | 24        | 48         |
| 710                                      | General Office Building        | 9,940 SF  | 10                        | 2         | 12        | 2                         | 9         | 11         | 3                         | 2         | 5          |
| 820                                      | Shopping Center                | 12,105 SF | 7                         | 4         | 11        | 55                        | 59        | 114        | 61                        | 56        | 117        |
| <b>ITE Trip Generation Total</b>         |                                |           | <b>27</b>                 | <b>36</b> | <b>63</b> | <b>86</b>                 | <b>87</b> | <b>173</b> | <b>88</b>                 | <b>82</b> | <b>170</b> |
| Internal Capture Trip Reduction          |                                |           | -1                        | -1        | -2        | -22                       | -22       | -44        | -19                       | -19       | -38        |
| Residential Transit Trip Reduction – 25% |                                |           | -3                        | -8        | -11       | -4                        | -3        | -7         | -3                        | -4        | -7         |
| Retail Pass-By Trip Reduction            |                                |           | --                        | --        | --        | -16                       | -16       | -32        | -11                       | -11       | -22        |
| <b>Total New Vehicular Trips</b>         |                                |           | <b>23</b>                 | <b>27</b> | <b>50</b> | <b>44</b>                 | <b>46</b> | <b>90</b>  | <b>55</b>                 | <b>48</b> | <b>103</b> |

**TRIP ASSIGNMENT/DISTRIBUTION**

The trips generated by the proposed development were distributed according to the existing travel pattern along the adjacent roadways and the access management plan of the site. The site-generated trips for the residential portion of the site were routed to the Vose Avenue driveway and the site-generated trips for retail and office portions of the site were routed to the Taylor Place driveway as parking on the Vose Avenue level would be designated for residents and parking on the South Orange Avenue level would be designated for the

retail and offices uses. The “New” Site-Generated Traffic Volumes are illustrated on **Figure 6** and the “Pass-By” Site-Generated Traffic Volumes expected to access the site are depicted on **Figure 7**.

### 2023 BUILD TRAFFIC VOLUMES

The site-generated trips were added to the 2023 No-Build Traffic Volumes to calculate the 2023 Build Traffic Volumes and are shown on appended **Figure 8**.

### 2023 BUILD LOS/CAPACITY ANALYSIS

A Level of Service and Volume/Capacity analysis was also conducted for the 2023 Build Condition during the weekday morning, weekday evening, and Saturday midday peak hours at the study intersections and proposed site driveways. Appended **Table AI** compares the Existing, No-Build, and Build Conditions Level of Service and delay values.

The signalized intersection of South Orange Avenue, Scotland Road, and Valley Street is calculated to operate generally consistent with the findings of the No-Build Condition at acceptable overall Level of Service C during each of the peak hours studied with the southbound left-turn approach calculated to deteriorate to Level of Service E during the Saturday midday peak hour. The signalized intersection of South Orange Avenue and Vose Avenue is calculated to operate at acceptable overall Level of Service B during each of the peak hours studied. Regarding the queuing at the signalized intersection of South Orange Avenue and Vose Avenue, the proposed development is calculated to add approximately one (1) vehicle every two (2) signal cycles to the southbound approach of Vose Avenue during the critical Saturday midday peak hour and as such, would not significantly increase the queueing at this approach.

The turning movements of the unsignalized intersection of Taylor Place and Scotland Road are calculated to operate generally consistent with the findings of the No-Build Condition at acceptable Level of Service C or better during the weekday morning peak hour and are calculated to operate at acceptable Level of Service D or better during the weekday evening and Saturday midday peak hours. The turning movements of the unsignalized intersection of Taylor Place and Vose Avenue are calculated to operate generally consistent with the findings of the No-Build Condition at acceptable Level of Service B or better during the weekday morning and weekday evening peak hours and are calculated to operate at acceptable Level of Service C or better during the Saturday midday peak hour.

The turning movements at the proposed driveways along Vose Avenue and Taylor Place are calculated to operate at acceptable Level of Service B or better during each of the peak hours studied. The 95<sup>th</sup> percentile queues at the proposed driveways are calculated to less than one (1) vehicle each and as such, the proposed

driveway depths would be able to accommodate the queuing at the driveways without impacting the operations of the parking garage.

### 2023 MIGATION LOS/CAPACITY ANALYSIS

To alleviate existing delays and mitigate the impact of the proposed development on the signalized intersection of South Orange Avenue, Scotland Road, and Valley Street, three (3) seconds of green time were redistributed from the eastbound and westbound through phase to the southbound lead left-turn phase during the weekday evening and Saturday midday peak hours. Under the proposed Mitigation Condition, the signalized intersection is calculated to operate at acceptable overall Level of Service C with the southbound left-turn approach calculated to operate at acceptable Level of Service D during the weekday evening peak hour and acceptable Level of C during the Saturday midday peak hour. The proposed timing mitigation provides satisfactory mitigation and maintains the current background cycle length and offset timings along the corridor.

### **SITE CIRCULATION/PARKING SUPPLY**

A review was conducted of the proposed mixed-use using the Site Plan prepared by Marchetto, Higgins, Stieve Architects P.C., last revised September 11, 2020. In completing this review, particular attention was focused on the site access, circulation, and parking supply.

Vehicular access is proposed via one (1) full-movement driveway along Taylor Place and one (1) full-movement driveway along Vose Avenue. Pedestrian walkways between the proposed development and surrounding buildings would be maintained along South Orange Avenue and Scotland Road for access the parking garage. The on-site parking and circulation areas within the parking garage would be split into two (2) separate levels. The lower level would provide 125 resident parking spaces and be accessed via Vose Avenue. The upper level would provide 80 public parking spaces with 70 spaces designated for the retail uses and 10 spaces designated for the office use and be accessed via Taylor Place. Two-way vehicular circulation throughout the parking garage would be facilitated by drive aisles with a minimum width of 22 feet. A bike storage room would be located in the northerly portion of the building with access provided via Taylor Place.

Regarding the parking requirement for the proposed development, the Vose & Taylor Redevelopment Plan ("Redevelopment Plan") requires one (1) parking space per multifamily unit, three (3) parking spaces per 1,000 square feet for offices, and four (4) parking spaces per 1,000 square feet for commercial uses. For the proposed mixed-use development consisting of 110 residential units, 9,940 square feet of office space, and 12,105 square feet of retail space, this equates to 189 required spaces. Under existing conditions, the site provides 59 public parking spaces for the commercial uses. As the commercial parking requirement is 49 spaces, 10 less than the existing supply, it is required to provide an additional 10 spaces to maintain the public parking supply for the

commercial uses which equates to a total parking requirement of 199 spaces. The site would provide 205 total parking spaces, inclusive of six (6) ADA accessible parking spaces and 14 sets of tandem spaces (28 total tandem spaces), which meets the parking requirement and would be sufficient to support this project's parking demand. It is noted the tandem parking spaces on the upper level would be designated for the office tenants; tandem parking would not be utilized by the general public. The standard parking spaces would be nine (9) feet wide by 18 feet deep and the compact parking spaces would be 8.5 feet wide by 18 feet deep in accordance with industry standards.

The Vose Avenue level of the parking garage provides 125 spaces designated for residents whereas 110 spaces are required for residents, which satisfies its respective parking requirement. Further, the parking supply for the residential portion of the site was evaluated with respect to data published within the ITE's Parking Generation, 5<sup>th</sup> Edition, for Land Use 221 "Multifamily Housing (Mid-Rise)." Specifically, parking generation rates for "Dense Multi-Use Urban (< ½ mile to rail transit)" locations were utilized. The average parking demand rate during the peak weekday overnight period is 0.71 vehicles per unit. For the proposed mixed-use development consisting of 110 residential units, this equates to 79 parking spaces. As such, the proposed parking supply of 125 spaces would be sufficient to support the parking demand for the residential portion of the site.

The Taylor Place level of the parking garage provides 70 spaces designated for retail uses whereas 49 spaces are required, which satisfies its respective parking requirement and increases the public parking supply by 11 spaces. Further, the parking supply for the retail uses was evaluated with respect to data published within the ITE's Parking Generation, 5<sup>th</sup> Edition, for Land Use 820 "Shopping Center." Specifically, parking generation rates for the month of December, when retail uses are at their highest demand, were utilized for Land Use 820 "Shopping Center." The average parking demand rate during the peak weekday midday period for Land Use 820 "Shopping Center" is 3.77 vehicles per 1,000 square feet. For the proposed 12,105 square feet of retail space, this equates to 46 parking spaces. As such, the proposed parking supply of 70 spaces would be sufficient to support the parking demand for the retail uses of the site and improve upon the existing public parking condition.

The Taylor Place level of the parking garage provides 10 spaces designated for office use whereas 30 spaces are required. It is anticipated a portion of the office employees would commute via transit as the site's proximity to the South Orange Train Station and numerous bus routes would provide employees means of commuting other than passenger vehicle. These available transit options within walking distance of the proposed development would likely reduce vehicular travel by residents to and from the subject property, thus reducing the parking demand of the proposed development. Further, there are other long-term public parking areas provided within Downtown South Orange Village, such as the South Orange Public Library Lot and Sloan Street

Lots, that provide various parking options including business employee permits. The overall parking supply for the development program is compliant with the Redevelopment Plan requirements, and the allocation between retail and office parking spaces provides effective utilization between the low-turnover office use and the high-turnover retail uses.

Based on nearby transit options for the site's residents, published ITE parking demand rates, and improvements to the number of publicly accessible off-street parking spaces, the proposed parking supply of 205 spaces would be sufficient to support the expected parking demand of the proposed development.

## **CONCLUSIONS**

This report was prepared to examine the potential traffic impact of the proposed mixed-use development. The analysis findings, which have been based on industry-standard guidelines indicate that with minor signal timing adjustments at the adjacent intersection, the proposed development would not have a significant impact on the traffic operations of the adjacent roadway network. The mixed-use nature of the site, proximity of the site to the South Orange train station and nearby bus and jitney stops, and walkable nature of the surrounding area would result in a reduced traffic generation as compared to a similar suburban development with separate land uses per lot and no transit access. The site driveways and on-site layout have been designed to provide for effective access to and from the subject property. Based on the Redevelopment Plan, industry data, and local characteristics of the site and surrounding area, the parking supply would be sufficient to support this project. The proposed development is a transit-oriented development within Downtown South Orange Village and would strengthen the transit node with increased transit use and pedestrian activity within the larger walkable downtown environment.

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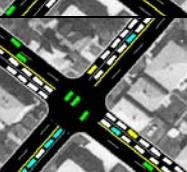
## **TECHNICAL APPENDIX**

**LEVEL OF SERVICE/AVERAGE CONTROL DELAY CRITERIA**

## LEVEL OF SERVICE /AVERAGE CONTROL DELAY CRITERIA

The ability of a roadway to effectively accommodate traffic demand is determined through an assessment of the volume-to-capacity ratio, delay and Level of Service of the lane group and/or intersection. The volume-to-capacity ratio is the ratio of traffic flow rate to capacity for a given transportation facility. As defined within the Highway Capacity Manual, 6<sup>th</sup> Edition (HCM), intersection delay is the total additional travel time experienced by drivers, passengers, or pedestrians as a result of control measures and interaction with other users of the facility, divided by the volume departing from the corresponding cross section of the facility. Level of service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience.

For an unsignalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle. For a signalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle and LOS F denotes operations with delay in excess of 80 seconds per vehicle.

|                                                                                     | Level Of Service (LOS) | Signalized Delay Range (average control delay in sec/veh) | Unsignalized Delay Range (average control delay in sec/veh) |
|-------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
|   | A                      | $\leq 10$                                                 | $\leq 10$                                                   |
|  | B                      | $> 10$ and $\leq 20$                                      | $> 10$ and $\leq 15$                                        |
|  | C                      | $> 20$ and $\leq 35$                                      | $> 15$ and $\leq 25$                                        |
|  | D                      | $> 35$ and $\leq 55$                                      | $> 25$ and $\leq 35$                                        |
|  | E                      | $> 55$ and $\leq 80$                                      | $> 35$ and $\leq 50$                                        |
|  | F                      | $> 80$                                                    | $> 50$                                                      |

Source: Highway Capacity Manual, 6<sup>th</sup> Edition

# STONEFIELD

**Table A1: Comparative Level of Service (Delay) Table**  
 South Orange Avenue, Essex County, New Jersey  
 X (n) = Level of Service (seconds of delay)

| Intersection                                                  | Lane Group                             | Weekday Morning Peak Hour |                 |                 |                 | Weekday Evening Peak Hour |                 |                 |                 | Saturday Midday Peak Hour |                 |                 |                 |
|---------------------------------------------------------------|----------------------------------------|---------------------------|-----------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------|---------------------------|-----------------|-----------------|-----------------|
|                                                               |                                        | 2020 Existing             | 2023 No-Build   | 2023 Build      | 2023 Mitigation | 2020 Existing             | 2023 No-Build   | 2023 Build      | 2023 Mitigation | 2020 Existing             | 2023 No-Build   | 2023 Build      | 2023 Mitigation |
| South Orange Avenue (E/W) & Valley Street/Scotland Road (N/S) | EB Left                                | B (13.8)                  | B (15.5)        | B (15.7)        | B (16.0)        | B (12.8)                  | B (14.1)        | B (14.2)        | B (16.0)        | B (10.9)                  | B (11.9)        | B (12.2)        | B (13.8)        |
|                                                               | EB Through                             | A (5.7)                   | A (6.9)         | A (7.1)         | A (7.8)         | A (5.9)                   | A (7.6)         | A (7.8)         | A (10.8)        | A (3.1)                   | A (4.3)         | A (4.7)         | A (7.1)         |
|                                                               | EB Through/Right                       | A (5.7)                   | A (6.9)         | A (7.1)         | B (10.8)        | A (5.9)                   | A (7.6)         | A (7.8)         | B (10.8)        | A (3.1)                   | A (4.4)         | A (4.7)         | A (7.2)         |
|                                                               | WB Left                                | B (12.6)                  | B (13.3)        | B (13.4)        | B (16.0)        | B (12.8)                  | B (13.9)        | B (14.1)        | B (16.0)        | B (10.9)                  | B (11.8)        | B (12.0)        | B (13.7)        |
|                                                               | WB Through                             | C (24.0)                  | C (28.7)        | C (29.1)        | C (23.8)        | C (20.0)                  | C (23.5)        | C (23.8)        | C (27.1)        | B (17.9)                  | C (20.0)        | C (20.4)        | C (23.2)        |
|                                                               | WB Right                               | B (17.6)                  | B (18.5)        | B (18.8)        | C (23.5)        | B (17.8)                  | C (20.1)        | C (20.8)        | C (23.5)        | B (15.4)                  | B (17.4)        | B (18.1)        | C (20.5)        |
|                                                               | NB Left                                | C (29.0)                  | C (28.3)        | C (28.2)        | C (26.6)        | C (27.9)                  | C (26.7)        | C (26.6)        | C (26.6)        | C (31.4)                  | C (30.2)        | C (29.9)        | C (29.9)        |
|                                                               | NB Through                             | D (39.0)                  | D (39.4)        | D (39.5)        | D (40.0)        | D (39.0)                  | D (39.9)        | D (40.0)        | D (40.0)        | D (37.9)                  | D (38.0)        | D (38.1)        | D (38.1)        |
|                                                               | NB Right                               | C (29.5)                  | C (28.7)        | C (28.6)        | C (27.9)        | C (29.4)                  | C (28.1)        | C (27.9)        | C (27.9)        | C (32.2)                  | C (30.8)        | C (30.4)        | C (30.4)        |
|                                                               | SB Left                                | D (49.0)                  | E (58.3)        | E (59.1)        | D (40.9)        | E (57.7)                  | F (81.7)        | F (97.9)        | D (40.9)        | D (40.1)                  | D (53.2)        | E (61.5)        | C (32.1)        |
| South Orange Avenue (E/W) & Vose Avenue (S)                   | SB Through                             | C (22.2)                  | C (21.7)        | C (21.5)        | B (18.6)        | C (21.9)                  | C (21.0)        | C (20.8)        | B (18.6)        | C (24.1)                  | C (23.1)        | C (22.9)        | C (20.6)        |
|                                                               | SB Through/Right                       | C (22.3)                  | C (21.8)        | C (21.7)        | B (18.7)        | C (22.0)                  | C (21.1)        | C (20.9)        | B (18.7)        | C (24.2)                  | C (23.2)        | C (23.0)        | C (20.7)        |
|                                                               | <b>Overall</b>                         | <b>C (23.1)</b>           | <b>C (25.0)</b> | <b>C (25.1)</b> | <b>C (24.5)</b> | <b>C (23.9)</b>           | <b>C (27.0)</b> | <b>C (29.0)</b> | <b>C (24.5)</b> | <b>C (20.8)</b>           | <b>C (22.8)</b> | <b>C (23.9)</b> | <b>C (22.0)</b> |
|                                                               | EB Left                                | A (4.3)                   | A (4.6)         | A (5.1)         | A (6.2)         | A (4.7)                   | A (5.4)         | A (6.2)         | A (3.8)         | A (3.8)                   | A (4.1)         | A (4.7)         |                 |
|                                                               | EB Through                             | A (6.0)                   | A (6.8)         | A (7.3)         | A (7.2)         | A (5.5)                   | A (6.6)         | A (7.2)         | A (4.6)         | A (4.6)                   | A (5.1)         | A (5.6)         |                 |
|                                                               | WB Through                             | A (0.7)                   | A (0.7)         | A (0.8)         | A (0.6)         | A (0.5)                   | A (0.6)         | A (0.6)         | A (0.4)         | A (0.4)                   | A (0.4)         | A (0.5)         |                 |
|                                                               | WB Right                               | A (0.1)                   | A (0.1)         | A (0.1)         | A (0.1)         | A (0.1)                   | A (0.1)         | A (0.1)         | A (0.2)         | A (0.2)                   | A (0.2)         | A (0.2)         |                 |
|                                                               | SB Left/Right                          | D (49.0)                  | D (50.0)        | D (52.0)        | D (50.1)        | D (46.3)                  | D (47.6)        | D (50.1)        | D (46.0)        | D (46.0)                  | D (47.0)        | D (49.7)        |                 |
|                                                               | <b>Overall</b>                         | <b>A (9.6)</b>            | <b>A (9.7)</b>  | <b>B (10.6)</b> | <b>B (10.5)</b> | <b>A (9.1)</b>            | <b>A (9.4)</b>  | <b>B (10.5)</b> | <b>A (9.1)</b>  | <b>A (9.1)</b>            | <b>A (9.3)</b>  | <b>B (10.5)</b> |                 |
|                                                               | EB Left/Right                          | C (16.6)                  | C (18.1)        | C (21.4)        | D (26.0)        | C (16.8)                  | C (18.7)        | D (26.0)        | C (16.0)        | C (18.3)                  | C (18.3)        | D (25.5)        |                 |
| Taylor Place (E) & Scotland Road (N/S)                        | NB Left/Through                        | A (9.3)                   | A (9.5)         | A (9.7)         | A (9.6)         | A (9.1)                   | A (9.4)         | A (9.6)         | A (8.9)         | A (9.1)                   | A (9.1)         | A (9.4)         |                 |
|                                                               | Taylor Place (W) & Vose Avenue (N/S)   | B (11.5)                  | B (11.8)        | B (12.3)        | B (14.2)        | B (12.7)                  | B (13.3)        | B (14.2)        | B (12.9)        | B (12.9)                  | B (13.5)        | C (15.2)        |                 |
|                                                               | Vose Avenue (N/S)                      | A (8.0)                   | A (8.0)         | A (8.1)         | A (8.4)         | A (8.2)                   | A (8.3)         | A (8.4)         | A (8.3)         | A (8.3)                   | A (8.3)         | A (8.5)         |                 |
|                                                               | Site Driveway (W) & Vose Avenue (N/S)  |                           |                 | B (11.5)        | B (12.2)        |                           |                 | B (12.2)        |                 |                           |                 | B (11.9)        |                 |
|                                                               | Taylor Place (E/W) & Site Driveway (N) |                           |                 | A (7.9)         | A (8.2)         |                           |                 | A (8.2)         |                 |                           |                 | A (8.1)         |                 |
|                                                               |                                        |                           |                 | A (7.7)         | A (7.8)         |                           |                 | A (7.8)         |                 |                           |                 | A (7.9)         |                 |
|                                                               |                                        |                           |                 | A (9.8)         | B (10.1)        |                           |                 | B (10.1)        |                 |                           |                 | B (10.4)        |                 |
|                                                               |                                        |                           |                 |                 |                 |                           |                 |                 |                 |                           |                 |                 |                 |
|                                                               |                                        |                           |                 |                 |                 |                           |                 |                 |                 |                           |                 |                 |                 |
|                                                               |                                        |                           |                 |                 |                 |                           |                 |                 |                 |                           |                 |                 |                 |

## **TURNING MOVEMENT COUNT DATA**

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of South Orange Avenue (E/W)  
and Valley Street/Scotland Road (N/S)  
South Orange, Essex County, New Jersey  
Tuesday, March 3, 2020

File Name : RUT-200075.04\_AM  
Site Code : 00200075  
Start Date : 3/3/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Valley Street Northbound |      |       |      |            | Scotland Road Southbound |      |       |      |            |            |
|-------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|------------|
| Start Time  | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Int. Total |
| 07:00 AM    | 4                             | 51   | 0     | 0    | 55         | 14                            | 67   | 24    | 2    | 107        | 8                        | 57   | 17    | 0    | 82         | 30                       | 77   | 2     | 0    | 109        | 353        |
| 07:15 AM    | 11                            | 83   | 4     | 0    | 98         | 16                            | 112  | 27    | 0    | 155        | 7                        | 77   | 23    | 0    | 107        | 32                       | 86   | 9     | 0    | 127        | 487        |
| 07:30 AM    | 13                            | 83   | 9     | 0    | 105        | 24                            | 121  | 25    | 0    | 170        | 5                        | 95   | 27    | 0    | 127        | 53                       | 106  | 13    | 0    | 172        | 574        |
| 07:45 AM    | 8                             | 102  | 0     | 0    | 110        | 16                            | 103  | 35    | 2    | 156        | 21                       | 92   | 15    | 0    | 128        | 63                       | 106  | 9     | 0    | 178        | 572        |
| Total       | 36                            | 319  | 13    | 0    | 368        | 70                            | 403  | 111   | 4    | 588        | 41                       | 321  | 82    | 0    | 444        | 178                      | 375  | 33    | 0    | 586        | 1986       |
| 08:00 AM    | 16                            | 101  | 2     | 0    | 119        | 20                            | 98   | 41    | 2    | 161        | 18                       | 110  | 31    | 0    | 159        | 59                       | 68   | 14    | 0    | 141        | 580        |
| 08:15 AM    | 14                            | 116  | 5     | 0    | 135        | 22                            | 99   | 36    | 0    | 157        | 7                        | 93   | 39    | 0    | 139        | 51                       | 107  | 16    | 0    | 174        | 605        |
| 08:30 AM    | 15                            | 108  | 10    | 0    | 133        | 20                            | 115  | 34    | 1    | 170        | 16                       | 88   | 27    | 0    | 131        | 60                       | 98   | 10    | 0    | 168        | 602        |
| 08:45 AM    | 9                             | 72   | 9     | 0    | 90         | 31                            | 104  | 37    | 1    | 173        | 8                        | 81   | 20    | 0    | 109        | 61                       | 95   | 9     | 0    | 165        | 537        |
| Total       | 54                            | 397  | 26    | 0    | 477        | 93                            | 416  | 148   | 4    | 661        | 49                       | 372  | 117   | 0    | 538        | 231                      | 368  | 49    | 0    | 648        | 2324       |
| Grand Total | 90                            | 716  | 39    | 0    | 845        | 163                           | 819  | 259   | 8    | 1249       | 90                       | 693  | 199   | 0    | 982        | 409                      | 743  | 82    | 0    | 1234       | 4310       |
| Apprch %    | 10.7                          | 84.7 | 4.6   | 0    |            | 13.1                          | 65.6 | 20.7  | 0.6  |            | 9.2                      | 70.6 | 20.3  | 0    |            | 33.1                     | 60.2 | 6.6   | 0    |            |            |
| Total %     | 2.1                           | 16.6 | 0.9   | 0    | 19.6       | 3.8                           | 19   | 6     | 0.2  | 29         | 2.1                      | 16.1 | 4.6   | 0    | 22.8       | 9.5                      | 17.2 | 1.9   | 0    | 28.6       |            |
| Auto        | 87                            | 705  | 38    | 0    | 830        | 155                           | 814  | 256   | 8    | 1233       | 85                       | 665  | 180   | 0    | 930        | 404                      | 719  | 81    | 0    | 1204       | 4197       |
| % Auto      | 96.7                          | 98.5 | 97.4  | 0    | 98.2       | 95.1                          | 99.4 | 98.8  | 100  | 98.7       | 94.4                     | 96   | 90.5  | 0    | 94.7       | 98.8                     | 96.8 | 98.8  | 0    | 97.6       | 97.4       |
| HV          | 1                             | 3    | 1     | 0    | 5          | 0                             | 2    | 2     | 0    | 4          | 2                        | 15   | 8     | 0    | 25         | 4                        | 14   | 1     | 0    | 19         | 53         |
| % HV        | 1.1                           | 0.4  | 2.6   | 0    | 0.6        | 0                             | 0.2  | 0.8   | 0    | 0.3        | 2.2                      | 2.2  | 4     | 0    | 2.5        | 1                        | 1.9  | 1.2   | 0    | 1.5        | 1.2        |
| B/SB        | 2                             | 8    | 0     | 0    | 10         | 8                             | 3    | 1     | 0    | 12         | 3                        | 13   | 11    | 0    | 27         | 1                        | 10   | 0     | 0    | 11         | 60         |
| % B/SB      | 2.2                           | 1.1  | 0     | 0    | 1.2        | 4.9                           | 0.4  | 0.4   | 0    | 1          | 3.3                      | 1.9  | 5.5   | 0    | 2.7        | 0.2                      | 1.3  | 0     | 0    | 0.9        | 1.4        |

|                                                            | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Valley Street Northbound |      |       |      |            | Scotland Road Southbound |      |       |      |            |            |
|------------------------------------------------------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|------------|
| Start Time                                                 | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Int. Total |
| Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1 |                               |      |       |      |            |                               |      |       |      |            |                          |      |       |      |            |                          |      |       |      |            |            |
| Peak Hour for Entire Intersection Begins at 08:00 AM       |                               |      |       |      |            |                               |      |       |      |            |                          |      |       |      |            |                          |      |       |      |            |            |
| 08:00 AM                                                   | 16                            | 101  | 2     | 0    | 119        | 20                            | 98   | 41    | 2    | 161        | 18                       | 110  | 31    | 0    | 159        | 59                       | 68   | 14    | 0    | 141        | 580        |
| 08:15 AM                                                   | 14                            | 116  | 5     | 0    | 135        | 22                            | 99   | 36    | 0    | 157        | 7                        | 93   | 39    | 0    | 139        | 51                       | 107  | 16    | 0    | 174        | 605        |
| 08:30 AM                                                   | 15                            | 108  | 10    | 0    | 133        | 20                            | 115  | 34    | 1    | 170        | 16                       | 88   | 27    | 0    | 131        | 60                       | 98   | 10    | 0    | 168        | 602        |
| 08:45 AM                                                   | 9                             | 72   | 9     | 0    | 90         | 31                            | 104  | 37    | 1    | 173        | 8                        | 81   | 20    | 0    | 109        | 61                       | 95   | 9     | 0    | 165        | 537        |
| Total Volume                                               | 54                            | 397  | 26    | 0    | 477        | 93                            | 416  | 148   | 4    | 661        | 49                       | 372  | 117   | 0    | 538        | 231                      | 368  | 49    | 0    | 648        | 2324       |
| % App. Total                                               | 11.3                          | 83.2 | 5.5   | 0    |            | 14.1                          | 62.9 | 22.4  | 0.6  |            | 9.1                      | 69.1 | 21.7  | 0    |            | 35.6                     | 56.8 | 7.6   | 0    |            |            |
| PHF                                                        | .844                          | .856 | .650  | .000 | .883       | .750                          | .904 | .902  | .500 | .955       | .681                     | .845 | .750  | .000 | .846       | .947                     | .860 | .766  | .000 | .931       | .960       |
| Auto                                                       | 52                            | 390  | 25    | 0    | 467        | 91                            | 414  | 148   | 4    | 657        | 46                       | 353  | 108   | 0    | 507        | 228                      | 358  | 49    | 0    | 635        | 2266       |
| % Auto                                                     | 96.3                          | 98.2 | 96.2  | 0    | 97.9       | 97.8                          | 99.5 | 100   | 100  | 99.4       | 93.9                     | 94.9 | 92.3  | 0    | 94.2       | 98.7                     | 97.3 | 100   | 0    | 98.0       | 97.5       |
| HV                                                         | 0                             | 1    | 1     | 0    | 2          | 0                             | 2    | 0     | 0    | 2          | 2                        | 11   | 5     | 0    | 18         | 2                        | 5    | 0     | 0    | 7          | 29         |
| % HV                                                       | 0                             | 0.3  | 3.8   | 0    | 0.4        | 0                             | 0.5  | 0     | 0    | 0.3        | 4.1                      | 3.0  | 4.3   | 0    | 3.3        | 0.9                      | 1.4  | 0     | 0    | 1.1        | 1.2        |
| B/SB                                                       | 2                             | 6    | 0     | 0    | 8          | 2                             | 0    | 0     | 0    | 2          | 1                        | 8    | 4     | 0    | 13         | 1                        | 5    | 0     | 0    | 6          | 29         |
| % B/SB                                                     | 3.7                           | 1.5  | 0     | 0    | 1.7        | 2.2                           | 0    | 0     | 0    | 0.3        | 2.0                      | 2.2  | 3.4   | 0    | 2.4        | 0.4                      | 1.4  | 0     | 0    | 0.9        | 1.2        |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of South Orange Avenue (E/W)  
and Vose Avenue (S)  
South Orange, Essex County, New Jersey  
Tuesday, March 3, 2020

File Name : RUT-200075.03\_AM  
Site Code : 00200075  
Start Date : 3/3/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | South Orange Avenue<br>Eastbound |      |       |      |            | South Orange Avenue<br>Westbound |      |       |      |            | Vose Avenue<br>Southbound |      |       |      |            |            |
|-------------|----------------------------------|------|-------|------|------------|----------------------------------|------|-------|------|------------|---------------------------|------|-------|------|------------|------------|
| Start Time  | Left                             | Thru | Right | RTOR | App. Total | Left                             | Thru | Right | RTOR | App. Total | Left                      | Thru | Right | RTOR | App. Total | Int. Total |
| 07:00 AM    | 5                                | 70   | 0     | 0    | 75         | 0                                | 87   | 5     | 3    | 95         | 6                         | 0    | 6     | 5    | 17         | 187        |
| 07:15 AM    | 5                                | 95   | 0     | 0    | 100        | 0                                | 121  | 2     | 0    | 123        | 12                        | 0    | 20    | 5    | 37         | 260        |
| 07:30 AM    | 9                                | 114  | 0     | 0    | 123        | 0                                | 137  | 8     | 0    | 145        | 15                        | 0    | 8     | 2    | 25         | 293        |
| 07:45 AM    | 15                               | 125  | 0     | 0    | 140        | 0                                | 158  | 13    | 0    | 171        | 13                        | 0    | 25    | 1    | 39         | 350        |
| Total       | 34                               | 404  | 0     | 0    | 438        | 0                                | 503  | 28    | 3    | 534        | 46                        | 0    | 59    | 13   | 118        | 1090       |
| 08:00 AM    | 15                               | 165  | 0     | 0    | 180        | 0                                | 125  | 8     | 1    | 134        | 21                        | 0    | 16    | 0    | 37         | 351        |
| 08:15 AM    | 20                               | 156  | 0     | 0    | 176        | 0                                | 116  | 13    | 2    | 131        | 30                        | 0    | 45    | 0    | 75         | 382        |
| 08:30 AM    | 17                               | 137  | 0     | 0    | 154        | 0                                | 152  | 12    | 0    | 164        | 33                        | 0    | 20    | 0    | 53         | 371        |
| 08:45 AM    | 14                               | 116  | 0     | 0    | 130        | 0                                | 216  | 18    | 0    | 234        | 22                        | 0    | 19    | 2    | 43         | 407        |
| Total       | 66                               | 574  | 0     | 0    | 640        | 0                                | 609  | 51    | 3    | 663        | 106                       | 0    | 100   | 2    | 208        | 1511       |
| Grand Total | 100                              | 978  | 0     | 0    | 1078       | 0                                | 1112 | 79    | 6    | 1197       | 152                       | 0    | 159   | 15   | 326        | 2601       |
| Apprch %    | 9.3                              | 90.7 | 0     | 0    |            | 0                                | 92.9 | 6.6   | 0.5  |            | 46.6                      | 0    | 48.8  | 4.6  |            |            |
| Total %     | 3.8                              | 37.6 | 0     | 0    | 41.4       | 0                                | 42.8 | 3     | 0.2  | 46         | 5.8                       | 0    | 6.1   | 0.6  | 12.5       |            |
| Auto        | 100                              | 972  | 0     | 0    | 1072       | 0                                | 1101 | 78    | 6    | 1185       | 152                       | 0    | 158   | 14   | 324        | 2581       |
| % Auto      | 100                              | 99.4 | 0     | 0    | 99.4       | 0                                | 99   | 98.7  | 100  | 99         | 100                       | 0    | 99.4  | 93.3 | 99.4       | 99.2       |
| HV          | 0                                | 1    | 0     | 0    | 1          | 0                                | 2    | 1     | 0    | 3          | 0                         | 0    | 1     | 0    | 1          | 5          |
| % HV        | 0                                | 0.1  | 0     | 0    | 0.1        | 0                                | 0.2  | 1.3   | 0    | 0.3        | 0                         | 0    | 0.6   | 0    | 0.3        | 0.2        |
| B/SB        | 0                                | 5    | 0     | 0    | 5          | 0                                | 9    | 0     | 0    | 9          | 0                         | 0    | 0     | 1    | 1          | 15         |
| % B/SB      | 0                                | 0.5  | 0     | 0    | 0.5        | 0                                | 0.8  | 0     | 0    | 0.8        | 0                         | 0    | 0     | 6.7  | 0.3        | 0.6        |

|                                                            | South Orange Avenue<br>Eastbound |      |       |      |            | South Orange Avenue<br>Westbound |      |       |      |            | Vose Avenue<br>Southbound |      |       |      |            |            |
|------------------------------------------------------------|----------------------------------|------|-------|------|------------|----------------------------------|------|-------|------|------------|---------------------------|------|-------|------|------------|------------|
| Start Time                                                 | Left                             | Thru | Right | RTOR | App. Total | Left                             | Thru | Right | RTOR | App. Total | Left                      | Thru | Right | RTOR | App. Total | Int. Total |
| Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1 |                                  |      |       |      |            |                                  |      |       |      |            |                           |      |       |      |            |            |
| Peak Hour for Entire Intersection Begins at 08:00 AM       |                                  |      |       |      |            |                                  |      |       |      |            |                           |      |       |      |            |            |
| 08:00 AM                                                   | 15                               | 165  | 0     | 0    | 180        | 0                                | 125  | 8     | 1    | 134        | 21                        | 0    | 16    | 0    | 37         | 351        |
| 08:15 AM                                                   | 20                               | 156  | 0     | 0    | 176        | 0                                | 116  | 13    | 2    | 131        | 30                        | 0    | 45    | 0    | 75         | 382        |
| 08:30 AM                                                   | 17                               | 137  | 0     | 0    | 154        | 0                                | 152  | 12    | 0    | 164        | 33                        | 0    | 20    | 0    | 53         | 371        |
| 08:45 AM                                                   | 14                               | 116  | 0     | 0    | 130        | 0                                | 216  | 18    | 0    | 234        | 22                        | 0    | 19    | 2    | 43         | 407        |
| Total Volume                                               | 66                               | 574  | 0     | 0    | 640        | 0                                | 609  | 51    | 3    | 663        | 106                       | 0    | 100   | 2    | 208        | 1511       |
| % App. Total                                               | 10.3                             | 89.7 | 0     | 0    |            | 0                                | 91.9 | 7.7   | 0.5  |            | 51                        | 0    | 48.1  | 1    |            |            |
| PHF                                                        | .825                             | .870 | .000  | .000 | .889       | .000                             | .705 | .708  | .375 | .708       | .803                      | .000 | .556  | .250 | .693       | .928       |
| Auto                                                       | 66                               | 570  | 0     | 0    | 636        | 0                                | 607  | 50    | 3    | 660        | 106                       | 0    | 100   | 2    | 208        | 1504       |
| % Auto                                                     | 100                              | 99.3 | 0     | 0    | 99.4       | 0                                | 99.7 | 98.0  | 100  | 99.5       | 100                       | 0    | 100   | 100  | 100        | 99.5       |
| HV                                                         | 0                                | 1    | 0     | 0    | 1          | 0                                | 1    | 1     | 0    | 2          | 0                         | 0    | 0     | 0    | 0          | 3          |
| % HV                                                       | 0                                | 0.2  | 0     | 0    | 0.2        | 0                                | 0.2  | 2.0   | 0    | 0.3        | 0                         | 0    | 0     | 0    | 0          | 0.2        |
| B/SB                                                       | 0                                | 3    | 0     | 0    | 3          | 0                                | 1    | 0     | 0    | 1          | 0                         | 0    | 0     | 0    | 0          | 4          |
| % B/SB                                                     | 0                                | 0.5  | 0     | 0    | 0.5        | 0                                | 0.2  | 0     | 0    | 0.2        | 0                         | 0    | 0     | 0    | 0          | 0.3        |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Taylor Place (E)  
and Scotland Road (N/S)  
South Orange, Essex County, New Jersey  
Tuesday, March 3, 2020

File Name : RUT-200075.02\_AM  
Site Code : 00200075  
Start Date : 3/3/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | Taylor Place<br>Eastbound |      |       |            | Scotland Road<br>Northbound |      |       |            | Scotland Road<br>Southbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|-----------------------------|------|-------|------------|-----------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Int. Total |
| 08:00 AM    | 2                         | 0    | 21    | 23         | 18                          | 0    | 0     | 18         | 0                           | 0    | 3     | 3          | 44         |
| 08:15 AM    | 4                         | 0    | 18    | 22         | 17                          | 0    | 0     | 17         | 0                           | 0    | 12    | 12         | 51         |
| 08:30 AM    | 2                         | 0    | 25    | 27         | 12                          | 0    | 0     | 12         | 0                           | 0    | 6     | 6          | 45         |
| 08:45 AM    | 4                         | 0    | 15    | 19         | 14                          | 0    | 0     | 14         | 0                           | 0    | 4     | 4          | 37         |
| Total       | 12                        | 0    | 79    | 91         | 61                          | 0    | 0     | 61         | 0                           | 0    | 25    | 25         | 177        |
| Grand Total | 12                        | 0    | 79    | 91         | 61                          | 0    | 0     | 61         | 0                           | 0    | 25    | 25         | 177        |
| Apprch %    | 13.2                      | 0    | 86.8  |            | 100                         | 0    | 0     |            | 0                           | 0    | 100   |            |            |
| Total %     | 6.8                       | 0    | 44.6  | 51.4       | 34.5                        | 0    | 0     | 34.5       | 0                           | 0    | 14.1  | 14.1       |            |
| Auto        | 11                        | 0    | 79    | 90         | 60                          | 0    | 0     | 60         | 0                           | 0    | 25    | 25         | 175        |
| % Auto      | 91.7                      | 0    | 100   | 98.9       | 98.4                        | 0    | 0     | 98.4       | 0                           | 0    | 100   | 100        | 98.9       |
| HV          | 1                         | 0    | 0     | 1          | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 1          |
| % HV        | 8.3                       | 0    | 0     | 1.1        | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0.6        |
| B/SB        | 0                         | 0    | 0     | 0          | 1                           | 0    | 0     | 1          | 0                           | 0    | 0     | 0          | 1          |
| % B/SB      | 0                         | 0    | 0     | 0          | 1.6                         | 0    | 0     | 1.6        | 0                           | 0    | 0     | 0          | 0.6        |

|                                                            | Taylor Place<br>Eastbound |      |       |            | Scotland Road<br>Northbound |      |       |            | Scotland Road<br>Southbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|-----------------------------|------|-------|------------|-----------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1 |                           |      |       |            |                             |      |       |            |                             |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 08:00 AM       |                           |      |       |            |                             |      |       |            |                             |      |       |            |            |
| 08:00 AM                                                   | 2                         | 0    | 21    | 23         | 18                          | 0    | 0     | 18         | 0                           | 0    | 3     | 3          | 44         |
| 08:15 AM                                                   | 4                         | 0    | 18    | 22         | 17                          | 0    | 0     | 17         | 0                           | 0    | 12    | 12         | 51         |
| 08:30 AM                                                   | 2                         | 0    | 25    | 27         | 12                          | 0    | 0     | 12         | 0                           | 0    | 6     | 6          | 45         |
| 08:45 AM                                                   | 4                         | 0    | 15    | 19         | 14                          | 0    | 0     | 14         | 0                           | 0    | 4     | 4          | 37         |
| Total Volume                                               | 12                        | 0    | 79    | 91         | 61                          | 0    | 0     | 61         | 0                           | 0    | 25    | 25         | 177        |
| % App. Total                                               | 13.2                      | 0    | 86.8  |            | 100                         | 0    | 0     |            | 0                           | 0    | 100   |            |            |
| PHF                                                        | .750                      | .000 | .790  | .843       | .847                        | .000 | .000  | .847       | .000                        | .000 | .521  | .521       | .868       |
| Auto                                                       | 11                        | 0    | 79    | 90         | 60                          | 0    | 0     | 60         | 0                           | 0    | 25    | 25         | 175        |
| % Auto                                                     | 91.7                      | 0    | 100   | 98.9       | 98.4                        | 0    | 0     | 98.4       | 0                           | 0    | 100   | 100        | 98.9       |
| HV                                                         | 1                         | 0    | 0     | 1          | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 1          |
| % HV                                                       | 8.3                       | 0    | 0     | 1.1        | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0.6        |
| B/SB                                                       | 0                         | 0    | 0     | 0          | 1                           | 0    | 0     | 1          | 0                           | 0    | 0     | 0          | 1          |
| % B/SB                                                     | 0                         | 0    | 0     | 0          | 1.6                         | 0    | 0     | 1.6        | 0                           | 0    | 0     | 0          | 0.6        |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Taylor Place (W)  
and Vose Avenue (N/S)  
South Orange, Essex County, New Jersey  
Tuesday, March 3, 2020

File Name : RUT-200075.01\_AM  
Site Code : 00200075  
Start Date : 3/3/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | Taylor Place<br>Westbound |      |       |            | Vose Avenue<br>Northbound |      |       |            | Vose Avenue<br>Southbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| 07:00 AM    | 4                         | 0    | 7     | 11         | 0                         | 8    | 1     | 9          | 11                        | 17   | 0     | 28         | 48         |
| 07:15 AM    | 6                         | 0    | 5     | 11         | 0                         | 5    | 2     | 7          | 9                         | 34   | 0     | 43         | 61         |
| 07:30 AM    | 3                         | 0    | 6     | 9          | 0                         | 14   | 4     | 18         | 21                        | 23   | 0     | 44         | 71         |
| 07:45 AM    | 5                         | 0    | 13    | 18         | 0                         | 11   | 7     | 18         | 36                        | 46   | 0     | 82         | 118        |
| Total       | 18                        | 0    | 31    | 49         | 0                         | 38   | 14    | 52         | 77                        | 120  | 0     | 197        | 298        |
| 08:00 AM    | 2                         | 0    | 14    | 16         | 0                         | 16   | 6     | 22         | 26                        | 38   | 0     | 64         | 102        |
| 08:15 AM    | 6                         | 0    | 12    | 18         | 0                         | 21   | 5     | 26         | 15                        | 50   | 0     | 65         | 109        |
| 08:30 AM    | 3                         | 0    | 4     | 7          | 0                         | 22   | 3     | 25         | 17                        | 46   | 0     | 63         | 95         |
| 08:45 AM    | 7                         | 0    | 5     | 12         | 0                         | 12   | 13    | 25         | 19                        | 48   | 0     | 67         | 104        |
| Total       | 18                        | 0    | 35    | 53         | 0                         | 71   | 27    | 98         | 77                        | 182  | 0     | 259        | 410        |
| Grand Total | 36                        | 0    | 66    | 102        | 0                         | 109  | 41    | 150        | 154                       | 302  | 0     | 456        | 708        |
| Apprch %    | 35.3                      | 0    | 64.7  |            | 0                         | 72.7 | 27.3  |            | 33.8                      | 66.2 | 0     |            |            |
| Total %     | 5.1                       | 0    | 9.3   | 14.4       | 0                         | 15.4 | 5.8   | 21.2       | 21.8                      | 42.7 | 0     | 64.4       |            |
| Auto        | 36                        | 0    | 64    | 100        | 0                         | 108  | 40    | 148        | 152                       | 289  | 0     | 441        | 689        |
| % Auto      | 100                       | 0    | 97    | 98         | 0                         | 99.1 | 97.6  | 98.7       | 98.7                      | 95.7 | 0     | 96.7       | 97.3       |
| HV          | 0                         | 0    | 1     | 1          | 0                         | 1    | 1     | 2          | 1                         | 2    | 0     | 3          | 6          |
| % HV        | 0                         | 0    | 1.5   | 1          | 0                         | 0.9  | 2.4   | 1.3        | 0.6                       | 0.7  | 0     | 0.7        | 0.8        |
| B/SB        | 0                         | 0    | 1     | 1          | 0                         | 0    | 0     | 0          | 1                         | 11   | 0     | 12         | 13         |
| % B/SB      | 0                         | 0    | 1.5   | 1          | 0                         | 0    | 0     | 0          | 0.6                       | 3.6  | 0     | 2.6        | 1.8        |

|            | Taylor Place<br>Westbound |      |       |            | Vose Avenue<br>Northbound |      |       |            | Vose Avenue<br>Southbound |      |       |            |            |
|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |

Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

|              |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 08:00 AM     | 2    | 0    | 14   | 16   | 0    | 16   | 6    | 22   | 26   | 38   | 0    | 64   | 102  |
| 08:15 AM     | 6    | 0    | 12   | 18   | 0    | 21   | 5    | 26   | 15   | 50   | 0    | 65   | 109  |
| 08:30 AM     | 3    | 0    | 4    | 7    | 0    | 22   | 3    | 25   | 17   | 46   | 0    | 63   | 95   |
| 08:45 AM     | 7    | 0    | 5    | 12   | 0    | 12   | 13   | 25   | 19   | 48   | 0    | 67   | 104  |
| Total Volume | 18   | 0    | 35   | 53   | 0    | 71   | 27   | 98   | 77   | 182  | 0    | 259  | 410  |
| % App. Total | 34   | 0    | 66   |      | 0    | 72.4 | 27.6 |      | 29.7 | 70.3 | 0    |      |      |
| PHF          | .643 | .000 | .625 | .736 | .000 | .807 | .519 | .942 | .740 | .910 | .000 | .966 | .940 |
| Auto         | 18   | 0    | 35   | 53   | 0    | 71   | 26   | 97   | 77   | 182  | 0    | 259  | 409  |
| % Auto       | 100  | 0    | 100  | 100  | 0    | 100  | 96.3 | 99.0 | 100  | 100  | 0    | 100  | 99.8 |
| HV           | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 1    |
| % HV         | 0    | 0    | 0    | 0    | 0    | 0    | 3.7  | 1.0  | 0    | 0    | 0    | 0    | 0.2  |
| B/SB         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| % B/SB       | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of South Orange Avenue (E/W  
and Valley Street/Scotland Road (N/S)  
South Orange, Essex County, New Jersey  
Wednesday, March 4, 2020

File Name : RUT-200075.04\_PM  
Site Code : 00200075  
Start Date : 3/4/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Valley Street Northbound |      |       |      |            | Scotland Road Southbound |      |       |      |            |            |
|-------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|------------|
| Start Time  | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Int. Total |
| 04:00 PM    | 12                            | 113  | 5     | 0    | 130        | 31                            | 77   | 31    | 0    | 139        | 10                       | 76   | 29    | 0    | 115        | 67                       | 92   | 9     | 0    | 168        | 552        |
| 04:15 PM    | 12                            | 111  | 7     | 0    | 130        | 18                            | 65   | 39    | 0    | 122        | 16                       | 105  | 39    | 0    | 160        | 44                       | 88   | 11    | 0    | 143        | 555        |
| 04:30 PM    | 13                            | 137  | 10    | 0    | 160        | 18                            | 84   | 48    | 0    | 150        | 9                        | 114  | 27    | 0    | 150        | 55                       | 96   | 18    | 0    | 169        | 629        |
| 04:45 PM    | 11                            | 131  | 11    | 0    | 153        | 28                            | 87   | 32    | 0    | 147        | 18                       | 103  | 29    | 0    | 150        | 62                       | 84   | 19    | 0    | 165        | 615        |
| Total       | 48                            | 492  | 33    | 0    | 573        | 95                            | 313  | 150   | 0    | 558        | 53                       | 398  | 124   | 0    | 575        | 228                      | 360  | 57    | 0    | 645        | 2351       |
| 05:00 PM    | 19                            | 142  | 7     | 0    | 168        | 28                            | 79   | 47    | 0    | 154        | 11                       | 111  | 28    | 0    | 150        | 51                       | 89   | 8     | 0    | 148        | 620        |
| 05:15 PM    | 13                            | 141  | 7     | 0    | 161        | 28                            | 86   | 42    | 0    | 156        | 11                       | 105  | 30    | 0    | 146        | 48                       | 80   | 10    | 0    | 138        | 601        |
| 05:30 PM    | 15                            | 121  | 12    | 0    | 148        | 18                            | 103  | 44    | 0    | 165        | 7                        | 92   | 37    | 0    | 136        | 60                       | 102  | 11    | 0    | 173        | 622        |
| 05:45 PM    | 14                            | 129  | 6     | 0    | 149        | 26                            | 79   | 40    | 0    | 145        | 10                       | 77   | 34    | 0    | 121        | 71                       | 90   | 18    | 0    | 179        | 594        |
| Total       | 61                            | 533  | 32    | 0    | 626        | 100                           | 347  | 173   | 0    | 620        | 39                       | 385  | 129   | 0    | 553        | 230                      | 361  | 47    | 0    | 638        | 2437       |
| 06:00 PM    | 13                            | 135  | 12    | 0    | 160        | 18                            | 103  | 46    | 0    | 167        | 20                       | 112  | 31    | 0    | 163        | 58                       | 93   | 17    | 0    | 168        | 658        |
| 06:15 PM    | 13                            | 131  | 9     | 0    | 153        | 27                            | 91   | 40    | 0    | 158        | 11                       | 110  | 25    | 0    | 146        | 53                       | 89   | 16    | 0    | 158        | 615        |
| 06:30 PM    | 11                            | 129  | 9     | 0    | 149        | 23                            | 80   | 32    | 0    | 135        | 15                       | 101  | 43    | 0    | 159        | 50                       | 62   | 13    | 0    | 125        | 568        |
| 06:45 PM    | 11                            | 95   | 4     | 0    | 110        | 24                            | 70   | 39    | 0    | 133        | 13                       | 92   | 26    | 0    | 131        | 47                       | 51   | 14    | 0    | 112        | 486        |
| Total       | 48                            | 490  | 34    | 0    | 572        | 92                            | 344  | 157   | 0    | 593        | 59                       | 415  | 125   | 0    | 599        | 208                      | 295  | 60    | 0    | 563        | 2327       |
| Grand Total | 157                           | 1515 | 99    | 0    | 1771       | 287                           | 1004 | 480   | 0    | 1771       | 151                      | 1198 | 378   | 0    | 1727       | 666                      | 1016 | 164   | 0    | 1846       | 7115       |
| Apprch %    | 8.9                           | 85.5 | 5.6   | 0    |            | 16.2                          | 56.7 | 27.1  | 0    |            | 8.7                      | 69.4 | 21.9  | 0    |            | 36.1                     | 55   | 8.9   | 0    |            |            |
| Total %     | 2.2                           | 21.3 | 1.4   | 0    | 24.9       | 4                             | 14.1 | 6.7   | 0    | 24.9       | 2.1                      | 16.8 | 5.3   | 0    | 24.3       | 9.4                      | 14.3 | 2.3   | 0    | 25.9       |            |
| Auto        | 155                           | 1502 | 98    | 0    | 1755       | 270                           | 1001 | 477   | 0    | 1748       | 150                      | 1178 | 361   | 0    | 1689       | 665                      | 1002 | 164   | 0    | 1831       | 7023       |
| % Auto      | 98.7                          | 99.1 | 99    | 0    | 99.1       | 94.1                          | 99.7 | 99.4  | 0    | 98.7       | 99.3                     | 98.3 | 95.5  | 0    | 97.8       | 99.8                     | 98.6 | 100   | 0    | 99.2       | 98.7       |
| HV          | 0                             | 4    | 1     | 0    | 5          | 1                             | 2    | 3     | 0    | 6          | 1                        | 5    | 2     | 0    | 8          | 0                        | 5    | 0     | 0    | 5          | 24         |
| % HV        | 0                             | 0.3  | 1     | 0    | 0.3        | 0.3                           | 0.2  | 0.6   | 0    | 0.3        | 0.7                      | 0.4  | 0.5   | 0    | 0.5        | 0                        | 0.5  | 0     | 0    | 0.3        | 0.3        |
| B/SB        | 2                             | 9    | 0     | 0    | 11         | 16                            | 1    | 0     | 0    | 17         | 0                        | 15   | 15    | 0    | 30         | 1                        | 9    | 0     | 0    | 10         | 68         |
| % B/SB      | 1.3                           | 0.6  | 0     | 0    | 0.6        | 5.6                           | 0.1  | 0     | 0    | 1          | 0                        | 1.3  | 4     | 0    | 1.7        | 0.2                      | 0.9  | 0     | 0    | 0.5        | 1          |

|            | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Valley Street Northbound |      |       |      |            | Scotland Road Southbound |      |       |      |            |            |
|------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|------------|
| Start Time | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Int. Total |

Peak Hour Analysis From 05:30 PM to 06:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:30 PM

|              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 05:30 PM     | 15   | 121  | 12   | 0    | 148  | 18   | 103  | 44   | 0    | 165  | 7    | 92   | 37   | 0    | 136  | 60   | 102  | 11   | 0    | 173  | 622  |
| 05:45 PM     | 14   | 129  | 6    | 0    | 149  | 26   | 79   | 40   | 0    | 145  | 10   | 77   | 34   | 0    | 121  | 71   | 90   | 18   | 0    | 179  | 594  |
| 06:00 PM     | 13   | 135  | 12   | 0    | 160  | 18   | 103  | 46   | 0    | 167  | 20   | 112  | 31   | 0    | 163  | 58   | 93   | 17   | 0    | 168  | 658  |
| 06:15 PM     | 13   | 131  | 9    | 0    | 153  | 27   | 91   | 40   | 0    | 158  | 11   | 110  | 25   | 0    | 146  | 53   | 89   | 16   | 0    | 158  | 615  |
| Total Volume | 55   | 516  | 39   | 0    | 610  | 89   | 376  | 170  | 0    | 635  | 48   | 391  | 127  | 0    | 566  | 242  | 374  | 62   | 0    | 678  | 2489 |
| % App. Total | 9    | 84.6 | 6.4  | 0    |      | 14   | 59.2 | 26.8 | 0    |      | 8.5  | 69.1 | 22.4 | 0    |      | 35.7 | 55.2 | 9.1  | 0    |      |      |
| PHF          | .917 | .956 | .813 | .000 | .953 | .824 | .913 | .924 | .000 | .951 | .600 | .873 | .858 | .000 | .868 | .852 | .917 | .861 | .000 | .947 | .946 |
| Auto         | 54   | 511  | 39   | 0    | 604  | 84   | 376  | 170  | 0    | 630  | 48   | 388  | 121  | 0    | 557  | 242  | 369  | 62   | 0    | 673  | 2464 |
| % Auto       | 98.2 | 99.0 | 100  | 0    | 99.0 | 94.4 | 100  | 100  | 0    | 99.2 | 100  | 99.2 | 95.3 | 0    | 98.4 | 100  | 98.7 | 100  | 0    | 99.3 | 99.0 |
| HV           | 0    | 2    | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 2    | 4    |
| % HV         | 0    | 0.4  | 0    | 0    | 0.3  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0.5  | 0    | 0    | 0.3  | 0.2  |
| B/SB         | 1    | 3    | 0    | 0    | 4    | 5    | 0    | 0    | 0    | 5    | 0    | 3    | 6    | 0    | 9    | 0    | 3    | 0    | 0    | 3    | 21   |
| % B/SB       | 1.8  | 0.6  | 0    | 0    | 0.7  | 5.6  | 0    | 0    | 0    | 0.8  | 0    | 0.8  | 4.7  | 0    | 1.6  | 0    | 0.8  | 0    | 0    | 0.4  | 0.8  |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of South Orange Avenue (E/W)  
and Vose Avenue (S)  
South Orange, Essex County, New Jersey  
Wednesday, March 4, 2020

File Name : RUT-200075.03\_PM  
Site Code : 00200075  
Start Date : 3/4/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Vose Avenue Southbound |      |       |      |            |            |
|-------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|------------------------|------|-------|------|------------|------------|
| Start Time  | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                   | Thru | Right | RTOR | App. Total | Int. Total |
| 04:00 PM    | 16                            | 54   | 0     | 0    | 70         | 0                             | 51   | 12    | 10   | 73         | 12                     | 0    | 16    | 14   | 42         | 185        |
| 04:15 PM    | 14                            | 59   | 0     | 0    | 73         | 0                             | 54   | 21    | 21   | 96         | 19                     | 0    | 29    | 12   | 60         | 229        |
| 04:30 PM    | 13                            | 73   | 0     | 0    | 86         | 0                             | 77   | 9     | 8    | 94         | 19                     | 0    | 10    | 12   | 41         | 221        |
| 04:45 PM    | 10                            | 85   | 0     | 0    | 95         | 0                             | 82   | 12    | 9    | 103        | 20                     | 0    | 13    | 9    | 42         | 240        |
| Total       | 53                            | 271  | 0     | 0    | 324        | 0                             | 264  | 54    | 48   | 366        | 70                     | 0    | 68    | 47   | 185        | 875        |
| 05:00 PM    | 13                            | 82   | 0     | 0    | 95         | 0                             | 83   | 11    | 8    | 102        | 23                     | 0    | 17    | 7    | 47         | 244        |
| 05:15 PM    | 10                            | 93   | 0     | 0    | 103        | 0                             | 89   | 16    | 10   | 115        | 24                     | 0    | 22    | 12   | 58         | 276        |
| 05:30 PM    | 12                            | 110  | 0     | 0    | 122        | 0                             | 108  | 12    | 9    | 129        | 21                     | 0    | 18    | 11   | 50         | 301        |
| 05:45 PM    | 114                           | 98   | 0     | 0    | 212        | 0                             | 97   | 13    | 9    | 119        | 22                     | 0    | 21    | 10   | 53         | 384        |
| Total       | 149                           | 383  | 0     | 0    | 532        | 0                             | 377  | 52    | 36   | 465        | 90                     | 0    | 78    | 40   | 208        | 1205       |
| 06:00 PM    | 13                            | 100  | 0     | 0    | 113        | 0                             | 99   | 16    | 11   | 126        | 20                     | 0    | 27    | 11   | 58         | 297        |
| 06:15 PM    | 10                            | 95   | 0     | 0    | 105        | 0                             | 91   | 12    | 10   | 113        | 21                     | 0    | 22    | 10   | 53         | 271        |
| 06:30 PM    | 7                             | 81   | 0     | 0    | 88         | 0                             | 79   | 12    | 8    | 99         | 18                     | 0    | 21    | 5    | 44         | 231        |
| 06:45 PM    | 5                             | 74   | 0     | 0    | 79         | 0                             | 78   | 10    | 6    | 94         | 10                     | 0    | 14    | 3    | 27         | 200        |
| Total       | 35                            | 350  | 0     | 0    | 385        | 0                             | 347  | 50    | 35   | 432        | 69                     | 0    | 84    | 29   | 182        | 999        |
| Grand Total | 237                           | 1004 | 0     | 0    | 1241       | 0                             | 988  | 156   | 119  | 1263       | 229                    | 0    | 230   | 116  | 575        | 3079       |
| Apprch %    | 19.1                          | 80.9 | 0     | 0    |            | 0                             | 78.2 | 12.4  | 9.4  |            | 39.8                   | 0    | 40    | 20.2 |            |            |
| Total %     | 7.7                           | 32.6 | 0     | 0    | 40.3       | 0                             | 32.1 | 5.1   | 3.9  | 41         | 7.4                    | 0    | 7.5   | 3.8  | 18.7       |            |
| Auto        | 237                           | 1001 | 0     | 0    | 1238       | 0                             | 984  | 156   | 119  | 1259       | 228                    | 0    | 229   | 116  | 573        | 3070       |
| % Auto      | 100                           | 99.7 | 0     | 0    | 99.8       | 0                             | 99.6 | 100   | 100  | 99.7       | 99.6                   | 0    | 99.6  | 100  | 99.7       | 99.7       |
| HV          | 0                             | 1    | 0     | 0    | 1          | 0                             | 2    | 0     | 0    | 2          | 1                      | 0    | 0     | 0    | 1          | 4          |
| % HV        | 0                             | 0.1  | 0     | 0    | 0.1        | 0                             | 0.2  | 0     | 0    | 0.2        | 0.4                    | 0    | 0     | 0    | 0.2        | 0.1        |
| B/SB        | 0                             | 2    | 0     | 0    | 2          | 0                             | 2    | 0     | 0    | 2          | 0                      | 0    | 1     | 0    | 1          | 5          |
| % B/SB      | 0                             | 0.2  | 0     | 0    | 0.2        | 0                             | 0.2  | 0     | 0    | 0.2        | 0                      | 0    | 0.4   | 0    | 0.2        | 0.2        |

|                                                            | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Vose Avenue Southbound |      |       |      |            |            |
|------------------------------------------------------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|------------------------|------|-------|------|------------|------------|
| Start Time                                                 | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                   | Thru | Right | RTOR | App. Total | Int. Total |
| Peak Hour Analysis From 05:30 PM to 06:15 PM - Peak 1 of 1 |                               |      |       |      |            |                               |      |       |      |            |                        |      |       |      |            |            |
| Peak Hour for Entire Intersection Begins at 05:30 PM       |                               |      |       |      |            |                               |      |       |      |            |                        |      |       |      |            |            |
| 05:30 PM                                                   | 12                            | 110  | 0     | 0    | 122        | 0                             | 108  | 12    | 9    | 129        | 21                     | 0    | 18    | 11   | 50         | 301        |
| 05:45 PM                                                   | 114                           | 98   | 0     | 0    | 212        | 0                             | 97   | 13    | 9    | 119        | 22                     | 0    | 21    | 10   | 53         | 384        |
| 06:00 PM                                                   | 13                            | 100  | 0     | 0    | 113        | 0                             | 99   | 16    | 11   | 126        | 20                     | 0    | 27    | 11   | 58         | 297        |
| 06:15 PM                                                   | 10                            | 95   | 0     | 0    | 105        | 0                             | 91   | 12    | 10   | 113        | 21                     | 0    | 22    | 10   | 53         | 271        |
| Total Volume                                               | 149                           | 403  | 0     | 0    | 552        | 0                             | 395  | 53    | 39   | 487        | 84                     | 0    | 88    | 42   | 214        | 1253       |
| % App. Total                                               | 27                            | 73   | 0     | 0    |            | 0                             | 81.1 | 10.9  | 8    |            | 39.3                   | 0    | 41.1  | 19.6 |            |            |
| PHF                                                        | .327                          | .916 | .000  | .000 | .651       | .000                          | .914 | .828  | .886 | .944       | .955                   | .000 | .815  | .955 | .922       | .816       |
| Auto                                                       | 149                           | 403  | 0     | 0    | 552        | 0                             | 395  | 53    | 39   | 487        | 84                     | 0    | 88    | 42   | 214        | 1253       |
| % Auto                                                     | 100                           | 100  | 0     | 0    | 100        | 0                             | 100  | 100   | 100  | 100        | 100                    | 0    | 100   | 100  | 100        | 100        |
| HV                                                         | 0                             | 0    | 0     | 0    | 0          | 0                             | 0    | 0     | 0    | 0          | 0                      | 0    | 0     | 0    | 0          | 0          |
| % HV                                                       | 0                             | 0    | 0     | 0    | 0          | 0                             | 0    | 0     | 0    | 0          | 0                      | 0    | 0     | 0    | 0          | 0          |
| B/SB                                                       | 0                             | 0    | 0     | 0    | 0          | 0                             | 0    | 0     | 0    | 0          | 0                      | 0    | 0     | 0    | 0          | 0          |
| % B/SB                                                     | 0                             | 0    | 0     | 0    | 0          | 0                             | 0    | 0     | 0    | 0          | 0                      | 0    | 0     | 0    | 0          | 0          |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Taylor Place (E)  
and Scotland Road (N/S)  
South Orange, Essex County, New Jersey  
Wednesday, March 4, 2020

File Name : RUT-200075.02\_PM  
Site Code : 00200075  
Start Date : 3/4/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | Taylor Place<br>Eastbound |      |       |            | Scotland Road<br>Northbound |      |       |            | Scotland Road<br>Southbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|-----------------------------|------|-------|------------|-----------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 5                         | 0    | 28    | 33         | 18                          | 120  | 0     | 138        | 0                           | 137  | 6     | 143        | 314        |
| 04:15 PM    | 7                         | 0    | 29    | 36         | 18                          | 130  | 0     | 148        | 0                           | 126  | 8     | 134        | 318        |
| 04:30 PM    | 9                         | 0    | 30    | 39         | 14                          | 156  | 0     | 170        | 0                           | 133  | 7     | 140        | 349        |
| 04:45 PM    | 4                         | 0    | 29    | 33         | 14                          | 135  | 0     | 149        | 0                           | 140  | 5     | 145        | 327        |
| Total       | 25                        | 0    | 116   | 141        | 64                          | 541  | 0     | 605        | 0                           | 536  | 26    | 562        | 1308       |
| 05:00 PM    | 6                         | 0    | 26    | 32         | 12                          | 166  | 0     | 178        | 0                           | 122  | 7     | 129        | 339        |
| 05:15 PM    | 3                         | 0    | 28    | 31         | 16                          | 144  | 0     | 160        | 0                           | 110  | 6     | 116        | 307        |
| 05:30 PM    | 7                         | 0    | 23    | 30         | 15                          | 136  | 0     | 151        | 0                           | 150  | 6     | 156        | 337        |
| 05:45 PM    | 6                         | 0    | 29    | 35         | 12                          | 119  | 0     | 131        | 0                           | 150  | 7     | 157        | 323        |
| Total       | 22                        | 0    | 106   | 128        | 55                          | 565  | 0     | 620        | 0                           | 532  | 26    | 558        | 1306       |
| 06:00 PM    | 2                         | 0    | 30    | 32         | 20                          | 151  | 0     | 171        | 0                           | 138  | 6     | 144        | 347        |
| 06:15 PM    | 6                         | 0    | 25    | 31         | 12                          | 151  | 0     | 163        | 0                           | 133  | 6     | 139        | 333        |
| 06:30 PM    | 2                         | 0    | 16    | 18         | 16                          | 128  | 0     | 144        | 0                           | 109  | 4     | 113        | 275        |
| 06:45 PM    | 5                         | 0    | 12    | 17         | 5                           | 137  | 0     | 142        | 0                           | 100  | 5     | 105        | 264        |
| Total       | 15                        | 0    | 83    | 98         | 53                          | 567  | 0     | 620        | 0                           | 480  | 21    | 501        | 1219       |
| Grand Total | 62                        | 0    | 305   | 367        | 172                         | 1673 | 0     | 1845       | 0                           | 1548 | 73    | 1621       | 3833       |
| Apprch %    | 16.9                      | 0    | 83.1  |            | 9.3                         | 90.7 | 0     |            | 0                           | 95.5 | 4.5   |            |            |
| Total %     | 1.6                       | 0    | 8     | 9.6        | 4.5                         | 43.6 | 0     | 48.1       | 0                           | 40.4 | 1.9   | 42.3       |            |
| Auto        | 62                        | 0    | 304   | 366        | 172                         | 1665 | 0     | 1837       | 0                           | 1542 | 71    | 1613       | 3816       |
| % Auto      | 100                       | 0    | 99.7  | 99.7       | 100                         | 99.5 | 0     | 99.6       | 0                           | 99.6 | 97.3  | 99.5       | 99.6       |
| HV          | 0                         | 0    | 1     | 1          | 0                           | 5    | 0     | 5          | 0                           | 2    | 1     | 3          | 9          |
| % HV        | 0                         | 0    | 0.3   | 0.3        | 0                           | 0.3  | 0     | 0.3        | 0                           | 0.1  | 1.4   | 0.2        | 0.2        |
| B/SB        | 0                         | 0    | 0     | 0          | 0                           | 3    | 0     | 3          | 0                           | 4    | 1     | 5          | 8          |
| % B/SB      | 0                         | 0    | 0     | 0          | 0                           | 0.2  | 0     | 0.2        | 0                           | 0.3  | 1.4   | 0.3        | 0.2        |

|                                                            | Taylor Place<br>Eastbound |      |       |            | Scotland Road<br>Northbound |      |       |            | Scotland Road<br>Southbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|-----------------------------|------|-------|------------|-----------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 05:30 PM to 06:45 PM - Peak 1 of 1 |                           |      |       |            |                             |      |       |            |                             |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 05:30 PM       |                           |      |       |            |                             |      |       |            |                             |      |       |            |            |
| 05:30 PM                                                   | 7                         | 0    | 23    | 30         | 15                          | 136  | 0     | 151        | 0                           | 150  | 6     | 156        | 337        |
| 05:45 PM                                                   | 6                         | 0    | 29    | 35         | 12                          | 119  | 0     | 131        | 0                           | 150  | 7     | 157        | 323        |
| 06:00 PM                                                   | 2                         | 0    | 30    | 32         | 20                          | 151  | 0     | 171        | 0                           | 138  | 6     | 144        | 347        |
| 06:15 PM                                                   | 6                         | 0    | 25    | 31         | 12                          | 151  | 0     | 163        | 0                           | 133  | 6     | 139        | 333        |
| Total Volume                                               | 21                        | 0    | 107   | 128        | 59                          | 557  | 0     | 616        | 0                           | 571  | 25    | 596        | 1340       |
| % App. Total                                               | 16.4                      | 0    | 83.6  |            | 9.6                         | 90.4 | 0     |            | 0                           | 95.8 | 4.2   |            |            |
| PHF                                                        | .750                      | .000 | .892  | .914       | .738                        | .922 | .000  | .901       | .000                        | .952 | .893  | .949       | .965       |
| Auto                                                       | 21                        | 0    | 107   | 128        | 59                          | 557  | 0     | 616        | 0                           | 571  | 25    | 596        | 1340       |
| % Auto                                                     | 100                       | 0    | 100   | 100        | 100                         | 100  | 0     | 100        | 0                           | 100  | 100   | 100        | 100        |
| HV                                                         | 0                         | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0          |
| % HV                                                       | 0                         | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0          |
| B/SB                                                       | 0                         | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0          |
| % B/SB                                                     | 0                         | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0          |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Taylor Place (W)  
and Vose Avenue (N/S)  
South Orange, Essex County, New Jersey  
Wednesday, March 4, 2020

File Name : RUT-200075.01\_PM  
Site Code : 00200075  
Start Date : 3/4/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | Taylor Place<br>Westbound |      |       |            | Vose Avenue<br>Northbound |      |       |            | Vose Avenue<br>Southbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| 04:00 PM    | 7                         | 0    | 13    | 20         | 0                         | 26   | 11    | 37         | 21                        | 35   | 0     | 56         | 113        |
| 04:15 PM    | 12                        | 0    | 12    | 24         | 0                         | 19   | 5     | 24         | 22                        | 35   | 0     | 57         | 105        |
| 04:30 PM    | 11                        | 0    | 12    | 23         | 0                         | 16   | 9     | 25         | 26                        | 31   | 0     | 57         | 105        |
| 04:45 PM    | 1                         | 0    | 6     | 7          | 0                         | 14   | 9     | 23         | 23                        | 28   | 0     | 51         | 81         |
| Total       | 31                        | 0    | 43    | 74         | 0                         | 75   | 34    | 109        | 92                        | 129  | 0     | 221        | 404        |
| 05:00 PM    | 5                         | 0    | 9     | 14         | 0                         | 22   | 9     | 31         | 18                        | 35   | 0     | 53         | 98         |
| 05:15 PM    | 7                         | 0    | 9     | 16         | 0                         | 21   | 9     | 30         | 18                        | 34   | 0     | 52         | 98         |
| 05:30 PM    | 8                         | 0    | 9     | 17         | 0                         | 19   | 15    | 34         | 13                        | 31   | 0     | 44         | 95         |
| 05:45 PM    | 9                         | 0    | 4     | 13         | 0                         | 19   | 11    | 30         | 21                        | 30   | 0     | 51         | 94         |
| Total       | 29                        | 0    | 31    | 60         | 0                         | 81   | 44    | 125        | 70                        | 130  | 0     | 200        | 385        |
| 06:00 PM    | 9                         | 0    | 13    | 22         | 0                         | 20   | 5     | 25         | 23                        | 39   | 0     | 62         | 109        |
| 06:15 PM    | 6                         | 0    | 8     | 14         | 0                         | 22   | 12    | 34         | 17                        | 29   | 0     | 46         | 94         |
| 06:30 PM    | 9                         | 0    | 9     | 18         | 0                         | 21   | 7     | 28         | 8                         | 16   | 0     | 24         | 70         |
| 06:45 PM    | 3                         | 0    | 4     | 7          | 0                         | 10   | 10    | 20         | 7                         | 22   | 0     | 29         | 56         |
| Total       | 27                        | 0    | 34    | 61         | 0                         | 73   | 34    | 107        | 55                        | 106  | 0     | 161        | 329        |
| Grand Total | 87                        | 0    | 108   | 195        | 0                         | 229  | 112   | 341        | 217                       | 365  | 0     | 582        | 1118       |
| Apprch %    | 44.6                      | 0    | 55.4  |            | 0                         | 67.2 | 32.8  |            | 37.3                      | 62.7 | 0     |            |            |
| Total %     | 7.8                       | 0    | 9.7   | 17.4       | 0                         | 20.5 | 10    | 30.5       | 19.4                      | 32.6 | 0     | 52.1       |            |
| Auto        | 87                        | 0    | 106   | 193        | 0                         | 228  | 112   | 340        | 216                       | 364  | 0     | 580        | 1113       |
| % Auto      | 100                       | 0    | 98.1  | 99         | 0                         | 99.6 | 100   | 99.7       | 99.5                      | 99.7 | 0     | 99.7       | 99.6       |
| HV          | 0                         | 0    | 1     | 1          | 0                         | 0    | 0     | 0          | 1                         | 0    | 0     | 1          | 2          |
| % HV        | 0                         | 0    | 0.9   | 0.5        | 0                         | 0    | 0     | 0          | 0.5                       | 0    | 0     | 0.2        | 0.2        |
| B/SB        | 0                         | 0    | 1     | 1          | 0                         | 1    | 0     | 1          | 0                         | 1    | 0     | 1          | 3          |
| % B/SB      | 0                         | 0    | 0.9   | 0.5        | 0                         | 0.4  | 0     | 0.3        | 0                         | 0.3  | 0     | 0.2        | 0.3        |

|                                                            | Taylor Place<br>Westbound |      |       |            | Vose Avenue<br>Northbound |      |       |            | Vose Avenue<br>Southbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 05:30 PM to 06:15 PM - Peak 1 of 1 |                           |      |       |            |                           |      |       |            |                           |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 05:30 PM       |                           |      |       |            |                           |      |       |            |                           |      |       |            |            |
| 05:30 PM                                                   | 8                         | 0    | 9     | 17         | 0                         | 19   | 15    | 34         | 13                        | 31   | 0     | 44         | 95         |
| 05:45 PM                                                   | 9                         | 0    | 4     | 13         | 0                         | 19   | 11    | 30         | 21                        | 30   | 0     | 51         | 94         |
| 06:00 PM                                                   | 9                         | 0    | 13    | 22         | 0                         | 20   | 5     | 25         | 23                        | 39   | 0     | 62         | 109        |
| 06:15 PM                                                   | 6                         | 0    | 8     | 14         | 0                         | 22   | 12    | 34         | 17                        | 29   | 0     | 46         | 94         |
| Total Volume                                               | 32                        | 0    | 34    | 66         | 0                         | 80   | 43    | 123        | 74                        | 129  | 0     | 203        | 392        |
| % App. Total                                               | 48.5                      | 0    | 51.5  |            | 0                         | 65   | 35    |            | 36.5                      | 63.5 | 0     |            |            |
| PHF                                                        | .889                      | .000 | .654  | .750       | .000                      | .909 | .717  | .904       | .804                      | .827 | .000  | .819       | .899       |
| Auto                                                       | 32                        | 0    | 34    | 66         | 0                         | 80   | 43    | 123        | 74                        | 128  | 0     | 202        | 391        |
| % Auto                                                     | 100                       | 0    | 100   | 100        | 0                         | 100  | 100   | 100        | 100                       | 99.2 | 0     | 99.5       | 99.7       |
| HV                                                         | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0          |
| % HV                                                       | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0          |
| B/SB                                                       | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0                         | 1    | 0     | 1          | 1          |
| % B/SB                                                     | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0                         | 0.8  | 0     | 0.5        | 0.3        |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of South Orange Avenue (E/W)  
and Valley Street/Scotland Road (N/S)  
South Orange, Essex County, New Jersey  
Saturday, February 29, 2020

File Name : RUT-200075.04\_SAT  
Site Code : 00200075  
Start Date : 2/29/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Valley Street Northbound |      |       |      |            | Scotland Road Southbound |      |       |      |            |            |
|-------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|------------|
| Start Time  | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Int. Total |
| 11:00 AM    | 15                            | 80   | 4     | 0    | 99         | 22                            | 88   | 42    | 1    | 153        | 17                       | 75   | 24    | 1    | 117        | 28                       | 53   | 16    | 0    | 97         | 466        |
| 11:15 AM    | 12                            | 102  | 6     | 0    | 120        | 15                            | 90   | 32    | 1    | 138        | 13                       | 52   | 34    | 0    | 99         | 52                       | 68   | 19    | 0    | 139        | 496        |
| 11:30 AM    | 9                             | 92   | 5     | 1    | 107        | 31                            | 93   | 39    | 2    | 165        | 22                       | 67   | 29    | 0    | 118        | 41                       | 67   | 19    | 0    | 127        | 517        |
| 11:45 AM    | 13                            | 88   | 10    | 1    | 112        | 31                            | 92   | 40    | 0    | 163        | 21                       | 61   | 19    | 0    | 101        | 62                       | 92   | 12    | 0    | 166        | 542        |
| Total       | 49                            | 362  | 25    | 2    | 438        | 99                            | 363  | 153   | 4    | 619        | 73                       | 255  | 106   | 1    | 435        | 183                      | 280  | 66    | 0    | 529        | 2021       |
| 12:00 PM    | 27                            | 103  | 18    | 0    | 148        | 24                            | 100  | 40    | 0    | 164        | 12                       | 78   | 23    | 0    | 113        | 46                       | 90   | 15    | 0    | 151        | 576        |
| 12:15 PM    | 14                            | 106  | 5     | 0    | 125        | 31                            | 94   | 28    | 1    | 154        | 17                       | 84   | 30    | 0    | 131        | 53                       | 74   | 9     | 0    | 136        | 546        |
| 12:30 PM    | 20                            | 73   | 17    | 0    | 110        | 20                            | 106  | 38    | 0    | 164        | 10                       | 71   | 32    | 1    | 114        | 60                       | 62   | 17    | 1    | 140        | 528        |
| 12:45 PM    | 10                            | 90   | 20    | 1    | 121        | 31                            | 98   | 46    | 0    | 175        | 26                       | 77   | 35    | 0    | 138        | 49                       | 59   | 24    | 0    | 132        | 566        |
| Total       | 71                            | 372  | 60    | 1    | 504        | 106                           | 398  | 152   | 1    | 657        | 65                       | 310  | 120   | 1    | 496        | 208                      | 285  | 65    | 1    | 559        | 2216       |
| 01:00 PM    | 14                            | 100  | 13    | 0    | 127        | 21                            | 81   | 45    | 0    | 147        | 22                       | 71   | 35    | 0    | 128        | 56                       | 67   | 25    | 0    | 148        | 550        |
| 01:15 PM    | 16                            | 106  | 11    | 0    | 133        | 22                            | 102  | 45    | 0    | 169        | 15                       | 82   | 22    | 0    | 119        | 45                       | 62   | 12    | 0    | 119        | 540        |
| 01:30 PM    | 9                             | 89   | 10    | 0    | 108        | 17                            | 109  | 50    | 0    | 176        | 23                       | 68   | 30    | 0    | 121        | 47                       | 73   | 17    | 0    | 137        | 542        |
| 01:45 PM    | 15                            | 95   | 6     | 0    | 116        | 19                            | 90   | 34    | 0    | 143        | 11                       | 71   | 26    | 0    | 108        | 56                       | 66   | 25    | 0    | 147        | 514        |
| Total       | 54                            | 390  | 40    | 0    | 484        | 79                            | 382  | 174   | 0    | 635        | 71                       | 292  | 113   | 0    | 476        | 204                      | 268  | 79    | 0    | 551        | 2146       |
| Grand Total | 174                           | 1124 | 125   | 3    | 1426       | 284                           | 1143 | 479   | 5    | 1911       | 209                      | 857  | 339   | 2    | 1407       | 595                      | 833  | 210   | 1    | 1639       | 6383       |
| Apprch %    | 12.2                          | 78.8 | 8.8   | 0.2  |            | 14.9                          | 59.8 | 25.1  | 0.3  |            | 14.9                     | 60.9 | 24.1  | 0.1  |            | 36.3                     | 50.8 | 12.8  | 0.1  |            |            |
| Total %     | 2.7                           | 17.6 | 2     | 0    | 22.3       | 4.4                           | 17.9 | 7.5   | 0.1  | 29.9       | 3.3                      | 13.4 | 5.3   | 0    | 22         | 9.3                      | 13.1 | 3.3   | 0    | 25.7       |            |
| Auto        | 173                           | 1120 | 125   | 3    | 1421       | 272                           | 1141 | 476   | 5    | 1894       | 209                      | 849  | 329   | 2    | 1389       | 593                      | 817  | 210   | 1    | 1621       | 6325       |
| % Auto      | 99.4                          | 99.6 | 100   | 100  | 99.6       | 95.8                          | 99.8 | 99.4  | 100  | 99.1       | 100                      | 99.1 | 97.1  | 100  | 98.7       | 99.7                     | 98.1 | 100   | 100  | 98.9       | 99.1       |
| HV          | 1                             | 2    | 0     | 0    | 3          | 4                             | 2    | 3     | 0    | 9          | 0                        | 4    | 1     | 0    | 5          | 2                        | 10   | 0     | 0    | 12         | 29         |
| % HV        | 0.6                           | 0.2  | 0     | 0    | 0.2        | 1.4                           | 0.2  | 0.6   | 0    | 0.5        | 0                        | 0.5  | 0.3   | 0    | 0.4        | 0.3                      | 1.2  | 0     | 0    | 0.7        | 0.5        |
| B/SB        | 0                             | 2    | 0     | 0    | 2          | 8                             | 0    | 0     | 0    | 8          | 0                        | 4    | 9     | 0    | 13         | 0                        | 6    | 0     | 0    | 6          | 29         |
| % B/SB      | 0                             | 0.2  | 0     | 0    | 0.1        | 2.8                           | 0    | 0     | 0    | 0.4        | 0                        | 0.5  | 2.7   | 0    | 0.9        | 0                        | 0.7  | 0     | 0    | 0.4        | 0.5        |

|                                                            | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Valley Street Northbound |      |       |      |            | Scotland Road Southbound |      |       |      |            |            |
|------------------------------------------------------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|------------|
| Start Time                                                 | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Left                     | Thru | Right | RTOR | App. Total | Int. Total |
| Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1 |                               |      |       |      |            |                               |      |       |      |            |                          |      |       |      |            |                          |      |       |      |            |            |
| Peak Hour for Entire Intersection Begins at 12:00 PM       |                               |      |       |      |            |                               |      |       |      |            |                          |      |       |      |            |                          |      |       |      |            |            |
| 12:00 PM                                                   | 27                            | 103  | 18    | 0    | 148        | 24                            | 100  | 40    | 0    | 164        | 12                       | 78   | 23    | 0    | 113        | 46                       | 90   | 15    | 0    | 151        | 576        |
| 12:15 PM                                                   | 14                            | 106  | 5     | 0    | 125        | 31                            | 94   | 28    | 1    | 154        | 17                       | 84   | 30    | 0    | 131        | 53                       | 74   | 9     | 0    | 136        | 546        |
| 12:30 PM                                                   | 20                            | 73   | 17    | 0    | 110        | 20                            | 106  | 38    | 0    | 164        | 10                       | 71   | 32    | 1    | 114        | 60                       | 62   | 17    | 1    | 140        | 528        |
| 12:45 PM                                                   | 10                            | 90   | 20    | 1    | 121        | 31                            | 98   | 46    | 0    | 175        | 26                       | 77   | 35    | 0    | 138        | 49                       | 59   | 24    | 0    | 132        | 566        |
| Total Volume                                               | 71                            | 372  | 60    | 1    | 504        | 106                           | 398  | 152   | 1    | 657        | 65                       | 310  | 120   | 1    | 496        | 208                      | 285  | 65    | 1    | 559        | 2216       |
| % App. Total                                               | 14.1                          | 73.8 | 11.9  | 0.2  |            | 16.1                          | 60.6 | 23.1  | 0.2  |            | 13.1                     | 62.5 | 24.2  | 0.2  |            | 37.2                     | 51   | 11.6  | 0.2  |            |            |
| PHF                                                        | .657                          | .877 | .750  | .250 | .851       | .855                          | .939 | .826  | .250 | .939       | .625                     | .923 | .857  | .250 | .899       | .867                     | .792 | .677  | .250 | .925       | .962       |
| Auto                                                       | 71                            | 372  | 60    | 1    | 504        | 102                           | 397  | 152   | 1    | 652        | 65                       | 306  | 117   | 1    | 489        | 208                      | 279  | 65    | 1    | 553        | 2198       |
| % Auto                                                     | 100                           | 100  | 100   | 100  | 100        | 96.2                          | 99.7 | 100   | 100  | 99.2       | 100                      | 98.7 | 97.5  | 100  | 98.6       | 100                      | 97.9 | 100   | 100  | 98.9       | 99.2       |
| HV                                                         | 0                             | 0    | 0     | 0    | 0          | 1                             | 1    | 0     | 0    | 2          | 0                        | 3    | 0     | 0    | 3          | 0                        | 3    | 0     | 0    | 3          | 8          |
| % HV                                                       | 0                             | 0    | 0     | 0    | 0          | 0.9                           | 0.3  | 0     | 0    | 0.3        | 0                        | 1.0  | 0     | 0    | 0.6        | 0                        | 1.1  | 0     | 0    | 0.5        | 0.4        |
| B/SB                                                       | 0                             | 0    | 0     | 0    | 0          | 3                             | 0    | 0     | 0    | 3          | 0                        | 1    | 3     | 0    | 4          | 0                        | 3    | 0     | 0    | 3          | 10         |
| % B/SB                                                     | 0                             | 0    | 0     | 0    | 0          | 2.8                           | 0    | 0     | 0    | 0.5        | 0                        | 0.3  | 2.5   | 0    | 0.8        | 0                        | 1.1  | 0     | 0    | 0.5        | 0.5        |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of South Orange Avenue (E/W)  
and Vose Avenue (S)  
South Orange, Essex County, New Jersey  
Saturday, February 29, 2020

File Name : RUT-200075.03\_SAT  
Site Code : 00200075  
Start Date : 2/29/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Vose Avenue Southbound |      |       |      |            |            |
|-------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|------------------------|------|-------|------|------------|------------|
| Start Time  | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                   | Thru | Right | RTOR | App. Total | Int. Total |
| 11:00 AM    | 29                            | 107  | 0     | 0    | 136        | 0                             | 87   | 29    | 0    | 116        | 31                     | 0    | 26    | 0    | 57         | 309        |
| 11:15 AM    | 15                            | 109  | 0     | 0    | 124        | 0                             | 87   | 26    | 0    | 113        | 28                     | 0    | 21    | 0    | 49         | 286        |
| 11:30 AM    | 19                            | 104  | 0     | 0    | 123        | 0                             | 105  | 17    | 1    | 123        | 22                     | 0    | 26    | 3    | 51         | 297        |
| 11:45 AM    | 25                            | 110  | 0     | 0    | 135        | 0                             | 97   | 21    | 1    | 119        | 34                     | 0    | 15    | 2    | 51         | 305        |
| Total       | 88                            | 430  | 0     | 0    | 518        | 0                             | 376  | 93    | 2    | 471        | 115                    | 0    | 88    | 5    | 208        | 1197       |
| 12:00 PM    | 27                            | 135  | 0     | 0    | 162        | 0                             | 92   | 20    | 0    | 112        | 31                     | 0    | 15    | 3    | 49         | 323        |
| 12:15 PM    | 23                            | 108  | 0     | 0    | 131        | 0                             | 93   | 26    | 2    | 121        | 30                     | 0    | 17    | 1    | 48         | 300        |
| 12:30 PM    | 16                            | 117  | 0     | 0    | 133        | 0                             | 102  | 16    | 3    | 121        | 23                     | 0    | 32    | 4    | 59         | 313        |
| 12:45 PM    | 19                            | 110  | 0     | 0    | 129        | 0                             | 116  | 23    | 1    | 140        | 19                     | 0    | 24    | 0    | 43         | 312        |
| Total       | 85                            | 470  | 0     | 0    | 555        | 0                             | 403  | 85    | 6    | 494        | 103                    | 0    | 88    | 8    | 199        | 1248       |
| 01:00 PM    | 12                            | 120  | 0     | 0    | 132        | 0                             | 98   | 15    | 0    | 113        | 25                     | 0    | 22    | 2    | 49         | 294        |
| 01:15 PM    | 25                            | 95   | 0     | 0    | 120        | 0                             | 84   | 16    | 0    | 100        | 31                     | 0    | 21    | 0    | 52         | 272        |
| 01:30 PM    | 16                            | 103  | 0     | 0    | 119        | 0                             | 115  | 19    | 0    | 134        | 18                     | 0    | 14    | 1    | 33         | 286        |
| 01:45 PM    | 26                            | 112  | 0     | 0    | 138        | 0                             | 103  | 26    | 0    | 129        | 21                     | 0    | 14    | 0    | 35         | 302        |
| Total       | 79                            | 430  | 0     | 0    | 509        | 0                             | 400  | 76    | 0    | 476        | 95                     | 0    | 71    | 3    | 169        | 1154       |
| Grand Total | 252                           | 1330 | 0     | 0    | 1582       | 0                             | 1179 | 254   | 8    | 1441       | 313                    | 0    | 247   | 16   | 576        | 3599       |
| Apprch %    | 15.9                          | 84.1 | 0     | 0    |            | 0                             | 81.8 | 17.6  | 0.6  |            | 54.3                   | 0    | 42.9  | 2.8  |            |            |
| Total %     | 7                             | 37   | 0     | 0    | 44         | 0                             | 32.8 | 7.1   | 0.2  | 40         | 8.7                    | 0    | 6.9   | 0.4  | 16         |            |
| Auto        | 252                           | 1329 | 0     | 0    | 1581       | 0                             | 1177 | 254   | 8    | 1439       | 313                    | 0    | 246   | 16   | 575        | 3595       |
| % Auto      | 100                           | 99.9 | 0     | 0    | 99.9       | 0                             | 99.8 | 100   | 100  | 99.9       | 100                    | 0    | 99.6  | 100  | 99.8       | 99.9       |
| HV          | 0                             | 0    | 0     | 0    | 0          | 0                             | 2    | 0     | 0    | 2          | 0                      | 0    | 1     | 0    | 1          | 3          |
| % HV        | 0                             | 0    | 0     | 0    | 0          | 0                             | 0.2  | 0     | 0    | 0.1        | 0                      | 0    | 0.4   | 0    | 0.2        | 0.1        |
| B/SB        | 0                             | 1    | 0     | 0    | 1          | 0                             | 0    | 0     | 0    | 0          | 0                      | 0    | 0     | 0    | 0          | 1          |
| % B/SB      | 0                             | 0.1  | 0     | 0    | 0.1        | 0                             | 0    | 0     | 0    | 0          | 0                      | 0    | 0     | 0    | 0          | 0          |

|                                                            | South Orange Avenue Eastbound |      |       |      |            | South Orange Avenue Westbound |      |       |      |            | Vose Avenue Southbound |      |       |      |            |            |
|------------------------------------------------------------|-------------------------------|------|-------|------|------------|-------------------------------|------|-------|------|------------|------------------------|------|-------|------|------------|------------|
| Start Time                                                 | Left                          | Thru | Right | RTOR | App. Total | Left                          | Thru | Right | RTOR | App. Total | Left                   | Thru | Right | RTOR | App. Total | Int. Total |
| Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1 |                               |      |       |      |            |                               |      |       |      |            |                        |      |       |      |            |            |
| Peak Hour for Entire Intersection Begins at 12:00 PM       |                               |      |       |      |            |                               |      |       |      |            |                        |      |       |      |            |            |
| 12:00 PM                                                   | 27                            | 135  | 0     | 0    | 162        | 0                             | 92   | 20    | 0    | 112        | 31                     | 0    | 15    | 3    | 49         | 323        |
| 12:15 PM                                                   | 23                            | 108  | 0     | 0    | 131        | 0                             | 93   | 26    | 2    | 121        | 30                     | 0    | 17    | 1    | 48         | 300        |
| 12:30 PM                                                   | 16                            | 117  | 0     | 0    | 133        | 0                             | 102  | 16    | 3    | 121        | 23                     | 0    | 32    | 4    | 59         | 313        |
| 12:45 PM                                                   | 19                            | 110  | 0     | 0    | 129        | 0                             | 116  | 23    | 1    | 140        | 19                     | 0    | 24    | 0    | 43         | 312        |
| Total Volume                                               | 85                            | 470  | 0     | 0    | 555        | 0                             | 403  | 85    | 6    | 494        | 103                    | 0    | 88    | 8    | 199        | 1248       |
| % App. Total                                               | 15.3                          | 84.7 | 0     | 0    |            | 0                             | 81.6 | 17.2  | 1.2  |            | 51.8                   | 0    | 44.2  | 4    |            |            |
| PHF                                                        | .787                          | .870 | .000  | .000 | .856       | .000                          | .869 | .817  | .500 | .882       | .831                   | .000 | .688  | .500 | .843       | .966       |
| Auto                                                       | 85                            | 470  | 0     | 0    | 555        | 0                             | 402  | 85    | 6    | 493        | 103                    | 0    | 88    | 8    | 199        | 1247       |
| % Auto                                                     | 100                           | 100  | 0     | 0    | 100        | 0                             | 99.8 | 100   | 100  | 99.8       | 100                    | 0    | 100   | 100  | 100        | 99.9       |
| HV                                                         | 0                             | 0    | 0     | 0    | 0          | 0                             | 1    | 0     | 0    | 1          | 0                      | 0    | 0     | 0    | 0          | 1          |
| % HV                                                       | 0                             | 0    | 0     | 0    | 0          | 0                             | 0.2  | 0     | 0    | 0.2        | 0                      | 0    | 0     | 0    | 0          | 0.1        |
| B/SB                                                       | 0                             | 0    | 0     | 0    | 0          | 0                             | 0    | 0     | 0    | 0          | 0                      | 0    | 0     | 0    | 0          | 0          |
| % B/SB                                                     | 0                             | 0    | 0     | 0    | 0          | 0                             | 0    | 0     | 0    | 0          | 0                      | 0    | 0     | 0    | 0          | 0          |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Taylor Place (E)  
and Scotland Road (N/S)  
South Orange, Essex County, New Jersey  
Saturday, February 29, 2020

File Name : RUT-200075.02\_SAT  
Site Code : 00200075  
Start Date : 2/29/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | Taylor Place<br>Eastbound |      |       |            | Scotland Road<br>Northbound |      |       |            | Scotland Road<br>Southbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|-----------------------------|------|-------|------------|-----------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Int. Total |
| 11:00 AM    | 10                        | 0    | 20    | 30         | 18                          | 0    | 0     | 18         | 0                           | 0    | 4     | 4          | 52         |
| 11:15 AM    | 10                        | 0    | 32    | 42         | 11                          | 0    | 0     | 11         | 0                           | 0    | 4     | 4          | 57         |
| 11:30 AM    | 8                         | 0    | 29    | 37         | 16                          | 0    | 0     | 16         | 0                           | 0    | 11    | 11         | 64         |
| 11:45 AM    | 4                         | 0    | 25    | 29         | 21                          | 0    | 0     | 21         | 0                           | 0    | 12    | 12         | 62         |
| Total       | 32                        | 0    | 106   | 138        | 66                          | 0    | 0     | 66         | 0                           | 0    | 31    | 31         | 235        |
| 12:00 PM    | 4                         | 0    | 34    | 38         | 19                          | 0    | 0     | 19         | 0                           | 0    | 6     | 6          | 63         |
| 12:15 PM    | 6                         | 0    | 27    | 33         | 16                          | 0    | 0     | 16         | 0                           | 0    | 5     | 5          | 54         |
| 12:30 PM    | 5                         | 0    | 26    | 31         | 14                          | 0    | 0     | 14         | 0                           | 0    | 8     | 8          | 53         |
| 12:45 PM    | 8                         | 0    | 24    | 32         | 12                          | 0    | 0     | 12         | 0                           | 0    | 7     | 7          | 51         |
| Total       | 23                        | 0    | 111   | 134        | 61                          | 0    | 0     | 61         | 0                           | 0    | 26    | 26         | 221        |
| 01:00 PM    | 6                         | 0    | 21    | 27         | 12                          | 0    | 0     | 12         | 0                           | 0    | 11    | 11         | 50         |
| Grand Total | 61                        | 0    | 238   | 299        | 139                         | 0    | 0     | 139        | 0                           | 0    | 68    | 68         | 506        |
| Apprch %    | 20.4                      | 0    | 79.6  |            | 100                         | 0    | 0     |            | 0                           | 0    | 100   |            |            |
| Total %     | 12.1                      | 0    | 47    | 59.1       | 27.5                        | 0    | 0     | 27.5       | 0                           | 0    | 13.4  | 13.4       |            |
| Auto        | 61                        | 0    | 237   | 298        | 138                         | 0    | 0     | 138        | 0                           | 0    | 68    | 68         | 504        |
| % Auto      | 100                       | 0    | 99.6  | 99.7       | 99.3                        | 0    | 0     | 99.3       | 0                           | 0    | 100   | 100        | 99.6       |
| HV          | 0                         | 0    | 1     | 1          | 1                           | 0    | 0     | 1          | 0                           | 0    | 0     | 0          | 2          |
| % HV        | 0                         | 0    | 0.4   | 0.3        | 0.7                         | 0    | 0     | 0.7        | 0                           | 0    | 0     | 0          | 0.4        |
| B/SB        | 0                         | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0          |
| % B/SB      | 0                         | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0                           | 0    | 0     | 0          | 0          |

|            | Taylor Place<br>Eastbound |      |       |            | Scotland Road<br>Northbound |      |       |            | Scotland Road<br>Southbound |      |       |            |            |
|------------|---------------------------|------|-------|------------|-----------------------------|------|-------|------------|-----------------------------|------|-------|------------|------------|
| Start Time | Left                      | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Left                        | Thru | Right | App. Total | Int. Total |

Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 12:00 PM

|              |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 12:00 PM     | 4    | 0    | 34   | 38   | 19   | 0    | 0    | 19   | 0    | 0    | 6    | 6    | 63   |
| 12:15 PM     | 6    | 0    | 27   | 33   | 16   | 0    | 0    | 16   | 0    | 0    | 5    | 5    | 54   |
| 12:30 PM     | 5    | 0    | 26   | 31   | 14   | 0    | 0    | 14   | 0    | 0    | 8    | 8    | 53   |
| 12:45 PM     | 8    | 0    | 24   | 32   | 12   | 0    | 0    | 12   | 0    | 0    | 7    | 7    | 51   |
| Total Volume | 23   | 0    | 111  | 134  | 61   | 0    | 0    | 61   | 0    | 0    | 26   | 26   | 221  |
| % App. Total | 17.2 | 0    | 82.8 |      | 100  | 0    | 0    |      | 0    | 0    | 100  |      |      |
| PHF          | .719 | .000 | .816 | .882 | .803 | .000 | .000 | .803 | .000 | .000 | .813 | .813 | .877 |
| Auto         | 23   | 0    | 110  | 133  | 61   | 0    | 0    | 61   | 0    | 0    | 26   | 26   | 220  |
| % Auto       | 100  | 0    | 99.1 | 99.3 | 100  | 0    | 0    | 100  | 0    | 0    | 100  | 100  | 99.5 |
| HV           | 0    | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    |
| % HV         | 0    | 0    | 0.9  | 0.7  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0.5  |
| B/SB         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| % B/SB       | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |

# Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Taylor Place (W)  
and Vose Avenue (N/S)  
South Orange, Essex County, New Jersey  
Saturday, February 29, 2020

File Name : RUT-200075.01\_SAT  
Site Code : 00200075  
Start Date : 2/29/2020  
Page No : 1

## Groups Printed- Auto - HV - B/SB

|             | Taylor Place<br>Westbound |      |       |            | Vose Avenue<br>Northbound |      |       |            | Vose Avenue<br>Southbound |      |       |            |            |
|-------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time  | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| 11:00 AM    | 9                         | 0    | 14    | 23         | 0                         | 29   | 13    | 42         | 16                        | 40   | 0     | 56         | 121        |
| 11:15 AM    | 6                         | 0    | 7     | 13         | 0                         | 26   | 22    | 48         | 24                        | 42   | 0     | 66         | 127        |
| 11:30 AM    | 8                         | 0    | 8     | 16         | 0                         | 13   | 11    | 24         | 22                        | 41   | 0     | 63         | 103        |
| 11:45 AM    | 11                        | 0    | 13    | 24         | 0                         | 27   | 16    | 43         | 21                        | 35   | 0     | 56         | 123        |
| Total       | 34                        | 0    | 42    | 76         | 0                         | 95   | 62    | 157        | 83                        | 158  | 0     | 241        | 474        |
| 12:00 PM    | 5                         | 0    | 16    | 21         | 0                         | 23   | 16    | 39         | 17                        | 39   | 0     | 56         | 116        |
| 12:15 PM    | 10                        | 0    | 8     | 18         | 0                         | 24   | 10    | 34         | 19                        | 37   | 0     | 56         | 108        |
| 12:30 PM    | 10                        | 0    | 6     | 16         | 0                         | 16   | 22    | 38         | 19                        | 22   | 0     | 41         | 95         |
| 12:45 PM    | 12                        | 0    | 5     | 17         | 0                         | 19   | 12    | 31         | 16                        | 29   | 0     | 45         | 93         |
| Total       | 37                        | 0    | 35    | 72         | 0                         | 82   | 60    | 142        | 71                        | 127  | 0     | 198        | 412        |
| 01:00 PM    | 9                         | 0    | 8     | 17         | 0                         | 13   | 16    | 29         | 12                        | 38   | 0     | 50         | 96         |
| 01:15 PM    | 10                        | 0    | 10    | 20         | 0                         | 28   | 12    | 40         | 11                        | 25   | 0     | 36         | 96         |
| 01:30 PM    | 10                        | 0    | 4     | 14         | 0                         | 19   | 13    | 32         | 4                         | 28   | 0     | 32         | 78         |
| 01:45 PM    | 3                         | 0    | 6     | 9          | 0                         | 21   | 16    | 37         | 17                        | 26   | 0     | 43         | 89         |
| Total       | 32                        | 0    | 28    | 60         | 0                         | 81   | 57    | 138        | 44                        | 117  | 0     | 161        | 359        |
| Grand Total | 103                       | 0    | 105   | 208        | 0                         | 258  | 179   | 437        | 198                       | 402  | 0     | 600        | 1245       |
| Apprch %    | 49.5                      | 0    | 50.5  |            | 0                         | 59   | 41    |            | 33                        | 67   | 0     |            |            |
| Total %     | 8.3                       | 0    | 8.4   | 16.7       | 0                         | 20.7 | 14.4  | 35.1       | 15.9                      | 32.3 | 0     | 48.2       |            |
| Auto        | 103                       | 0    | 105   | 208        | 0                         | 257  | 179   | 436        | 195                       | 401  | 0     | 596        | 1240       |
| % Auto      | 100                       | 0    | 100   | 100        | 0                         | 99.6 | 100   | 99.8       | 98.5                      | 99.8 | 0     | 99.3       | 99.6       |
| HV          | 0                         | 0    | 0     | 0          | 0                         | 1    | 0     | 1          | 3                         | 1    | 0     | 4          | 5          |
| % HV        | 0                         | 0    | 0     | 0          | 0                         | 0.4  | 0     | 0.2        | 1.5                       | 0.2  | 0     | 0.7        | 0.4        |
| B/SB        | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0          |
| % B/SB      | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0          |

|                                                            | Taylor Place<br>Westbound |      |       |            | Vose Avenue<br>Northbound |      |       |            | Vose Avenue<br>Southbound |      |       |            |            |
|------------------------------------------------------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|---------------------------|------|-------|------------|------------|
| Start Time                                                 | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Left                      | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1 |                           |      |       |            |                           |      |       |            |                           |      |       |            |            |
| Peak Hour for Entire Intersection Begins at 12:00 PM       |                           |      |       |            |                           |      |       |            |                           |      |       |            |            |
| 12:00 PM                                                   | 5                         | 0    | 16    | 21         | 0                         | 23   | 16    | 39         | 17                        | 39   | 0     | 56         | 116        |
| 12:15 PM                                                   | 10                        | 0    | 8     | 18         | 0                         | 24   | 10    | 34         | 19                        | 37   | 0     | 56         | 108        |
| 12:30 PM                                                   | 10                        | 0    | 6     | 16         | 0                         | 16   | 22    | 38         | 19                        | 22   | 0     | 41         | 95         |
| 12:45 PM                                                   | 12                        | 0    | 5     | 17         | 0                         | 19   | 12    | 31         | 16                        | 29   | 0     | 45         | 93         |
| Total Volume                                               | 37                        | 0    | 35    | 72         | 0                         | 82   | 60    | 142        | 71                        | 127  | 0     | 198        | 412        |
| % App. Total                                               | 51.4                      | 0    | 48.6  |            | 0                         | 57.7 | 42.3  |            | 35.9                      | 64.1 | 0     |            |            |
| PHF                                                        | .771                      | .000 | .547  | .857       | .000                      | .854 | .682  | .910       | .934                      | .814 | .000  | .884       | .888       |
| Auto                                                       | 37                        | 0    | 35    | 72         | 0                         | 81   | 60    | 141        | 70                        | 126  | 0     | 196        | 409        |
| % Auto                                                     | 100                       | 0    | 100   | 100        | 0                         | 98.8 | 100   | 99.3       | 98.6                      | 99.2 | 0     | 99.0       | 99.3       |
| HV                                                         | 0                         | 0    | 0     | 0          | 0                         | 1    | 0     | 1          | 1                         | 1    | 0     | 2          | 3          |
| % HV                                                       | 0                         | 0    | 0     | 0          | 0                         | 1.2  | 0     | 0.7        | 1.4                       | 0.8  | 0     | 1.0        | 0.7        |
| B/SB                                                       | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0          |
| % B/SB                                                     | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0                         | 0    | 0     | 0          | 0          |

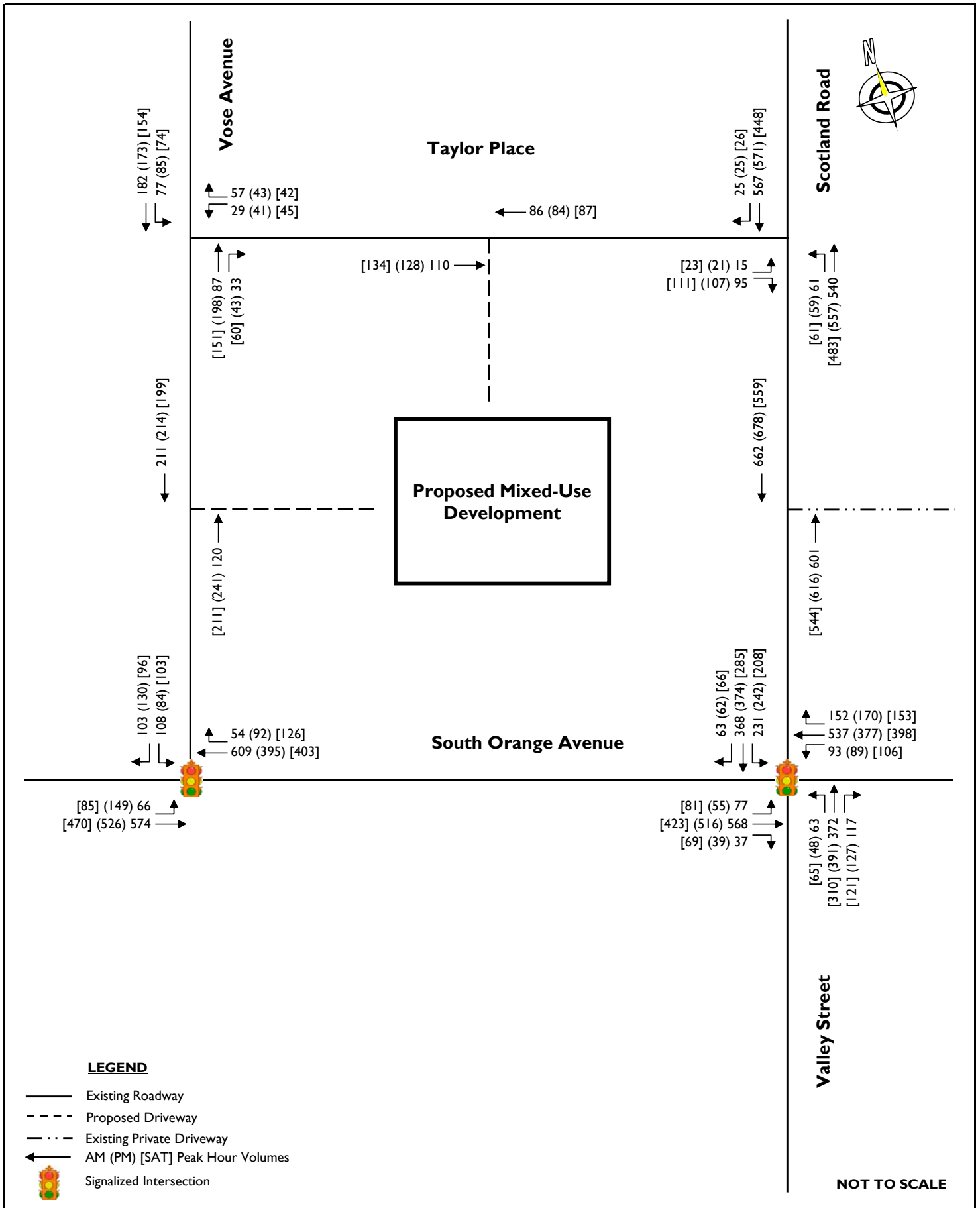
## FIGURES



**STONEFIELD**

**Proposed Mixed-Use Development  
South Orange Avenue  
South Orange, Essex County, New Jersey  
Traffic Impact Study**

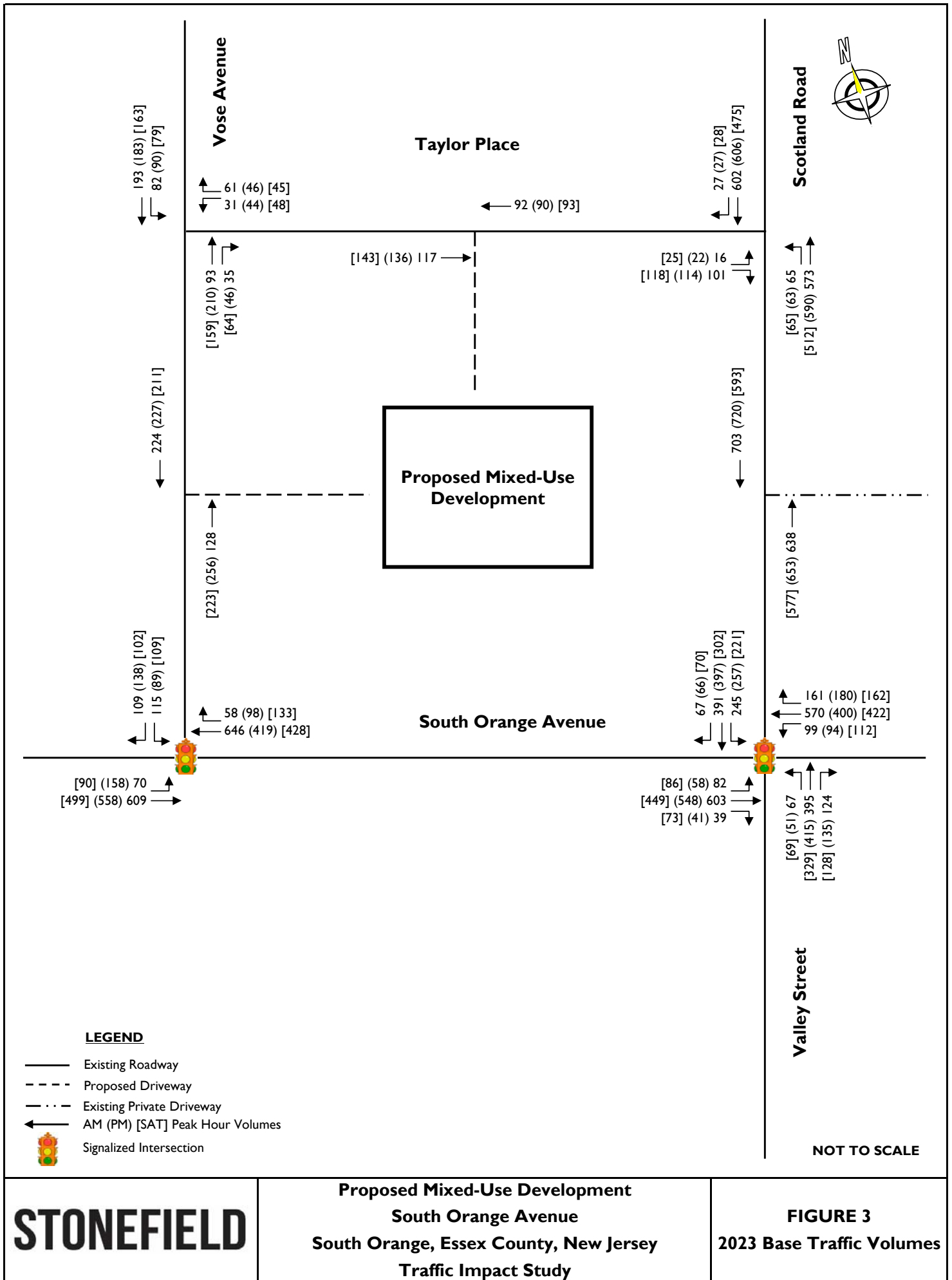
**FIGURE I  
Site Location Map**

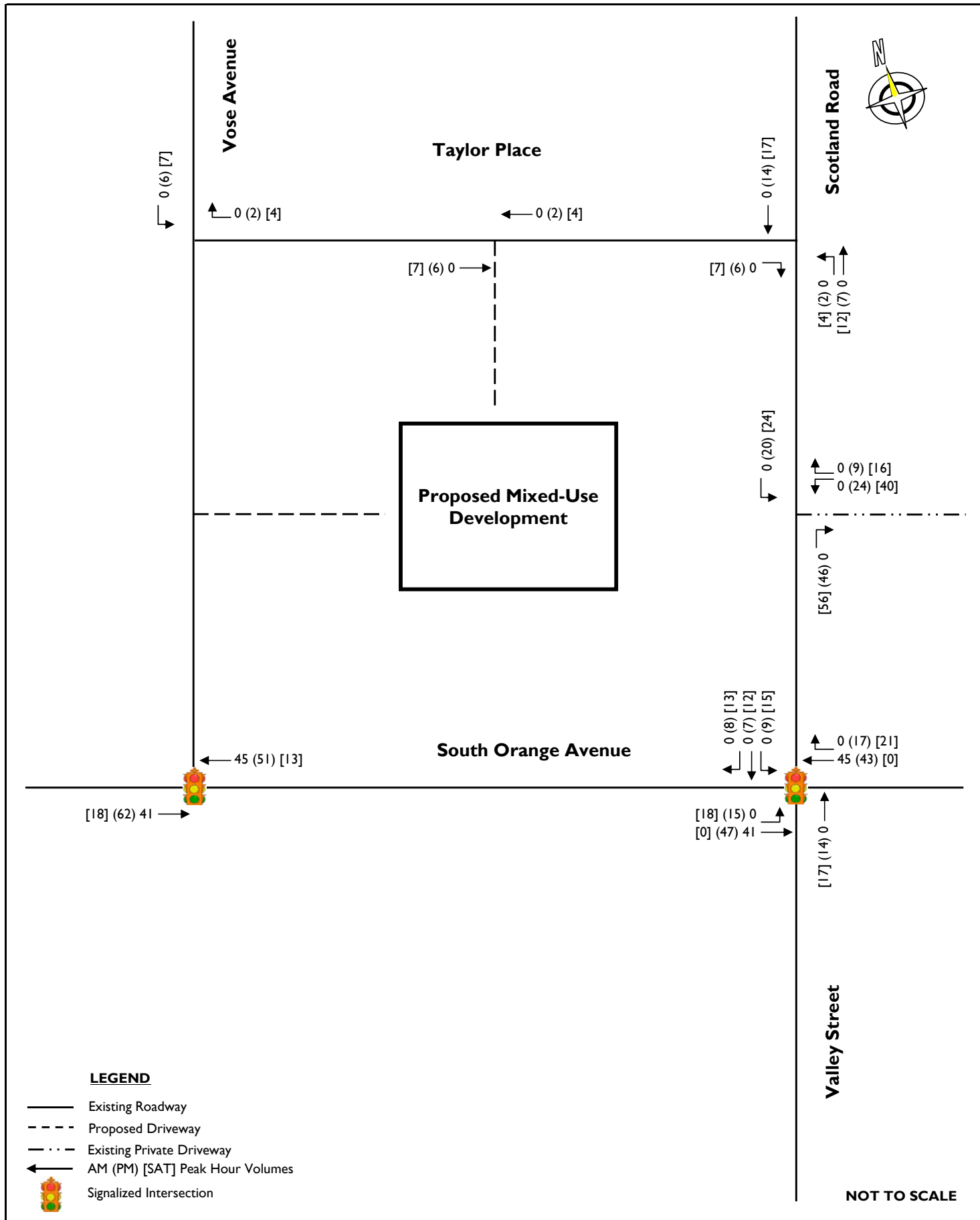


**STONEFIELD**

**Proposed Mixed-Use Development**  
**South Orange Avenue**  
**South Orange, Essex County, New Jersey**  
**Traffic Impact Study**

**FIGURE 2**  
**2020 Existing Traffic**  
**Volumes**

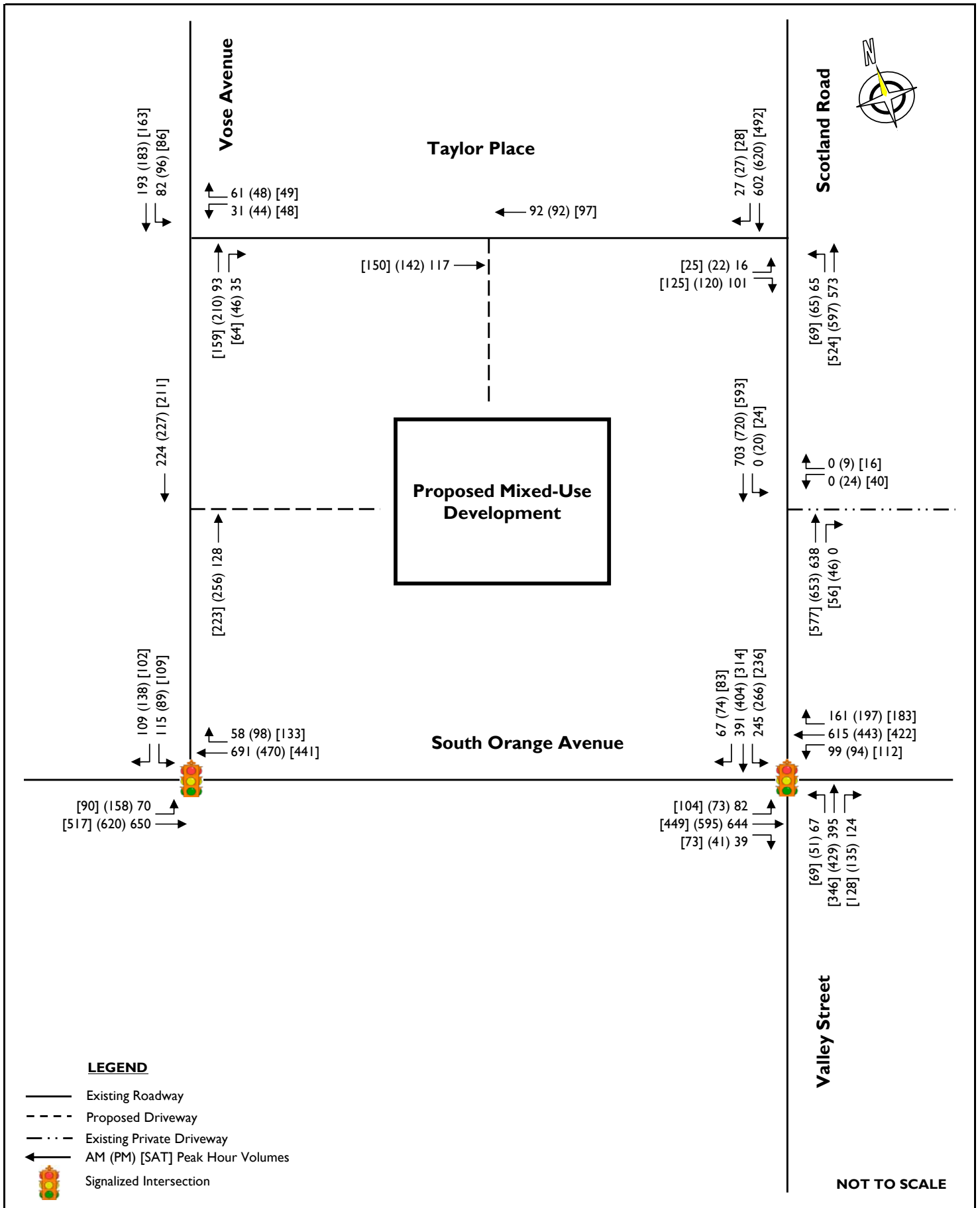




**STONEFIELD**

**Proposed Mixed-Use Development**  
**South Orange Avenue**  
**South Orange, Essex County, New Jersey**  
**Traffic Impact Study**

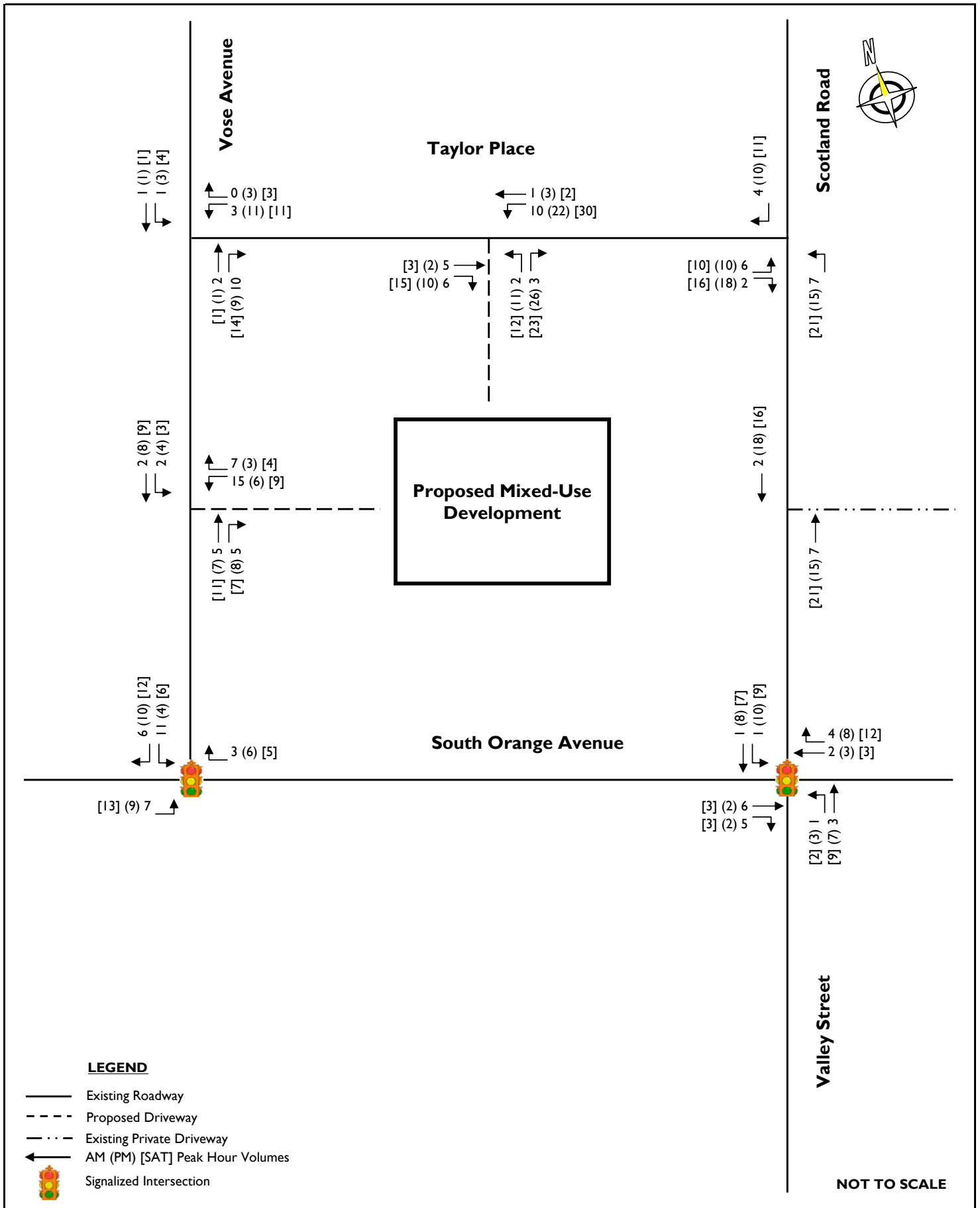
**FIGURE 4**  
**Other Planned Projects**  
**Future Traffic Volumes**



**STONEFIELD**

**Proposed Mixed-Use Development**  
**South Orange Avenue**  
**South Orange, Essex County, New Jersey**  
**Traffic Impact Study**

**FIGURE 5**  
**2023 No-Build Traffic**  
**Volumes**

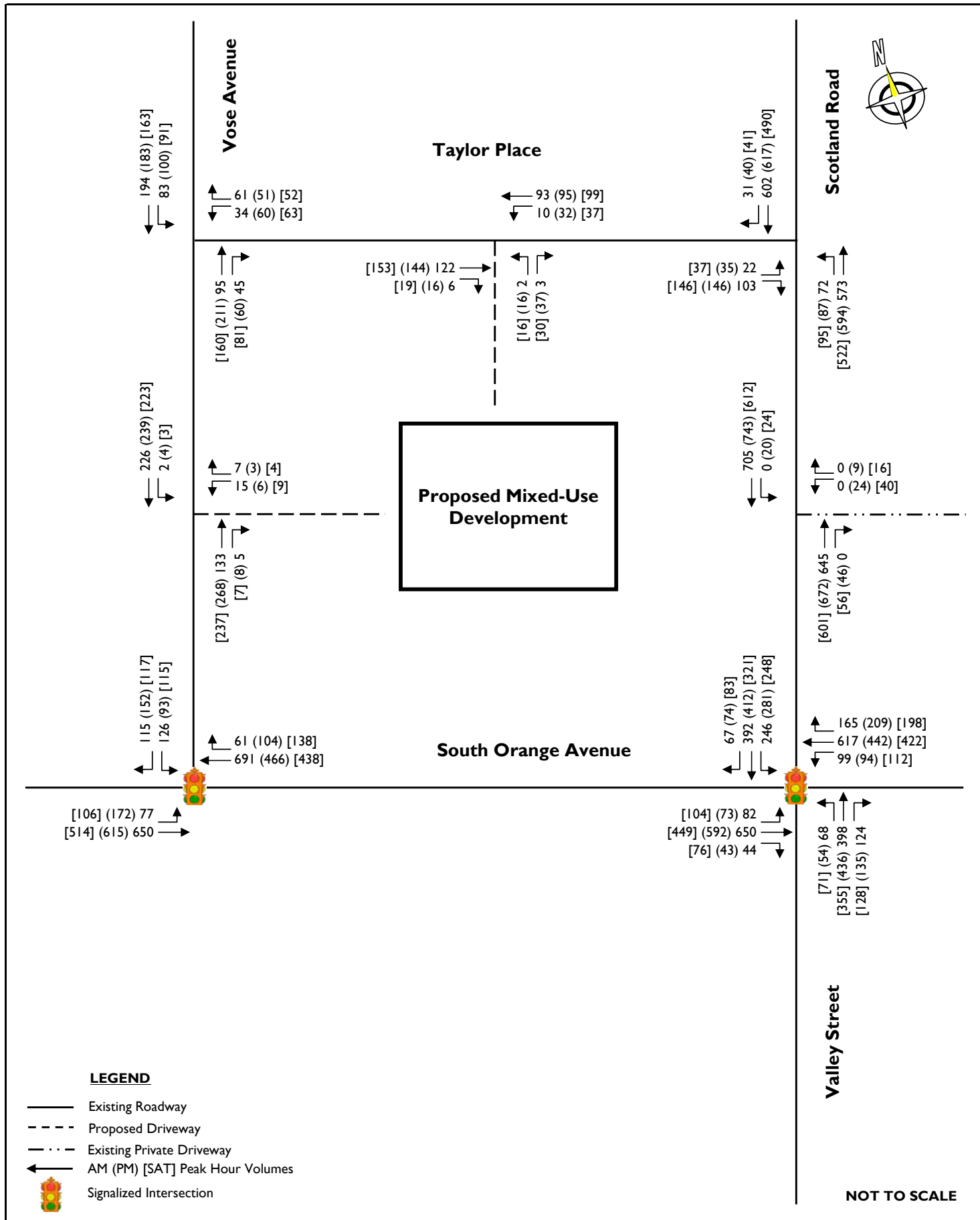


**STONEFIELD**

**Proposed Mixed-Use Development**  
**South Orange Avenue**  
**South Orange, Essex County, New Jersey**  
**Traffic Impact Study**

**FIGURE 6**  
**"New" Site-Generated**  
**Traffic Volumes**





**STONEFIELD**

**Proposed Mixed-Use Development**  
**South Orange Avenue**  
**South Orange, Essex County, New Jersey**  
**Traffic Impact Study**

**FIGURE 8**  
**2023 Build Traffic Volumes**

## **INTERNAL CAPTURE CALCULATION SHEETS**

| NCHRP 684 Internal Trip Capture Estimation Tool |                                        |  |  |               |           |
|-------------------------------------------------|----------------------------------------|--|--|---------------|-----------|
| Project Name:                                   | Proposed Mixed-Use Development         |  |  | Organization: | SE&D      |
| Project Location:                               | South Orange, Essex County, New Jersey |  |  | Performed By: | NLP       |
| Scenario Description:                           | RUT-200075                             |  |  | Date:         | 9/10/2020 |
| Analysis Year:                                  | 2023                                   |  |  | Checked By:   | JRC       |
| Analysis Period:                                | AM Street Peak Hour                    |  |  | Date:         | 9/10/2020 |

| Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate) |                                         |          |       |                                      |          |         |
|------------------------------------------------------------------------------|-----------------------------------------|----------|-------|--------------------------------------|----------|---------|
| Land Use                                                                     | Development Data (For Information Only) |          |       | Estimated Vehicle-Trips <sup>3</sup> |          |         |
|                                                                              | ITE LUCs <sup>1</sup>                   | Quantity | Units | Total                                | Entering | Exiting |
| Office                                                                       | 710                                     | 9,940    | SF    | 12                                   | 10       | 2       |
| Retail                                                                       | 820                                     | 12,105   | SF    | 11                                   | 7        | 4       |
| Restaurant                                                                   |                                         |          |       | 0                                    |          |         |
| Cinema/Entertainment                                                         |                                         |          |       | 0                                    |          |         |
| Residential                                                                  | 221                                     | 110      | Units | 40                                   | 10       | 30      |
| Hotel                                                                        |                                         |          |       | 0                                    |          |         |
| All Other Land Uses <sup>2</sup>                                             |                                         |          |       | 0                                    |          |         |
|                                                                              |                                         |          |       | 63                                   | 27       | 36      |

| Table 2-A: Mode Split and Vehicle Occupancy Estimates |                        |           |                 |                        |           |                 |
|-------------------------------------------------------|------------------------|-----------|-----------------|------------------------|-----------|-----------------|
| Land Use                                              | Entering Trips         |           |                 | Exiting Trips          |           |                 |
|                                                       | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized |
| Office                                                |                        |           |                 |                        |           |                 |
| Retail                                                |                        |           |                 |                        |           |                 |
| Restaurant                                            |                        |           |                 |                        |           |                 |
| Cinema/Entertainment                                  |                        |           |                 |                        |           |                 |
| Residential                                           |                        |           |                 |                        |           |                 |
| Hotel                                                 |                        |           |                 |                        |           |                 |
| All Other Land Uses <sup>2</sup>                      |                        |           |                 |                        |           |                 |

| Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance) |                  |        |            |                      |             |       |
|---------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                             | Destination (To) |        |            |                      |             |       |
|                                                                           | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                    |                  |        |            |                      |             |       |
| Retail                                                                    |                  |        |            |                      |             |       |
| Restaurant                                                                |                  |        |            |                      |             |       |
| Cinema/Entertainment                                                      |                  |        |            |                      |             |       |
| Residential                                                               |                  |        |            |                      |             |       |
| Hotel                                                                     |                  |        |            |                      |             |       |

| Table 4-A: Internal Person-Trip Origin-Destination Matrix* |                  |        |            |                      |             |       |
|------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                              | Destination (To) |        |            |                      |             |       |
|                                                            | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                     |                  | 1      | 0          | 0                    | 0           | 0     |
| Retail                                                     | 0                |        | 0          | 0                    | 0           | 0     |
| Restaurant                                                 | 0                | 0      |            | 0                    | 0           | 0     |
| Cinema/Entertainment                                       | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                | 0                | 0      | 0          | 0                    |             | 0     |
| Hotel                                                      | 0                | 0      | 0          | 0                    | 0           |       |

| Table 5-A: Computations Summary           |       |          |         |
|-------------------------------------------|-------|----------|---------|
|                                           | Total | Entering | Exiting |
| All Person-Trips                          | 63    | 27       | 36      |
| Internal Capture Percentage               | 3%    | 4%       | 3%      |
| External Vehicle-Trips <sup>5</sup>       | 61    | 26       | 35      |
| External Transit-Trips <sup>6</sup>       | 0     | 0        | 0       |
| External Non-Motorized Trips <sup>6</sup> | 0     | 0        | 0       |

| Table 6-A: Internal Trip Capture Percentages by Land Use |                |               |
|----------------------------------------------------------|----------------|---------------|
| Land Use                                                 | Entering Trips | Exiting Trips |
| Office                                                   | 0%             | 50%           |
| Retail                                                   | 14%            | 0%            |
| Restaurant                                               | N/A            | N/A           |
| Cinema/Entertainment                                     | N/A            | N/A           |
| Residential                                              | 0%             | 0%            |
| Hotel                                                    | N/A            | N/A           |

|                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <sup>1</sup> Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.                                                                                                                                                                         |
| <sup>2</sup> Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.                                                                                                                                               |
| <sup>3</sup> Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i> ).                                                                                                                                                                                 |
| <sup>4</sup> Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete. |
| <sup>5</sup> Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.                                                                                                                                                                                            |
| <sup>6</sup> Person-Trips                                                                                                                                                                                                                                                                               |
| *Indicates computation that has been rounded to the nearest whole number.                                                                                                                                                                                                                               |
| Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1                                                                                                                                                                                                                    |

|                         |                                |
|-------------------------|--------------------------------|
| <b>Project Name:</b>    | Proposed Mixed-Use Development |
| <b>Analysis Period:</b> | AM Street Peak Hour            |

| Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends |                               |               |               |                              |           |               |
|----------------------------------------------------------------|-------------------------------|---------------|---------------|------------------------------|-----------|---------------|
| Land Use                                                       | Table 7-A (D): Entering Trips |               |               | Table 7-A (O): Exiting Trips |           |               |
|                                                                | Veh. Occ.                     | Vehicle-Trips | Person-Trips* | Veh. Occ.                    | 9/10/2020 | Person-Trips* |
| Office                                                         | 1.00                          | 10            | 10            | 1.00                         | 2         | 2             |
| Retail                                                         | 1.00                          | 7             | 7             | 1.00                         | 4         | 4             |
| Restaurant                                                     | 1.00                          | 0             | 0             | 1.00                         | 0         | 0             |
| Cinema/Entertainment                                           | 1.00                          | 0             | 0             | 1.00                         | 0         | 0             |
| Residential                                                    | 1.00                          | 10            | 10            | 1.00                         | 30        | 30            |
| Hotel                                                          | 1.00                          | 0             | 0             | 1.00                         | 0         | 0             |

| Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin) |                  |        |            |                      |             |       |
|------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                      | Destination (To) |        |            |                      |             |       |
|                                                                                    | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                             |                  | 1      | 1          | 0                    | 0           | 0     |
| Retail                                                                             | 1                |        | 1          | 0                    | 1           | 0     |
| Restaurant                                                                         | 0                | 0      |            | 0                    | 0           | 0     |
| Cinema/Entertainment                                                               | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                                        | 1                | 0      | 6          | 0                    |             | 0     |
| Hotel                                                                              | 0                | 0      | 0          | 0                    | 0           |       |

| Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination) |                  |        |            |                      |             |       |
|-----------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                           | Destination (To) |        |            |                      |             |       |
|                                                                                         | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                                  |                  | 2      | 0          | 0                    | 0           | 0     |
| Retail                                                                                  | 0                |        | 0          | 0                    | 0           | 0     |
| Restaurant                                                                              | 1                | 1      |            | 0                    | 1           | 0     |
| Cinema/Entertainment                                                                    | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                                             | 0                | 1      | 0          | 0                    |             | 0     |
| Hotel                                                                                   | 0                | 0      | 0          | 0                    | 0           |       |

| Table 9-A (D): Internal and External Trips Summary (Entering Trips) |                       |          |       |                         |                      |                            |
|---------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Destination Land Use                                                | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                     | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                              | 0                     | 10       | 10    | 10                      | 0                    | 0                          |
| Retail                                                              | 1                     | 6        | 7     | 6                       | 0                    | 0                          |
| Restaurant                                                          | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Cinema/Entertainment                                                | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                         | 0                     | 10       | 10    | 10                      | 0                    | 0                          |
| Hotel                                                               | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| All Other Land Uses <sup>3</sup>                                    | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

| Table 9-A (O): Internal and External Trips Summary (Exiting Trips) |                       |          |       |                         |                      |                            |
|--------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Origin Land Use                                                    | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                    | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                             | 1                     | 1        | 2     | 1                       | 0                    | 0                          |
| Retail                                                             | 0                     | 4        | 4     | 4                       | 0                    | 0                          |
| Restaurant                                                         | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Cinema/Entertainment                                               | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                        | 0                     | 30       | 30    | 30                      | 0                    | 0                          |
| Hotel                                                              | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| All Other Land Uses <sup>3</sup>                                   | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

| NCHRP 684 Internal Trip Capture Estimation Tool |                                        |                      |           |  |  |
|-------------------------------------------------|----------------------------------------|----------------------|-----------|--|--|
| <b>Project Name:</b>                            | Proposed Mixed-Use Development         | <b>Organization:</b> | SE&D      |  |  |
| <b>Project Location:</b>                        | South Orange, Essex County, New Jersey | <b>Performed By:</b> | NLP       |  |  |
| <b>Scenario Description:</b>                    | RUT-200075                             | <b>Date:</b>         | 9/10/2020 |  |  |
| <b>Analysis Year:</b>                           | 2023                                   | <b>Checked By:</b>   | JRC       |  |  |
| <b>Analysis Period:</b>                         | PM Street Peak Hour                    | <b>Date:</b>         | 9/10/2020 |  |  |

| Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate) |                                         |          |       |                                      |          |         |
|------------------------------------------------------------------------------|-----------------------------------------|----------|-------|--------------------------------------|----------|---------|
| Land Use                                                                     | Development Data (For Information Only) |          |       | Estimated Vehicle-Trips <sup>3</sup> |          |         |
|                                                                              | ITE LUCs <sup>1</sup>                   | Quantity | Units | Total                                | Entering | Exiting |
| Office                                                                       | 710                                     | 9,940    | SF    | 11                                   | 2        | 9       |
| Retail                                                                       | 820                                     | 12,105   | SF    | 114                                  | 55       | 59      |
| Restaurant                                                                   |                                         |          |       | 0                                    |          |         |
| Cinema/Entertainment                                                         |                                         |          |       | 0                                    |          |         |
| Residential                                                                  | 221                                     | 110      | Units | 48                                   | 29       | 19      |
| Hotel                                                                        |                                         |          |       | 0                                    |          |         |
| All Other Land Uses <sup>2</sup>                                             |                                         |          |       | 0                                    |          |         |
|                                                                              |                                         |          |       | 173                                  | 86       | 87      |

| Table 2-P: Mode Split and Vehicle Occupancy Estimates |                        |           |                 |                        |           |                 |
|-------------------------------------------------------|------------------------|-----------|-----------------|------------------------|-----------|-----------------|
| Land Use                                              | Entering Trips         |           |                 | Exiting Trips          |           |                 |
|                                                       | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized |
| Office                                                |                        |           |                 |                        |           |                 |
| Retail                                                |                        |           |                 |                        |           |                 |
| Restaurant                                            |                        |           |                 |                        |           |                 |
| Cinema/Entertainment                                  |                        |           |                 |                        |           |                 |
| Residential                                           |                        |           |                 |                        |           |                 |
| Hotel                                                 |                        |           |                 |                        |           |                 |
| All Other Land Uses <sup>2</sup>                      |                        |           |                 |                        |           |                 |

| Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance) |                  |        |            |                      |             |       |
|---------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                             | Destination (To) |        |            |                      |             |       |
|                                                                           | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                    |                  |        |            |                      |             |       |
| Retail                                                                    |                  |        |            |                      |             |       |
| Restaurant                                                                |                  |        |            |                      |             |       |
| Cinema/Entertainment                                                      |                  |        |            |                      |             |       |
| Residential                                                               |                  |        |            |                      |             |       |
| Hotel                                                                     |                  |        |            |                      |             |       |

| Table 4-P: Internal Person-Trip Origin-Destination Matrix* |                  |        |            |                      |             |       |
|------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                              | Destination (To) |        |            |                      |             |       |
|                                                            | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                     |                  | 2      | 0          | 0                    | 0           | 0     |
| Retail                                                     | 0                |        | 0          | 0                    | 13          | 0     |
| Restaurant                                                 | 0                | 0      |            | 0                    | 0           | 0     |
| Cinema/Entertainment                                       | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                | 1                | 6      | 0          | 0                    |             | 0     |
| Hotel                                                      | 0                | 0      | 0          | 0                    | 0           |       |

| Table 5-P: Computations Summary           |       |          |         |
|-------------------------------------------|-------|----------|---------|
|                                           | Total | Entering | Exiting |
| All Person-Trips                          | 173   | 86       | 87      |
| Internal Capture Percentage               | 25%   | 26%      | 25%     |
| External Vehicle-Trips <sup>5</sup>       | 129   | 64       | 65      |
| External Transit-Trips <sup>6</sup>       | 0     | 0        | 0       |
| External Non-Motorized Trips <sup>6</sup> | 0     | 0        | 0       |

| Table 6-P: Internal Trip Capture Percentages by Land Use |                |               |
|----------------------------------------------------------|----------------|---------------|
| Land Use                                                 | Entering Trips | Exiting Trips |
| Office                                                   | 50%            | 22%           |
| Retail                                                   | 15%            | 22%           |
| Restaurant                                               | N/A            | N/A           |
| Cinema/Entertainment                                     | N/A            | N/A           |
| Residential                                              | 45%            | 37%           |
| Hotel                                                    | N/A            | N/A           |

|                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <sup>1</sup> Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.                                  |
| <sup>2</sup> Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.        |
| <sup>3</sup> Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i> ).                                          |
| <sup>4</sup> Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be |
| <sup>5</sup> Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.                                                     |
| <sup>6</sup> Person-Trips                                                                                                                                        |
| *Indicates computation that has been rounded to the nearest whole number.                                                                                        |
| Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1                                                                             |

|                         |                                |
|-------------------------|--------------------------------|
| <b>Project Name:</b>    | Proposed Mixed-Use Development |
| <b>Analysis Period:</b> | PM Street Peak Hour            |

| Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends |                               |               |               |                              |           |               |
|----------------------------------------------------------------|-------------------------------|---------------|---------------|------------------------------|-----------|---------------|
| Land Use                                                       | Table 7-P (D): Entering Trips |               |               | Table 7-P (O): Exiting Trips |           |               |
|                                                                | Veh. Occ.                     | Vehicle-Trips | Person-Trips* | Veh. Occ.                    | 9/10/2020 | Person-Trips* |
| Office                                                         | 1.00                          | 2             | 2             | 1.00                         | 9         | 9             |
| Retail                                                         | 1.00                          | 55            | 55            | 1.00                         | 59        | 59            |
| Restaurant                                                     | 1.00                          | 0             | 0             | 1.00                         | 0         | 0             |
| Cinema/Entertainment                                           | 1.00                          | 0             | 0             | 1.00                         | 0         | 0             |
| Residential                                                    | 1.00                          | 29            | 29            | 1.00                         | 19        | 19            |
| Hotel                                                          | 1.00                          | 0             | 0             | 1.00                         | 0         | 0             |

| Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin) |                  |        |            |                      |             |       |
|------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                      | Destination (To) |        |            |                      |             |       |
|                                                                                    | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                             |                  | 2      | 0          | 0                    | 0           | 0     |
| Retail                                                                             | 1                |        | 17         | 2                    | 15          | 3     |
| Restaurant                                                                         | 0                | 0      |            | 0                    | 0           | 0     |
| Cinema/Entertainment                                                               | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                                        | 1                | 8      | 4          | 0                    |             | 1     |
| Hotel                                                                              | 0                | 0      | 0          | 0                    | 0           |       |

| Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination) |                  |        |            |                      |             |       |
|-----------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                           | Destination (To) |        |            |                      |             |       |
|                                                                                         | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                                  |                  | 4      | 0          | 0                    | 1           | 0     |
| Retail                                                                                  | 1                |        | 0          | 0                    | 13          | 0     |
| Restaurant                                                                              | 1                | 28     |            | 0                    | 5           | 0     |
| Cinema/Entertainment                                                                    | 0                | 2      | 0          |                      | 1           | 0     |
| Residential                                                                             | 1                | 6      | 0          | 0                    |             | 0     |
| Hotel                                                                                   | 0                | 1      | 0          | 0                    | 0           |       |

| Table 9-P (D): Internal and External Trips Summary (Entering Trips) |                       |          |       |                         |                      |                            |
|---------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Destination Land Use                                                | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                     | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                              | 1                     | 1        | 2     | 1                       | 0                    | 0                          |
| Retail                                                              | 8                     | 47       | 55    | 47                      | 0                    | 0                          |
| Restaurant                                                          | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Cinema/Entertainment                                                | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                         | 13                    | 16       | 29    | 16                      | 0                    | 0                          |
| Hotel                                                               | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| All Other Land Uses <sup>3</sup>                                    | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

| Table 9-P (O): Internal and External Trips Summary (Exiting Trips) |                       |          |       |                         |                      |                            |
|--------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Origin Land Use                                                    | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                    | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                             | 2                     | 7        | 9     | 7                       | 0                    | 0                          |
| Retail                                                             | 13                    | 46       | 59    | 46                      | 0                    | 0                          |
| Restaurant                                                         | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Cinema/Entertainment                                               | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                        | 7                     | 12       | 19    | 12                      | 0                    | 0                          |
| Hotel                                                              | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| All Other Land Uses <sup>3</sup>                                   | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

| NCHRP 684 Internal Trip Capture Estimation Tool |                                        |                      |           |  |  |
|-------------------------------------------------|----------------------------------------|----------------------|-----------|--|--|
| <b>Project Name:</b>                            | Proposed Mixed-Use Development         | <b>Organization:</b> | SE&D      |  |  |
| <b>Project Location:</b>                        | South Orange, Essex County, New Jersey | <b>Performed By:</b> | NLP       |  |  |
| <b>Scenario Description:</b>                    | RUT-200075                             | <b>Date:</b>         | 9/10/2020 |  |  |
| <b>Analysis Year:</b>                           | 2023                                   | <b>Checked By:</b>   | JRC       |  |  |
| <b>Analysis Period:</b>                         | Saturday Peak Hour                     | <b>Date:</b>         | 9/10/2020 |  |  |

| Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate) |                                         |          |       |                                      |          |         |
|------------------------------------------------------------------------------|-----------------------------------------|----------|-------|--------------------------------------|----------|---------|
| Land Use                                                                     | Development Data (For Information Only) |          |       | Estimated Vehicle-Trips <sup>3</sup> |          |         |
|                                                                              | ITE LUCs <sup>1</sup>                   | Quantity | Units | Total                                | Entering | Exiting |
| Office                                                                       | 710                                     | 9,940    | SF    | 5                                    | 3        | 2       |
| Retail                                                                       | 820                                     | 12,105   | SF    | 117                                  | 61       | 56      |
| Restaurant                                                                   |                                         |          |       | 0                                    |          |         |
| Cinema/Entertainment                                                         |                                         |          |       | 0                                    |          |         |
| Residential                                                                  | 221                                     | 110      | Units | 48                                   | 24       | 24      |
| Hotel                                                                        |                                         |          |       | 0                                    |          |         |
| All Other Land Uses <sup>2</sup>                                             |                                         |          |       | 0                                    |          |         |
|                                                                              |                                         |          |       | 170                                  | 88       | 82      |

| Table 2-P: Mode Split and Vehicle Occupancy Estimates |                        |           |                 |                        |           |                 |
|-------------------------------------------------------|------------------------|-----------|-----------------|------------------------|-----------|-----------------|
| Land Use                                              | Entering Trips         |           |                 | Exiting Trips          |           |                 |
|                                                       | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized |
| Office                                                |                        |           |                 |                        |           |                 |
| Retail                                                |                        |           |                 |                        |           |                 |
| Restaurant                                            |                        |           |                 |                        |           |                 |
| Cinema/Entertainment                                  |                        |           |                 |                        |           |                 |
| Residential                                           |                        |           |                 |                        |           |                 |
| Hotel                                                 |                        |           |                 |                        |           |                 |
| All Other Land Uses <sup>2</sup>                      |                        |           |                 |                        |           |                 |

| Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance) |                  |        |            |                      |             |       |
|---------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                             | Destination (To) |        |            |                      |             |       |
|                                                                           | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                    |                  |        |            |                      |             |       |
| Retail                                                                    |                  |        |            |                      |             |       |
| Restaurant                                                                |                  |        |            |                      |             |       |
| Cinema/Entertainment                                                      |                  |        |            |                      |             |       |
| Residential                                                               |                  |        |            |                      |             |       |
| Hotel                                                                     |                  |        |            |                      |             |       |

| Table 4-P: Internal Person-Trip Origin-Destination Matrix* |                  |        |            |                      |             |       |
|------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                              | Destination (To) |        |            |                      |             |       |
|                                                            | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                     |                  | 0      | 0          | 0                    | 0           | 0     |
| Retail                                                     | 1                |        | 0          | 0                    | 11          | 0     |
| Restaurant                                                 | 0                | 0      |            | 0                    | 0           | 0     |
| Cinema/Entertainment                                       | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                | 1                | 6      | 0          | 0                    |             | 0     |
| Hotel                                                      | 0                | 0      | 0          | 0                    | 0           |       |

| Table 5-P: Computations Summary           |       |          |         |
|-------------------------------------------|-------|----------|---------|
|                                           | Total | Entering | Exiting |
| All Person-Trips                          | 170   | 88       | 82      |
| Internal Capture Percentage               | 22%   | 22%      | 23%     |
| External Vehicle-Trips <sup>5</sup>       | 132   | 69       | 63      |
| External Transit-Trips <sup>6</sup>       | 0     | 0        | 0       |
| External Non-Motorized Trips <sup>6</sup> | 0     | 0        | 0       |

| Table 6-P: Internal Trip Capture Percentages by Land Use |                |               |
|----------------------------------------------------------|----------------|---------------|
| Land Use                                                 | Entering Trips | Exiting Trips |
| Office                                                   | 67%            | 0%            |
| Retail                                                   | 10%            | 21%           |
| Restaurant                                               | N/A            | N/A           |
| Cinema/Entertainment                                     | N/A            | N/A           |
| Residential                                              | 46%            | 29%           |
| Hotel                                                    | N/A            | N/A           |

|                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <sup>1</sup> Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.                                  |
| <sup>2</sup> Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.        |
| <sup>3</sup> Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i> ).                                          |
| <sup>4</sup> Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be |
| <sup>5</sup> Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.                                                     |
| <sup>6</sup> Person-Trips                                                                                                                                        |
| *Indicates computation that has been rounded to the nearest whole number.                                                                                        |
| Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1                                                                             |

|                         |                                |
|-------------------------|--------------------------------|
| <b>Project Name:</b>    | Proposed Mixed-Use Development |
| <b>Analysis Period:</b> | Saturday Peak Hour             |

| Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends |                               |               |               |                              |               |               |
|----------------------------------------------------------------|-------------------------------|---------------|---------------|------------------------------|---------------|---------------|
| Land Use                                                       | Table 7-P (D): Entering Trips |               |               | Table 7-P (O): Exiting Trips |               |               |
|                                                                | Veh. Occ.                     | Vehicle-Trips | Person-Trips* | Veh. Occ.                    | Vehicle-Trips | Person-Trips* |
| Office                                                         | 1.00                          | 3             | 3             | 1.00                         | 2             | 2             |
| Retail                                                         | 1.00                          | 61            | 61            | 1.00                         | 56            | 56            |
| Restaurant                                                     | 1.00                          | 0             | 0             | 1.00                         | 0             | 0             |
| Cinema/Entertainment                                           | 1.00                          | 0             | 0             | 1.00                         | 0             | 0             |
| Residential                                                    | 1.00                          | 24            | 24            | 1.00                         | 24            | 24            |
| Hotel                                                          | 1.00                          | 0             | 0             | 1.00                         | 0             | 0             |

| Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin) |                  |        |            |                      |             |       |
|------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                      | Destination (To) |        |            |                      |             |       |
|                                                                                    | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                             |                  | 0      | 0          | 0                    | 0           | 0     |
| Retail                                                                             | 1                |        | 16         | 2                    | 15          | 3     |
| Restaurant                                                                         | 0                | 0      |            | 0                    | 0           | 0     |
| Cinema/Entertainment                                                               | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                                        | 1                | 10     | 5          | 0                    |             | 1     |
| Hotel                                                                              | 0                | 0      | 0          | 0                    | 0           |       |

| Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination) |                  |        |            |                      |             |       |
|-----------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                           | Destination (To) |        |            |                      |             |       |
|                                                                                         | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                                  |                  | 5      | 0          | 0                    | 1           | 0     |
| Retail                                                                                  | 1                |        | 0          | 0                    | 11          | 0     |
| Restaurant                                                                              | 1                | 31     |            | 0                    | 4           | 0     |
| Cinema/Entertainment                                                                    | 0                | 2      | 0          |                      | 1           | 0     |
| Residential                                                                             | 2                | 6      | 0          | 0                    |             | 0     |
| Hotel                                                                                   | 0                | 1      | 0          | 0                    | 0           |       |

| Table 9-P (D): Internal and External Trips Summary (Entering Trips) |                       |          |       |                         |                      |                            |
|---------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Destination Land Use                                                | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                     | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                              | 2                     | 1        | 3     | 1                       | 0                    | 0                          |
| Retail                                                              | 6                     | 55       | 61    | 55                      | 0                    | 0                          |
| Restaurant                                                          | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Cinema/Entertainment                                                | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                         | 11                    | 13       | 24    | 13                      | 0                    | 0                          |
| Hotel                                                               | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| All Other Land Uses <sup>3</sup>                                    | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

| Table 9-P (O): Internal and External Trips Summary (Exiting Trips) |                       |          |       |                         |                      |                            |
|--------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Origin Land Use                                                    | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                    | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                             | 0                     | 2        | 2     | 2                       | 0                    | 0                          |
| Retail                                                             | 12                    | 44       | 56    | 44                      | 0                    | 0                          |
| Restaurant                                                         | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Cinema/Entertainment                                               | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                        | 7                     | 17       | 24    | 17                      | 0                    | 0                          |
| Hotel                                                              | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| All Other Land Uses <sup>3</sup>                                   | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

## **CAPACITY ANALYSIS DETAIL SHEETS**

# HCM 6th Signalized Intersection Summary

## 1: Valley Street/Scotland Road & South Orange Avenue

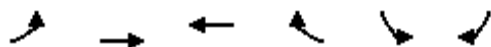
2020 Existing Condition  
Weekday Morning Peak Hour

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 77                                                                                | 568                                                                               | 37                                                                                | 93                                                                                | 537                                                                               | 152                                                                               | 63                                                                                  | 372                                                                                 | 117                                                                                 | 231                                                                                 | 368                                                                                 | 63                                                                                  |
| Future Volume (veh/h)        | 77                                                                                | 568                                                                               | 37                                                                                | 93                                                                                | 537                                                                               | 152                                                                               | 63                                                                                  | 372                                                                                 | 117                                                                                 | 231                                                                                 | 368                                                                                 | 63                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.97                                                                              |                                                                                   | 0.93                                                                              | 0.97                                                                              |                                                                                   | 0.88                                                                              | 0.90                                                                                |                                                                                     | 0.89                                                                                | 0.97                                                                                |                                                                                     | 0.87                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2034                                                                              | 2067                                                                              | 2067                                                                              | 2067                                                                              | 2084                                                                              | 2100                                                                              | 2002                                                                                | 2018                                                                                | 1969                                                                                | 2084                                                                                | 2051                                                                                | 2051                                                                                |
| Adj Flow Rate, veh/h         | 80                                                                                | 592                                                                               | 39                                                                                | 97                                                                                | 559                                                                               | 158                                                                               | 66                                                                                  | 388                                                                                 | 122                                                                                 | 241                                                                                 | 383                                                                                 | 66                                                                                  |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 4                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 0                                                                                 | 6                                                                                   | 5                                                                                   | 8                                                                                   | 1                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 373                                                                               | 1557                                                                              | 102                                                                               | 545                                                                               | 880                                                                               | 664                                                                               | 291                                                                                 | 470                                                                                 | 345                                                                                 | 283                                                                                 | 1119                                                                                | 190                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.84                                                                              | 0.84                                                                              | 0.07                                                                              | 0.42                                                                              | 0.42                                                                              | 0.23                                                                                | 0.23                                                                                | 0.23                                                                                | 0.08                                                                                | 0.34                                                                                | 0.34                                                                                |
| Sat Flow, veh/h              | 1938                                                                              | 3721                                                                              | 245                                                                               | 1969                                                                              | 2084                                                                              | 1573                                                                              | 907                                                                                 | 2018                                                                                | 1482                                                                                | 1984                                                                                | 3254                                                                                | 552                                                                                 |
| Grp Volume(v), veh/h         | 80                                                                                | 312                                                                               | 319                                                                               | 97                                                                                | 559                                                                               | 158                                                                               | 66                                                                                  | 388                                                                                 | 122                                                                                 | 241                                                                                 | 227                                                                                 | 222                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1938                                                                              | 1964                                                                              | 2001                                                                              | 1969                                                                              | 2084                                                                              | 1573                                                                              | 907                                                                                 | 2018                                                                                | 1482                                                                                | 1984                                                                                | 1948                                                                                | 1857                                                                                |
| Q Serve(g_s), s              | 1.9                                                                               | 3.4                                                                               | 3.4                                                                               | 2.4                                                                               | 19.1                                                                              | 5.8                                                                               | 5.4                                                                                 | 16.4                                                                                | 6.2                                                                                 | 7.0                                                                                 | 7.8                                                                                 | 8.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.9                                                                               | 3.4                                                                               | 3.4                                                                               | 2.4                                                                               | 19.1                                                                              | 5.8                                                                               | 5.4                                                                                 | 16.4                                                                                | 6.2                                                                                 | 7.0                                                                                 | 7.8                                                                                 | 8.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.12                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.30                                                                                |
| Lane Grp Cap(c), veh/h       | 373                                                                               | 822                                                                               | 838                                                                               | 545                                                                               | 880                                                                               | 664                                                                               | 291                                                                                 | 470                                                                                 | 345                                                                                 | 283                                                                                 | 670                                                                                 | 639                                                                                 |
| V/C Ratio(X)                 | 0.21                                                                              | 0.38                                                                              | 0.38                                                                              | 0.18                                                                              | 0.64                                                                              | 0.24                                                                              | 0.23                                                                                | 0.83                                                                                | 0.35                                                                                | 0.85                                                                                | 0.34                                                                                | 0.35                                                                                |
| Avail Cap(c_a), veh/h        | 393                                                                               | 822                                                                               | 838                                                                               | 558                                                                               | 880                                                                               | 664                                                                               | 372                                                                                 | 650                                                                                 | 477                                                                                 | 283                                                                                 | 844                                                                                 | 805                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 13.5                                                                              | 4.5                                                                               | 4.5                                                                               | 12.4                                                                              | 20.5                                                                              | 16.7                                                                              | 28.6                                                                                | 32.8                                                                                | 28.9                                                                                | 27.6                                                                                | 21.9                                                                                | 22.0                                                                                |
| Incr Delay (d2), s/veh       | 0.2                                                                               | 1.1                                                                               | 1.1                                                                               | 0.2                                                                               | 3.5                                                                               | 0.8                                                                               | 0.4                                                                                 | 6.2                                                                                 | 0.6                                                                                 | 21.4                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.4                                                                               | 2.4                                                                               | 2.4                                                                               | 1.9                                                                               | 14.8                                                                              | 4.0                                                                               | 2.2                                                                                 | 13.6                                                                                | 4.1                                                                                 | 9.4                                                                                 | 6.4                                                                                 | 6.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 13.8                                                                              | 5.7                                                                               | 5.7                                                                               | 12.6                                                                              | 24.0                                                                              | 17.6                                                                              | 29.0                                                                                | 39.0                                                                                | 29.5                                                                                | 49.0                                                                                | 22.2                                                                                | 22.3                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                   | D                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 711                                                                               |                                                                                   |                                                                                   | 814                                                                               |                                                                                   |                                                                                   | 576                                                                                 |                                                                                     |                                                                                     | 690                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 6.6                                                                               |                                                                                   |                                                                                   | 21.4                                                                              |                                                                                   |                                                                                   | 35.8                                                                                |                                                                                     |                                                                                     | 31.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.1                                                                               | 44.0                                                                              | 10.0                                                                              | 27.0                                                                              | 9.4                                                                               | 43.7                                                                              | 37.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.9                                                                               | 21.1                                                                              | 9.0                                                                               | 18.4                                                                              | 4.4                                                                               | 5.4                                                                               | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 2.7                                                                               | 0.0                                                                               | 2.5                                                                               | 0.0                                                                               | 4.0                                                                               | 3.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 23.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## HCM 6th Signalized Intersection Summary

### 2: South Orange Avenue & Vose Avenue

2020 Existing Condition  
Weekday Morning Peak Hour



| Movement                                                             | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|----------------------------------------------------------------------|------|------|------|------|------|------|
| Lane Configurations                                                  |      |      |      |      |      |      |
| Traffic Volume (veh/h)                                               | 66   | 574  | 609  | 54   | 108  | 103  |
| Future Volume (veh/h)                                                | 66   | 574  | 609  | 54   | 108  | 103  |
| Initial Q (Qb), veh                                                  | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)                                                  | 0.97 |      |      | 0.93 | 1.00 | 0.78 |
| Parking Bus, Adj                                                     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach                                                |      | No   | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln                                               | 2100 | 2084 | 2084 | 2067 | 2100 | 2100 |
| Adj Flow Rate, veh/h                                                 | 71   | 617  | 655  | 55   | 116  | 109  |
| Peak Hour Factor                                                     | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, %                                                 | 0    | 1    | 1    | 2    | 0    | 0    |
| Cap, veh/h                                                           | 660  | 1495 | 1495 | 1169 | 135  | 127  |
| Arrive On Green                                                      | 0.72 | 0.72 | 1.00 | 1.00 | 0.16 | 0.16 |
| Sat Flow, veh/h                                                      | 808  | 2084 | 2084 | 1630 | 844  | 793  |
| Grp Volume(v), veh/h                                                 | 71   | 617  | 655  | 55   | 226  | 0    |
| Grp Sat Flow(s),veh/h/ln                                             | 808  | 2084 | 2084 | 1630 | 1644 | 0    |
| Q Serve(g_s), s                                                      | 2.4  | 10.7 | 0.0  | 0.0  | 12.0 | 0.0  |
| Cycle Q Clear(g_c), s                                                | 2.4  | 10.7 | 0.0  | 0.0  | 12.0 | 0.0  |
| Prop In Lane                                                         | 1.00 |      |      | 1.00 | 0.51 | 0.48 |
| Lane Grp Cap(c), veh/h                                               | 660  | 1495 | 1495 | 1169 | 264  | 0    |
| V/C Ratio(X)                                                         | 0.11 | 0.41 | 0.44 | 0.05 | 0.86 | 0.00 |
| Avail Cap(c_a), veh/h                                                | 660  | 1495 | 1495 | 1169 | 384  | 0    |
| HCM Platoon Ratio                                                    | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I)                                                   | 1.00 | 1.00 | 0.75 | 0.75 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh                                             | 3.9  | 5.1  | 0.0  | 0.0  | 36.8 | 0.0  |
| Incr Delay (d2), s/veh                                               | 0.3  | 0.8  | 0.7  | 0.1  | 12.2 | 0.0  |
| Initial Q Delay(d3),s/veh                                            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(95%),veh/ln                                             | 0.7  | 7.2  | 0.5  | 0.0  | 9.6  | 0.0  |
| Unsig. Movement Delay, s/veh                                         |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh                                                 | 4.3  | 6.0  | 0.7  | 0.1  | 49.0 | 0.0  |
| LnGrp LOS                                                            | A    | A    | A    | A    | D    | A    |
| Approach Vol, veh/h                                                  |      | 688  | 710  |      | 226  |      |
| Approach Delay, s/veh                                                |      | 5.8  | 0.7  |      | 49.0 |      |
| Approach LOS                                                         |      | A    | A    |      | D    |      |
| Timer - Assigned Phs                                                 |      | 2    |      | 4    |      | 6    |
| Phs Duration (G+Y+Rc), s                                             |      | 69.6 |      | 20.4 |      | 69.6 |
| Change Period (Y+Rc), s                                              |      | 5.0  |      | 6.0  |      | 5.0  |
| Max Green Setting (Gmax), s                                          |      | 58.0 |      | 21.0 |      | 58.0 |
| Max Q Clear Time (g_c+I1), s                                         |      | 12.7 |      | 14.0 |      | 2.0  |
| Green Ext Time (p_c), s                                              |      | 3.3  |      | 0.4  |      | 3.3  |
| <b>Intersection Summary</b>                                          |      |      |      |      |      |      |
| HCM 6th Ctrl Delay                                                   |      |      | 9.6  |      |      |      |
| HCM 6th LOS                                                          |      |      | A    |      |      |      |
| <b>Notes</b>                                                         |      |      |      |      |      |      |
| User approved volume balancing among the lanes for turning movement. |      |      |      |      |      |      |
| User approved changes to right turn type.                            |      |      |      |      |      |      |

HCM 6th TWSC  
3: Scotland Road & Taylor Place

2020 Existing Condition  
Weekday Morning Peak Hour

Intersection

Int Delay, s/veh 1.8

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 15                                                                                | 95   | 61   | 540                                                                               | 567                                                                               | 25   |
| Future Vol, veh/h        | 15                                                                                | 95   | 61   | 540                                                                               | 567                                                                               | 25   |
| Conflicting Peds, #/hr   | 2                                                                                 | 3    | 5    | 0                                                                                 | 0                                                                                 | 5    |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | -    | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 87                                                                                | 87   | 87   | 87                                                                                | 87                                                                                | 87   |
| Heavy Vehicles, %        | 8                                                                                 | 0    | 2    | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 17                                                                                | 109  | 70   | 621                                                                               | 652                                                                               | 29   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 1435   | 675    | 686    |
| Stage 1              | 672    | -      | -      |
| Stage 2              | 763    | -      | -      |
| Critical Hdwy        | 5.4    | 5.2    | 4.12   |
| Critical Hdwy Stg 1  | 5.48   | -      | -      |
| Critical Hdwy Stg 2  | 5.48   | -      | -      |
| Follow-up Hdwy       | 3.572  | 3.3    | 2.218  |
| Pot Cap-1 Maneuver   | 220    | 552    | 908    |
| Stage 1              | 496    | -      | -      |
| Stage 2              | 450    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 192    | 548    | 904    |
| Mov Cap-2 Maneuver   | 192    | -      | -      |
| Stage 1              | 435    | -      | -      |
| Stage 2              | 448    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 16.6 | 0.9 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 904   | -   | 437   | -   | -   |
| HCM Lane V/C Ratio    | 0.078 | -   | 0.289 | -   | -   |
| HCM Control Delay (s) | 9.3   | 0   | 16.6  | -   | -   |
| HCM Lane LOS          | A     | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 1.2   | -   | -   |

HCM 6th TWSC  
4: Vose Avenue & Taylor Place

2020 Existing Condition  
Weekday Morning Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.5                                                                               |          |                                                                                   |        |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL  | SBT                                                                               |
| Lane Configurations      |  |          |  |        |      |  |
| Traffic Vol, veh/h       | 29                                                                                | 57       | 87                                                                                | 33     | 77   | 182                                                                               |
| Future Vol, veh/h        | 29                                                                                | 57       | 87                                                                                | 33     | 77   | 182                                                                               |
| Conflicting Peds, #/hr   | 36                                                                                | 36       | 0                                                                                 | 72     | 72   | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -    | 0                                                                                 |
| Peak Hour Factor         | 94                                                                                | 94       | 94                                                                                | 94     | 94   | 94                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 0                                                                                 | 3      | 0    | 0                                                                                 |
| Mvmt Flow                | 31                                                                                | 61       | 93                                                                                | 35     | 82   | 194                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |      |                                                                                   |
| Conflicting Flow All     | 577                                                                               | 219      | 0                                                                                 | 0      | 200  | 0                                                                                 |
| Stage 1                  | 183                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 2                  | 394                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Critical Hdwy            | 5.4                                                                               | 5.2      | -                                                                                 | -      | 4.1  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -      | 2.2  | -                                                                                 |
| Pot Cap-1 Maneuver       | 566                                                                               | 878      | -                                                                                 | -      | 1384 | -                                                                                 |
| Stage 1                  | 853                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 2                  | 686                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |      | -                                                                                 |
| Mov Cap-1 Maneuver       | 473                                                                               | 790      | -                                                                                 | -      | 1289 | -                                                                                 |
| Mov Cap-2 Maneuver       | 473                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 1                  | 794                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 2                  | 615                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |      |                                                                                   |
| HCM Control Delay, s     | 11.5                                                                              | 0        |                                                                                   | 2.4    |      |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |      |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT  |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | 644      |                                                                                   | 1289   | -    |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | 0.142    |                                                                                   | 0.064  | -    |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | 11.5     |                                                                                   | 8      | 0    |                                                                                   |
| HCM Lane LOS             | -                                                                                 | B        |                                                                                   | A      | A    |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | 0.5      |                                                                                   | 0.2    | -    |                                                                                   |

# HCM 6th Signalized Intersection Summary

## 1: Valley Street/Scotland Road & South Orange Avenue

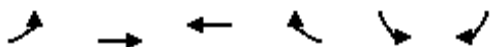
2020 Existing Condition  
Weekday Evening Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)       | 55                                                                                | 516                                                                               | 39                                                                                | 89                                                                                | 377                                                                               | 170                                                                               | 48                                                                                  | 391                                                                                 | 127                                                                                 | 242                                                                                 | 374                                                                                 | 62                                                                                  |
| Future Volume (veh/h)        | 55                                                                                | 516                                                                               | 39                                                                                | 89                                                                                | 377                                                                               | 170                                                                               | 48                                                                                  | 391                                                                                 | 127                                                                                 | 242                                                                                 | 374                                                                                 | 62                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.95                                                                              |                                                                                   | 0.93                                                                              | 0.97                                                                              |                                                                                   | 0.88                                                                              | 0.88                                                                                |                                                                                     | 0.87                                                                                | 0.97                                                                                |                                                                                     | 0.85                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2067                                                                              | 2084                                                                              | 2084                                                                              | 2002                                                                              | 2100                                                                              | 2100                                                                              | 2100                                                                                | 2084                                                                                | 2018                                                                                | 2100                                                                                | 2084                                                                                | 2084                                                                                |
| Adj Flow Rate, veh/h         | 58                                                                                | 543                                                                               | 41                                                                                | 94                                                                                | 397                                                                               | 179                                                                               | 51                                                                                  | 412                                                                                 | 134                                                                                 | 255                                                                                 | 394                                                                                 | 65                                                                                  |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 1                                                                                 | 1                                                                                 | 6                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 5                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   |
| Cap, veh/h                   | 453                                                                               | 1533                                                                              | 115                                                                               | 540                                                                               | 891                                                                               | 667                                                                               | 301                                                                                 | 497                                                                                 | 354                                                                                 | 283                                                                                 | 1159                                                                                | 188                                                                                 |
| Arrive On Green              | 0.12                                                                              | 0.83                                                                              | 0.83                                                                              | 0.07                                                                              | 0.42                                                                              | 0.42                                                                              | 0.24                                                                                | 0.24                                                                                | 0.24                                                                                | 0.08                                                                                | 0.35                                                                                | 0.35                                                                                |
| Sat Flow, veh/h              | 1969                                                                              | 3708                                                                              | 279                                                                               | 1906                                                                              | 2100                                                                              | 1572                                                                              | 925                                                                                 | 2084                                                                                | 1484                                                                                | 2000                                                                                | 3316                                                                                | 538                                                                                 |
| Grp Volume(v), veh/h         | 58                                                                                | 289                                                                               | 295                                                                               | 94                                                                                | 397                                                                               | 179                                                                               | 51                                                                                  | 412                                                                                 | 134                                                                                 | 255                                                                                 | 232                                                                                 | 227                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1969                                                                              | 1979                                                                              | 2008                                                                              | 1906                                                                              | 2100                                                                              | 1572                                                                              | 925                                                                                 | 2084                                                                                | 1484                                                                                | 2000                                                                                | 1979                                                                                | 1875                                                                                |
| Q Serve(g_s), s              | 1.4                                                                               | 3.2                                                                               | 3.2                                                                               | 2.4                                                                               | 12.1                                                                              | 6.7                                                                               | 4.0                                                                                 | 16.9                                                                                | 6.8                                                                                 | 7.0                                                                                 | 7.8                                                                                 | 8.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.4                                                                               | 3.2                                                                               | 3.2                                                                               | 2.4                                                                               | 12.1                                                                              | 6.7                                                                               | 4.0                                                                                 | 16.9                                                                                | 6.8                                                                                 | 7.0                                                                                 | 7.8                                                                                 | 8.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.14                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.29                                                                                |
| Lane Grp Cap(c), veh/h       | 453                                                                               | 818                                                                               | 830                                                                               | 540                                                                               | 891                                                                               | 667                                                                               | 301                                                                                 | 497                                                                                 | 354                                                                                 | 283                                                                                 | 692                                                                                 | 655                                                                                 |
| V/C Ratio(X)                 | 0.13                                                                              | 0.35                                                                              | 0.36                                                                              | 0.17                                                                              | 0.45                                                                              | 0.27                                                                              | 0.17                                                                                | 0.83                                                                                | 0.38                                                                                | 0.90                                                                                | 0.34                                                                                | 0.35                                                                                |
| Avail Cap(c_a), veh/h        | 489                                                                               | 818                                                                               | 830                                                                               | 554                                                                               | 891                                                                               | 667                                                                               | 378                                                                                 | 671                                                                                 | 478                                                                                 | 283                                                                                 | 858                                                                                 | 812                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 12.7                                                                              | 4.8                                                                               | 4.8                                                                               | 12.7                                                                              | 18.4                                                                              | 16.8                                                                              | 27.6                                                                                | 32.5                                                                                | 28.7                                                                                | 28.1                                                                                | 21.6                                                                                | 21.7                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 1.0                                                                               | 1.0                                                                               | 0.2                                                                               | 1.6                                                                               | 1.0                                                                               | 0.3                                                                                 | 6.4                                                                                 | 0.7                                                                                 | 29.6                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.1                                                                               | 2.3                                                                               | 2.3                                                                               | 1.8                                                                               | 10.1                                                                              | 4.6                                                                               | 1.6                                                                                 | 14.3                                                                                | 4.5                                                                                 | 7.4                                                                                 | 6.5                                                                                 | 6.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 12.8                                                                              | 5.9                                                                               | 5.9                                                                               | 12.8                                                                              | 20.0                                                                              | 17.8                                                                              | 27.9                                                                                | 39.0                                                                                | 29.4                                                                                | 57.7                                                                                | 21.9                                                                                | 22.0                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                   | D                                                                                   | C                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 642                                                                               |                                                                                   |                                                                                   | 670                                                                               |                                                                                   |                                                                                     | 597                                                                                 |                                                                                     |                                                                                     | 714                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 6.5                                                                               |                                                                                   |                                                                                   | 18.4                                                                              |                                                                                   |                                                                                     | 35.9                                                                                |                                                                                     |                                                                                     | 34.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.4                                                                               | 44.2                                                                              | 10.0                                                                              | 27.5                                                                              | 9.3                                                                               | 43.2                                                                              |                                                                                     | 37.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              |                                                                                     | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.4                                                                               | 14.1                                                                              | 9.0                                                                               | 18.9                                                                              | 4.4                                                                               | 5.2                                                                               |                                                                                     | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 2.8                                                                               | 0.0                                                                               | 2.6                                                                               | 0.0                                                                               | 3.7                                                                               |                                                                                     | 3.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 23.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## HCM 6th Signalized Intersection Summary

### 2: South Orange Avenue & Vose Avenue

2020 Existing Condition  
Weekday Evening Peak Hour



| Movement                     | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------------|------|------|------|------|------|------|
| Lane Configurations          |      |      |      |      |      |      |
| Traffic Volume (veh/h)       | 149  | 526  | 395  | 92   | 84   | 130  |
| Future Volume (veh/h)        | 149  | 526  | 395  | 92   | 84   | 130  |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 0.99 |      |      | 0.97 | 1.00 | 0.84 |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |      | No   | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 |
| Adj Flow Rate, veh/h         | 182  | 641  | 482  | 64   | 102  | 108  |
| Peak Hour Factor             | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| Percent Heavy Veh, %         | 0    | 0    | 0    | 0    | 0    | 0    |
| Cap, veh/h                   | 777  | 1536 | 1536 | 1265 | 121  | 128  |
| Arrive On Green              | 0.73 | 0.73 | 1.00 | 1.00 | 0.15 | 0.15 |
| Sat Flow, veh/h              | 954  | 2100 | 2100 | 1730 | 826  | 875  |
| Grp Volume(v), veh/h         | 182  | 641  | 482  | 64   | 211  | 0    |
| Grp Sat Flow(s),veh/h/ln     | 954  | 2100 | 2100 | 1730 | 1709 | 0    |
| Q Serve(g_s), s              | 5.7  | 10.6 | 0.0  | 0.0  | 10.8 | 0.0  |
| Cycle Q Clear(g_c), s        | 5.7  | 10.6 | 0.0  | 0.0  | 10.8 | 0.0  |
| Prop In Lane                 | 1.00 |      |      | 1.00 | 0.48 | 0.51 |
| Lane Grp Cap(c), veh/h       | 777  | 1536 | 1536 | 1265 | 250  | 0    |
| V/C Ratio(X)                 | 0.23 | 0.42 | 0.31 | 0.05 | 0.84 | 0.00 |
| Avail Cap(c_a), veh/h        | 777  | 1536 | 1536 | 1265 | 399  | 0    |
| HCM Platoon Ratio            | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00 | 1.00 | 0.90 | 0.90 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh     | 4.0  | 4.7  | 0.0  | 0.0  | 37.4 | 0.0  |
| Incr Delay (d2), s/veh       | 0.7  | 0.8  | 0.5  | 0.1  | 8.9  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(95%),veh/ln     | 1.8  | 7.0  | 0.4  | 0.0  | 8.8  | 0.0  |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 4.7  | 5.5  | 0.5  | 0.1  | 46.3 | 0.0  |
| LnGrp LOS                    | A    | A    | A    | A    | D    | A    |
| Approach Vol, veh/h          |      | 823  | 546  |      | 211  |      |
| Approach Delay, s/veh        |      | 5.3  | 0.4  |      | 46.3 |      |
| Approach LOS                 |      | A    | A    |      | D    |      |
| Timer - Assigned Phs         |      | 2    |      | 4    |      | 6    |
| Phs Duration (G+Y+Rc), s     |      | 70.8 |      | 19.2 |      | 70.8 |
| Change Period (Y+Rc), s      |      | 5.0  |      | 6.0  |      | 5.0  |
| Max Green Setting (Gmax), s  |      | 58.0 |      | 21.0 |      | 58.0 |
| Max Q Clear Time (g_c+I1), s |      | 12.6 |      | 12.8 |      | 2.0  |
| Green Ext Time (p_c), s      |      | 3.8  |      | 0.4  |      | 2.2  |

#### Intersection Summary

|                    |     |
|--------------------|-----|
| HCM 6th Ctrl Delay | 9.1 |
| HCM 6th LOS        | A   |

#### Notes

User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

HCM 6th TWSC  
3: Scotland Road & Taylor Place

2020 Existing Condition  
Weekday Evening Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2                                                                                 |        |       |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL   | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |       |  |  |      |
| Traffic Vol, veh/h       | 21                                                                                | 107    | 59    | 557                                                                               | 571                                                                               | 25   |
| Future Vol, veh/h        | 21                                                                                | 107    | 59    | 557                                                                               | 571                                                                               | 25   |
| Conflicting Peds, #/hr   | 13                                                                                | 13     | 26    | 0                                                                                 | 0                                                                                 | 26   |
| Sign Control             | Stop                                                                              | Stop   | Free  | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 97                                                                                | 97     | 97    | 97                                                                                | 97                                                                                | 97   |
| Heavy Vehicles, %        | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 22                                                                                | 110    | 61    | 574                                                                               | 589                                                                               | 26   |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |      |
| Major/Minor              | Minor2                                                                            | Major1 |       | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 1337                                                                              | 641    | 641   | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 628                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 709                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 5.4                                                                               | 5.2    | 4.1   | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.4                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.4                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.5                                                                               | 3.3    | 2.2   | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 247                                                                               | 572    | 953   | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 536                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 491                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |       | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 212                                                                               | 551    | 929   | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 212                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 472                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 479                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |      |
| Approach                 | EB                                                                                | NB     |       | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 16.8                                                                              | 0.9    |       | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | C                                                                                 |        |       |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1 | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 929                                                                               | -      | 436   | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.065                                                                             | -      | 0.303 | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 9.1                                                                               | 0      | 16.8  | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | A      | C     | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0.2                                                                               | -      | 1.3   | -                                                                                 | -                                                                                 |      |

HCM 6th TWSC  
4: Vose Avenue & Taylor Place

2020 Existing Condition  
Weekday Evening Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3                                                                                 |          |                                                                                   |       |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL  | SBT                                                                               |
| Lane Configurations      |  |          |  |       |      |  |
| Traffic Vol, veh/h       | 41                                                                                | 43       | 198                                                                               | 43    | 85   | 173                                                                               |
| Future Vol, veh/h        | 41                                                                                | 43       | 198                                                                               | 43    | 85   | 173                                                                               |
| Conflicting Peds, #/hr   | 19                                                                                | 19       | 0                                                                                 | 38    | 38   | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -    | 0                                                                                 |
| Peak Hour Factor         | 90                                                                                | 90       | 90                                                                                | 90    | 90   | 90                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 0                                                                                 | 0     | 0    | 1                                                                                 |
| Mvmt Flow                | 46                                                                                | 48       | 220                                                                               | 48    | 94   | 192                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |      |                                                                                   |
| Conflicting Flow All     | 681                                                                               | 301      | 0                                                                                 | 0     | 306  | 0                                                                                 |
| Stage 1                  | 282                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 399                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Critical Hdwy            | 5.4                                                                               | 5.2      | -                                                                                 | -     | 4.1  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -     | 2.2  | -                                                                                 |
| Pot Cap-1 Maneuver       | 506                                                                               | 808      | -                                                                                 | -     | 1266 | -                                                                                 |
| Stage 1                  | 770                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 682                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |      | -                                                                                 |
| Mov Cap-1 Maneuver       | 438                                                                               | 765      | -                                                                                 | -     | 1220 | -                                                                                 |
| Mov Cap-2 Maneuver       | 438                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 1                  | 742                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 612                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB    |      |                                                                                   |
| HCM Control Delay, s     | 12.7                                                                              | 0        |                                                                                   | 2.7   |      |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |      |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |      |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 561                                                                               | 1220  | -    |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.166                                                                             | 0.077 | -    |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 12.7                                                                              | 8.2   | 0    |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | A    |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.6                                                                               | 0.3   | -    |                                                                                   |

# HCM 6th Signalized Intersection Summary

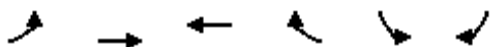
## 1: Valley Street/Scotland Road & South Orange Avenue

2020 Existing Condition  
Saturday Midday Peak Hour

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 81                                                                                | 423                                                                               | 69                                                                                | 106                                                                               | 398                                                                               | 153                                                                               | 65                                                                                  | 310                                                                                 | 121                                                                                 | 208                                                                                 | 285                                                                                 | 66                                                                                  |
| Future Volume (veh/h)        | 81                                                                                | 423                                                                               | 69                                                                                | 106                                                                               | 398                                                                               | 153                                                                               | 65                                                                                  | 310                                                                                 | 121                                                                                 | 208                                                                                 | 285                                                                                 | 66                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.95                                                                              |                                                                                   | 0.93                                                                              | 0.96                                                                              |                                                                                   | 0.88                                                                              | 0.97                                                                                |                                                                                     | 0.97                                                                                | 0.99                                                                                |                                                                                     | 0.97                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2100                                                                              | 2100                                                                              | 2100                                                                              | 2034                                                                              | 2084                                                                              | 2100                                                                              | 2100                                                                                | 2084                                                                                | 2051                                                                                | 2067                                                                                | 2100                                                                                | 2100                                                                                |
| Adj Flow Rate, veh/h         | 84                                                                                | 441                                                                               | 72                                                                                | 110                                                                               | 415                                                                               | 159                                                                               | 68                                                                                  | 323                                                                                 | 126                                                                                 | 217                                                                                 | 297                                                                                 | 69                                                                                  |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 4                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 3                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 507                                                                               | 1540                                                                              | 249                                                                               | 628                                                                               | 954                                                                               | 717                                                                               | 296                                                                                 | 408                                                                                 | 330                                                                                 | 283                                                                                 | 983                                                                                 | 224                                                                                 |
| Arrive On Green              | 0.14                                                                              | 0.91                                                                              | 0.91                                                                              | 0.07                                                                              | 0.46                                                                              | 0.46                                                                              | 0.20                                                                                | 0.20                                                                                | 0.20                                                                                | 0.08                                                                                | 0.31                                                                                | 0.31                                                                                |
| Sat Flow, veh/h              | 2000                                                                              | 3396                                                                              | 549                                                                               | 1938                                                                              | 2084                                                                              | 1566                                                                              | 1104                                                                                | 2084                                                                                | 1682                                                                                | 1969                                                                                | 3203                                                                                | 730                                                                                 |
| Grp Volume(v), veh/h         | 84                                                                                | 257                                                                               | 256                                                                               | 110                                                                               | 415                                                                               | 159                                                                               | 68                                                                                  | 323                                                                                 | 126                                                                                 | 217                                                                                 | 183                                                                                 | 183                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 2000                                                                              | 1995                                                                              | 1950                                                                              | 1938                                                                              | 2084                                                                              | 1566                                                                              | 1104                                                                                | 2084                                                                                | 1682                                                                                | 1969                                                                                | 1995                                                                                | 1938                                                                                |
| Q Serve(g_s), s              | 1.8                                                                               | 1.5                                                                               | 1.5                                                                               | 2.6                                                                               | 12.1                                                                              | 5.5                                                                               | 4.8                                                                                 | 13.3                                                                                | 5.9                                                                                 | 7.0                                                                                 | 6.3                                                                                 | 6.5                                                                                 |
| Cycle Q Clear(g_c), s        | 1.8                                                                               | 1.5                                                                               | 1.5                                                                               | 2.6                                                                               | 12.1                                                                              | 5.5                                                                               | 4.8                                                                                 | 13.3                                                                                | 5.9                                                                                 | 7.0                                                                                 | 6.3                                                                                 | 6.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.28                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.38                                                                                |
| Lane Grp Cap(c), veh/h       | 507                                                                               | 905                                                                               | 884                                                                               | 628                                                                               | 954                                                                               | 717                                                                               | 296                                                                                 | 408                                                                                 | 330                                                                                 | 283                                                                                 | 613                                                                                 | 595                                                                                 |
| V/C Ratio(X)                 | 0.17                                                                              | 0.28                                                                              | 0.29                                                                              | 0.18                                                                              | 0.43                                                                              | 0.22                                                                              | 0.23                                                                                | 0.79                                                                                | 0.38                                                                                | 0.77                                                                                | 0.30                                                                                | 0.31                                                                                |
| Avail Cap(c_a), veh/h        | 526                                                                               | 905                                                                               | 884                                                                               | 638                                                                               | 954                                                                               | 717                                                                               | 436                                                                                 | 671                                                                                 | 542                                                                                 | 283                                                                                 | 865                                                                                 | 840                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 10.7                                                                              | 2.4                                                                               | 2.4                                                                               | 10.7                                                                              | 16.5                                                                              | 14.7                                                                              | 31.0                                                                                | 34.4                                                                                | 31.5                                                                                | 28.2                                                                                | 23.8                                                                                | 23.9                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.7                                                                               | 0.8                                                                               | 0.1                                                                               | 1.4                                                                               | 0.7                                                                               | 0.4                                                                                 | 3.5                                                                                 | 0.7                                                                                 | 11.9                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.4                                                                               | 1.2                                                                               | 1.2                                                                               | 1.9                                                                               | 9.9                                                                               | 3.7                                                                               | 2.3                                                                                 | 11.4                                                                                | 4.4                                                                                 | 8.1                                                                                 | 5.4                                                                                 | 5.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 10.9                                                                              | 3.1                                                                               | 3.1                                                                               | 10.9                                                                              | 17.9                                                                              | 15.4                                                                              | 31.4                                                                                | 37.9                                                                                | 32.2                                                                                | 40.1                                                                                | 24.1                                                                                | 24.2                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | C                                                                                   | D                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 597                                                                               |                                                                                   |                                                                                   | 684                                                                               |                                                                                   |                                                                                   | 517                                                                                 |                                                                                     |                                                                                     | 583                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 4.2                                                                               |                                                                                   |                                                                                   | 16.2                                                                              |                                                                                   |                                                                                   | 35.7                                                                                |                                                                                     |                                                                                     | 30.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.1                                                                               | 47.2                                                                              | 10.0                                                                              | 23.6                                                                              | 9.6                                                                               | 46.8                                                                              | 33.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.8                                                                               | 14.1                                                                              | 9.0                                                                               | 15.3                                                                              | 4.6                                                                               | 3.5                                                                               | 8.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 2.8                                                                               | 0.0                                                                               | 2.4                                                                               | 0.1                                                                               | 3.3                                                                               | 2.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 20.8                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## HCM 6th Signalized Intersection Summary 2: South Orange Avenue & Vose Avenue

2020 Existing Condition  
Saturday Midday Peak Hour



| Movement                     | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------------|------|------|------|------|------|------|
| Lane Configurations          |      |      |      |      |      |      |
| Traffic Volume (veh/h)       | 85   | 470  | 403  | 126  | 103  | 96   |
| Future Volume (veh/h)        | 85   | 470  | 403  | 126  | 103  | 96   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 0.96 |      |      | 0.91 | 1.00 | 0.78 |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |      | No   | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 2100 | 2100 | 2084 | 2100 | 2100 | 2100 |
| Adj Flow Rate, veh/h         | 88   | 485  | 415  | 124  | 106  | 91   |
| Peak Hour Factor             | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, %         | 0    | 0    | 1    | 0    | 0    | 0    |
| Cap, veh/h                   | 764  | 1545 | 1533 | 1188 | 126  | 108  |
| Arrive On Green              | 0.74 | 0.74 | 1.00 | 1.00 | 0.14 | 0.14 |
| Sat Flow, veh/h              | 930  | 2100 | 2084 | 1615 | 887  | 762  |
| Grp Volume(v), veh/h         | 88   | 485  | 415  | 124  | 198  | 0    |
| Grp Sat Flow(s),veh/h/ln     | 930  | 2100 | 2084 | 1615 | 1658 | 0    |
| Q Serve(g_s), s              | 2.5  | 7.1  | 0.0  | 0.0  | 10.5 | 0.0  |
| Cycle Q Clear(g_c), s        | 2.5  | 7.1  | 0.0  | 0.0  | 10.5 | 0.0  |
| Prop In Lane                 | 1.00 |      |      | 1.00 | 0.54 | 0.46 |
| Lane Grp Cap(c), veh/h       | 764  | 1545 | 1533 | 1188 | 236  | 0    |
| V/C Ratio(X)                 | 0.12 | 0.31 | 0.27 | 0.10 | 0.84 | 0.00 |
| Avail Cap(c_a), veh/h        | 764  | 1545 | 1533 | 1188 | 387  | 0    |
| HCM Platoon Ratio            | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00 | 1.00 | 0.90 | 0.90 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh     | 3.5  | 4.1  | 0.0  | 0.0  | 37.6 | 0.0  |
| Incr Delay (d2), s/veh       | 0.3  | 0.5  | 0.4  | 0.2  | 8.4  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(95%),veh/ln     | 0.8  | 4.7  | 0.3  | 0.1  | 8.3  | 0.0  |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 3.8  | 4.6  | 0.4  | 0.2  | 46.0 | 0.0  |
| LnGrp LOS                    | A    | A    | A    | A    | D    | A    |
| Approach Vol, veh/h          |      | 573  | 539  |      | 198  |      |
| Approach Delay, s/veh        |      | 4.5  | 0.3  |      | 46.0 |      |
| Approach LOS                 |      | A    | A    |      | D    |      |
| Timer - Assigned Phs         |      | 2    |      | 4    |      | 6    |
| Phs Duration (G+Y+Rc), s     |      | 71.2 |      | 18.8 |      | 71.2 |
| Change Period (Y+Rc), s      |      | 5.0  |      | 6.0  |      | 5.0  |
| Max Green Setting (Gmax), s  |      | 58.0 |      | 21.0 |      | 58.0 |
| Max Q Clear Time (g_c+I1), s |      | 9.1  |      | 12.5 |      | 2.0  |
| Green Ext Time (p_c), s      |      | 2.5  |      | 0.4  |      | 2.0  |

### Intersection Summary

|                    |     |
|--------------------|-----|
| HCM 6th Ctrl Delay | 9.1 |
| HCM 6th LOS        | A   |

### Notes

User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

HCM 6th TWSC  
3: Scotland Road & Taylor Place

2020 Existing Condition  
Saturday Middy Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.3                                                                               |        |       |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL   | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |       |  |  |      |
| Traffic Vol, veh/h       | 23                                                                                | 111    | 61    | 483                                                                               | 448                                                                               | 26   |
| Future Vol, veh/h        | 23                                                                                | 111    | 61    | 483                                                                               | 448                                                                               | 26   |
| Conflicting Peds, #/hr   | 10                                                                                | 11     | 21    | 0                                                                                 | 0                                                                                 | 21   |
| Sign Control             | Stop                                                                              | Stop   | Free  | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 88                                                                                | 88     | 88    | 88                                                                                | 88                                                                                | 88   |
| Heavy Vehicles, %        | 0                                                                                 | 1      | 0     | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 26                                                                                | 126    | 69    | 549                                                                               | 509                                                                               | 30   |
| Major/Minor              | Minor2                                                                            | Major1 |       | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 1242                                                                              | 556    | 560   | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 545                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 697                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 5.4                                                                               | 5.2    | 4.1   | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.4                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.4                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.5                                                                               | 3.309  | 2.2   | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 275                                                                               | 622    | 1021  | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 585                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 498                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |       | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 238                                                                               | 603    | 1001  | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 238                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 517                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 488                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Approach                 | EB                                                                                | NB     |       | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 16                                                                                | 1      |       | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | C                                                                                 |        |       |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1 | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 1001                                                                              | -      | 477   | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.069                                                                             | -      | 0.319 | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 8.9                                                                               | 0      | 16    | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | A      | C     | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0.2                                                                               | -      | 1.4   | -                                                                                 | -                                                                                 |      |

HCM 6th TWSC  
4: Vose Avenue & Taylor Place

2020 Existing Condition  
Saturday Middy Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |      |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.3                                                                               |          |                                                                                   |      |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR  | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |      |       |  |
| Traffic Vol, veh/h       | 45                                                                                | 42       | 151                                                                               | 60   | 74    | 154                                                                               |
| Future Vol, veh/h        | 45                                                                                | 42       | 151                                                                               | 60   | 74    | 154                                                                               |
| Conflicting Peds, #/hr   | 32                                                                                | 32       | 0                                                                                 | 64   | 64    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -    | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -    | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -    | -     | 0                                                                                 |
| Peak Hour Factor         | 89                                                                                | 89       | 89                                                                                | 89   | 89    | 89                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 1                                                                                 | 0    | 1     | 1                                                                                 |
| Mvmt Flow                | 51                                                                                | 47       | 170                                                                               | 67   | 83    | 173                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |      |       |                                                                                   |
| Conflicting Flow All     | 639                                                                               | 300      | 0                                                                                 | 0    | 301   | 0                                                                                 |
| Stage 1                  | 268                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 2                  | 371                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Critical Hdwy            | 5.4                                                                               | 5.2      | -                                                                                 | -    | 4.11  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -    | 2.209 | -                                                                                 |
| Pot Cap-1 Maneuver       | 530                                                                               | 809      | -                                                                                 | -    | 1266  | -                                                                                 |
| Stage 1                  | 782                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 2                  | 702                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -    |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 446                                                                               | 737      | -                                                                                 | -    | 1189  | -                                                                                 |
| Mov Cap-2 Maneuver       | 446                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 1                  | 734                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 2                  | 628                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB   |       |                                                                                   |
| HCM Control Delay, s     | 12.9                                                                              | 0        |                                                                                   | 2.7  |       |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |      |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT  |       |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 551                                                                               | 1189 | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.177                                                                             | 0.07 | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 12.9                                                                              | 8.3  | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A    | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.6                                                                               | 0.2  | -     |                                                                                   |

# HCM 6th Signalized Intersection Summary

## 1: Valley Street/Scotland Road & South Orange Avenue

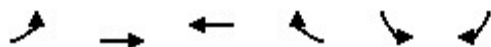
2023 No-Build Condition  
Weekday Morning Peak Hour

|                              |  |                                                                                       |  |  |  |  |   |  |  |  |                                                                                         |  |
|------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                                                                                                                    | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                        | SBR                                                                                 |
| Lane Configurations          |  | <br> |                                                                                   |  |  |  |  |  |  |  | <br> |                                                                                     |
| Traffic Volume (veh/h)       | 82                                                                                | 644                                                                                                                                                                    | 39                                                                                | 99                                                                                | 615                                                                               | 161                                                                               | 67                                                                                  | 395                                                                                 | 124                                                                                 | 245                                                                                 | 391                                                                                                                                                                        | 67                                                                                  |
| Future Volume (veh/h)        | 82                                                                                | 644                                                                                                                                                                    | 39                                                                                | 99                                                                                | 615                                                                               | 161                                                                               | 67                                                                                  | 395                                                                                 | 124                                                                                 | 245                                                                                 | 391                                                                                                                                                                        | 67                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                                                                                                      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                          | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.97                                                                              |                                                                                                                                                                        | 0.93                                                                              | 0.97                                                                              |                                                                                   | 0.88                                                                              | 0.91                                                                                |                                                                                     | 0.89                                                                                | 0.97                                                                                |                                                                                                                                                                            | 0.88                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                                                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                       | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                                                                                                        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                                                                                                            |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2034                                                                              | 2067                                                                                                                                                                   | 2067                                                                              | 2067                                                                              | 2084                                                                              | 2100                                                                              | 2002                                                                                | 2018                                                                                | 1969                                                                                | 2084                                                                                | 2051                                                                                                                                                                       | 2051                                                                                |
| Adj Flow Rate, veh/h         | 85                                                                                | 671                                                                                                                                                                    | 41                                                                                | 103                                                                               | 641                                                                               | 168                                                                               | 70                                                                                  | 411                                                                                 | 129                                                                                 | 255                                                                                 | 407                                                                                                                                                                        | 70                                                                                  |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                                                                                                                   | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                                                                                                       | 0.96                                                                                |
| Percent Heavy Veh, %         | 4                                                                                 | 2                                                                                                                                                                      | 2                                                                                 | 2                                                                                 | 1                                                                                 | 0                                                                                 | 6                                                                                   | 5                                                                                   | 8                                                                                   | 1                                                                                   | 3                                                                                                                                                                          | 3                                                                                   |
| Cap, veh/h                   | 318                                                                               | 1520                                                                                                                                                                   | 93                                                                                | 503                                                                               | 854                                                                               | 642                                                                               | 297                                                                                 | 492                                                                                 | 363                                                                                 | 282                                                                                 | 1156                                                                                                                                                                       | 196                                                                                 |
| Arrive On Green              | 0.14                                                                              | 0.81                                                                                                                                                                   | 0.81                                                                              | 0.07                                                                              | 0.41                                                                              | 0.41                                                                              | 0.24                                                                                | 0.24                                                                                | 0.24                                                                                | 0.08                                                                                | 0.36                                                                                                                                                                       | 0.36                                                                                |
| Sat Flow, veh/h              | 1938                                                                              | 3741                                                                                                                                                                   | 228                                                                               | 1969                                                                              | 2084                                                                              | 1567                                                                              | 892                                                                                 | 2018                                                                                | 1490                                                                                | 1984                                                                                | 3257                                                                                                                                                                       | 552                                                                                 |
| Grp Volume(v), veh/h         | 85                                                                                | 352                                                                                                                                                                    | 360                                                                               | 103                                                                               | 641                                                                               | 168                                                                               | 70                                                                                  | 411                                                                                 | 129                                                                                 | 255                                                                                 | 241                                                                                                                                                                        | 236                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1938                                                                              | 1964                                                                                                                                                                   | 2005                                                                              | 1969                                                                              | 2084                                                                              | 1567                                                                              | 892                                                                                 | 2018                                                                                | 1490                                                                                | 1984                                                                                | 1948                                                                                                                                                                       | 1861                                                                                |
| Q Serve(g_s), s              | 2.1                                                                               | 4.7                                                                                                                                                                    | 4.7                                                                               | 2.6                                                                               | 23.6                                                                              | 6.4                                                                               | 5.8                                                                                 | 17.4                                                                                | 6.4                                                                                 | 7.0                                                                                 | 8.2                                                                                                                                                                        | 8.4                                                                                 |
| Cycle Q Clear(g_c), s        | 2.1                                                                               | 4.7                                                                                                                                                                    | 4.7                                                                               | 2.6                                                                               | 23.6                                                                              | 6.4                                                                               | 5.8                                                                                 | 17.4                                                                                | 6.4                                                                                 | 7.0                                                                                 | 8.2                                                                                                                                                                        | 8.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                                                                                                        | 0.11                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                            | 0.30                                                                                |
| Lane Grp Cap(c), veh/h       | 318                                                                               | 798                                                                                                                                                                    | 815                                                                               | 503                                                                               | 854                                                                               | 642                                                                               | 297                                                                                 | 492                                                                                 | 363                                                                                 | 282                                                                                 | 692                                                                                                                                                                        | 661                                                                                 |
| V/C Ratio(X)                 | 0.27                                                                              | 0.44                                                                                                                                                                   | 0.44                                                                              | 0.20                                                                              | 0.75                                                                              | 0.26                                                                              | 0.24                                                                                | 0.83                                                                                | 0.35                                                                                | 0.90                                                                                | 0.35                                                                                                                                                                       | 0.36                                                                                |
| Avail Cap(c_a), veh/h        | 336                                                                               | 798                                                                                                                                                                    | 815                                                                               | 515                                                                               | 854                                                                               | 642                                                                               | 367                                                                                 | 650                                                                                 | 480                                                                                 | 282                                                                                 | 844                                                                                                                                                                        | 806                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                                                                                                                   | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                       | 1.00                                                                                |
| Upstream Filter(I)           | 0.83                                                                              | 0.83                                                                                                                                                                   | 0.83                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                       | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 15.1                                                                              | 5.4                                                                                                                                                                    | 5.4                                                                               | 13.1                                                                              | 22.6                                                                              | 17.6                                                                              | 27.9                                                                                | 32.3                                                                                | 28.2                                                                                | 28.0                                                                                | 21.4                                                                                                                                                                       | 21.4                                                                                |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 1.5                                                                                                                                                                    | 1.4                                                                               | 0.2                                                                               | 6.0                                                                               | 1.0                                                                               | 0.4                                                                                 | 7.1                                                                                 | 0.6                                                                                 | 30.3                                                                                | 0.3                                                                                                                                                                        | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                                                                                                                    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                        | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.6                                                                               | 3.1                                                                                                                                                                    | 3.2                                                                               | 2.0                                                                               | 18.2                                                                              | 4.4                                                                               | 2.3                                                                                 | 14.4                                                                                | 4.2                                                                                 | 7.6                                                                                 | 6.8                                                                                                                                                                        | 6.7                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |
| LnGrp Delay(d),s/veh         | 15.5                                                                              | 6.9                                                                                                                                                                    | 6.9                                                                               | 13.3                                                                              | 28.7                                                                              | 18.5                                                                              | 28.3                                                                                | 39.4                                                                                | 28.7                                                                                | 58.3                                                                                | 21.7                                                                                                                                                                       | 21.8                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                                                                                                      | A                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                   | D                                                                                   | C                                                                                   | E                                                                                   | C                                                                                                                                                                          | C                                                                                   |
| Approach Vol, veh/h          | 797                                                                               |                                                                                                                                                                        |                                                                                   | 912                                                                               |                                                                                   |                                                                                   | 610                                                                                 |                                                                                     |                                                                                     | 732                                                                                 |                                                                                                                                                                            |                                                                                     |
| Approach Delay, s/veh        | 7.8                                                                               |                                                                                                                                                                        |                                                                                   | 25.1                                                                              |                                                                                   |                                                                                   | 35.9                                                                                |                                                                                     |                                                                                     | 34.4                                                                                |                                                                                                                                                                            |                                                                                     |
| Approach LOS                 | A                                                                                 |                                                                                                                                                                        |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                                                                                                            |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                                                                                                      | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.2                                                                               | 42.9                                                                                                                                                                   | 10.0                                                                              | 28.0                                                                              | 9.5                                                                               | 42.6                                                                              | 38.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                                                                                                                    | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 29.0                                                                                                                                                                   | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.1                                                                               | 25.6                                                                                                                                                                   | 9.0                                                                               | 19.4                                                                              | 4.6                                                                               | 6.7                                                                               | 10.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.6                                                                                                                                                                    | 0.0                                                                               | 2.6                                                                               | 0.0                                                                               | 4.6                                                                               | 3.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |
| HCM 6th Ctrl Delay           | 25.0                                                                              |                                                                                                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                                                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                            |                                                                                     |

## HCM 6th Signalized Intersection Summary

### 2: South Orange Avenue & Vose Avenue

2023 No-Build Condition  
Weekday Morning Peak Hour



| Movement                                                             | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|----------------------------------------------------------------------|------|------|------|------|------|------|
| Lane Configurations                                                  |      |      |      |      |      |      |
| Traffic Volume (veh/h)                                               | 70   | 650  | 691  | 58   | 115  | 109  |
| Future Volume (veh/h)                                                | 70   | 650  | 691  | 58   | 115  | 109  |
| Initial Q (Qb), veh                                                  | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)                                                  | 0.98 |      |      | 0.93 | 1.00 | 0.79 |
| Parking Bus, Adj                                                     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach                                                |      | No   | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln                                               | 2100 | 2084 | 2084 | 2067 | 2100 | 2100 |
| Adj Flow Rate, veh/h                                                 | 75   | 699  | 743  | 59   | 124  | 115  |
| Peak Hour Factor                                                     | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, %                                                 | 0    | 1    | 1    | 2    | 0    | 0    |
| Cap, veh/h                                                           | 608  | 1480 | 1480 | 1156 | 144  | 133  |
| Arrive On Green                                                      | 0.71 | 0.71 | 1.00 | 1.00 | 0.17 | 0.17 |
| Sat Flow, veh/h                                                      | 744  | 2084 | 2084 | 1629 | 857  | 794  |
| Grp Volume(v), veh/h                                                 | 75   | 699  | 743  | 59   | 240  | 0    |
| Grp Sat Flow(s),veh/h/ln                                             | 744  | 2084 | 2084 | 1629 | 1658 | 0    |
| Q Serve(g_s), s                                                      | 2.9  | 13.2 | 0.0  | 0.0  | 12.7 | 0.0  |
| Cycle Q Clear(g_c), s                                                | 2.9  | 13.2 | 0.0  | 0.0  | 12.7 | 0.0  |
| Prop In Lane                                                         | 1.00 |      |      | 1.00 | 0.52 | 0.48 |
| Lane Grp Cap(c), veh/h                                               | 608  | 1480 | 1480 | 1156 | 278  | 0    |
| V/C Ratio(X)                                                         | 0.12 | 0.47 | 0.50 | 0.05 | 0.86 | 0.00 |
| Avail Cap(c_a), veh/h                                                | 608  | 1480 | 1480 | 1156 | 387  | 0    |
| HCM Platoon Ratio                                                    | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I)                                                   | 1.00 | 1.00 | 0.61 | 0.61 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh                                             | 4.2  | 5.7  | 0.0  | 0.0  | 36.5 | 0.0  |
| Incr Delay (d2), s/veh                                               | 0.4  | 1.1  | 0.7  | 0.1  | 13.6 | 0.0  |
| Initial Q Delay(d3),s/veh                                            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(95%),veh/ln                                             | 0.8  | 8.7  | 0.6  | 0.0  | 10.2 | 0.0  |
| Unsig. Movement Delay, s/veh                                         |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh                                                 | 4.6  | 6.8  | 0.7  | 0.1  | 50.0 | 0.0  |
| LnGrp LOS                                                            | A    | A    | A    | A    | D    | A    |
| Approach Vol, veh/h                                                  |      | 774  | 802  |      | 240  |      |
| Approach Delay, s/veh                                                |      | 6.6  | 0.7  |      | 50.0 |      |
| Approach LOS                                                         |      | A    | A    |      | D    |      |
| Timer - Assigned Phs                                                 |      | 2    |      | 4    |      | 6    |
| Phs Duration (G+Y+Rc), s                                             |      | 68.9 |      | 21.1 |      | 68.9 |
| Change Period (Y+Rc), s                                              |      | 5.0  |      | 6.0  |      | 5.0  |
| Max Green Setting (Gmax), s                                          |      | 58.0 |      | 21.0 |      | 58.0 |
| Max Q Clear Time (g_c+I1), s                                         |      | 15.2 |      | 14.7 |      | 2.0  |
| Green Ext Time (p_c), s                                              |      | 4.0  |      | 0.4  |      | 4.0  |
| <b>Intersection Summary</b>                                          |      |      |      |      |      |      |
| HCM 6th Ctrl Delay                                                   |      |      | 9.7  |      |      |      |
| HCM 6th LOS                                                          |      |      | A    |      |      |      |
| <b>Notes</b>                                                         |      |      |      |      |      |      |
| User approved volume balancing among the lanes for turning movement. |      |      |      |      |      |      |
| User approved changes to right turn type.                            |      |      |      |      |      |      |

HCM 6th TWSC  
3: Scotland Road & Taylor Place

2023 No-Build Condition  
Weekday Morning Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2                                                                                 |        |       |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL   | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |       |  |  |      |
| Traffic Vol, veh/h       | 16                                                                                | 101    | 65    | 573                                                                               | 602                                                                               | 27   |
| Future Vol, veh/h        | 16                                                                                | 101    | 65    | 573                                                                               | 602                                                                               | 27   |
| Conflicting Peds, #/hr   | 2                                                                                 | 3      | 5     | 0                                                                                 | 0                                                                                 | 5    |
| Sign Control             | Stop                                                                              | Stop   | Free  | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 87                                                                                | 87     | 87    | 87                                                                                | 87                                                                                | 87   |
| Heavy Vehicles, %        | 8                                                                                 | 0      | 2     | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 18                                                                                | 116    | 75    | 659                                                                               | 692                                                                               | 31   |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |      |
| Major/Minor              | Minor2                                                                            | Major1 |       | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 1524                                                                              | 716    | 728   | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 713                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 811                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 5.4                                                                               | 5.2    | 4.12  | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.48                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.48                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.572                                                                             | 3.3    | 2.218 | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 199                                                                               | 529    | 876   | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 475                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 427                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |       | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 170                                                                               | 525    | 872   | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 170                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 409                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 425                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |      |
| Approach                 | EB                                                                                | NB     |       | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 18.1                                                                              | 1      |       | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | C                                                                                 |        |       |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1 | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 872                                                                               | -      | 408   | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.086                                                                             | -      | 0.33  | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 9.5                                                                               | 0      | 18.1  | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | A      | C     | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0.3                                                                               | -      | 1.4   | -                                                                                 | -                                                                                 |      |

HCM 6th TWSC  
4: Vose Avenue & Taylor Place

2023 No-Build Condition  
Weekday Morning Peak Hour

| Intersection             |                                                                                   |      |                                                                                   |      |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.5                                                                               |      |                                                                                   |      |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR  | NBT                                                                               | NBR  | SBL  | SBT                                                                               |
| Lane Configurations      |  |      |  |      |      |  |
| Traffic Vol, veh/h       | 31                                                                                | 61   | 93                                                                                | 35   | 82   | 193                                                                               |
| Future Vol, veh/h        | 31                                                                                | 61   | 93                                                                                | 35   | 82   | 193                                                                               |
| Conflicting Peds, #/hr   | 36                                                                                | 36   | 0                                                                                 | 72   | 72   | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -    | -                                                                                 | -    | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Peak Hour Factor         | 94                                                                                | 94   | 94                                                                                | 94   | 94   | 94                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0    | 0                                                                                 | 3    | 0    | 0                                                                                 |
| Mvmt Flow                | 33                                                                                | 65   | 99                                                                                | 37   | 87   | 205                                                                               |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 605    | 226    | 0      | 0 | 208  |
| Stage 1              | 190    | -      | -      | - | -    |
| Stage 2              | 415    | -      | -      | - | -    |
| Critical Hdwy        | 5.4    | 5.2    | -      | - | 4.1  |
| Critical Hdwy Stg 1  | 5.4    | -      | -      | - | -    |
| Critical Hdwy Stg 2  | 5.4    | -      | -      | - | -    |
| Follow-up Hdwy       | 3.5    | 3.3    | -      | - | 2.2  |
| Pot Cap-1 Maneuver   | 549    | 871    | -      | - | 1375 |
| Stage 1              | 847    | -      | -      | - | -    |
| Stage 2              | 671    | -      | -      | - | -    |
| Platoon blocked, %   |        |        | -      | - | -    |
| Mov Cap-1 Maneuver   | 456    | 783    | -      | - | 1281 |
| Mov Cap-2 Maneuver   | 456    | -      | -      | - | -    |
| Stage 1              | 789    | -      | -      | - | -    |
| Stage 2              | 598    | -      | -      | - | -    |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 11.8 | 0  | 2.4 |
| HCM LOS              | B    |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 631   | 1281  |
| HCM Lane V/C Ratio    | -   | -        | 0.155 | 0.068 |
| HCM Control Delay (s) | -   | -        | 11.8  | 8     |
| HCM Lane LOS          | -   | -        | B     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.5   | 0.2   |

# HCM 6th Signalized Intersection Summary

## 1: Valley Street/Scotland Road & South Orange Avenue

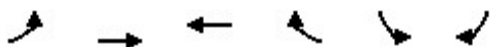
2023 No-Build Condition  
Weekday Evening Peak Hour

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 73                                                                                | 595                                                                               | 41                                                                                | 94                                                                                | 443                                                                               | 197                                                                               | 51                                                                                  | 429                                                                                 | 135                                                                                 | 266                                                                                 | 404                                                                                 | 74                                                                                  |
| Future Volume (veh/h)        | 73                                                                                | 595                                                                               | 41                                                                                | 94                                                                                | 443                                                                               | 197                                                                               | 51                                                                                  | 429                                                                                 | 135                                                                                 | 266                                                                                 | 404                                                                                 | 74                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.96                                                                              |                                                                                   | 0.92                                                                              | 0.97                                                                              |                                                                                   | 0.88                                                                              | 0.90                                                                                |                                                                                     | 0.88                                                                                | 0.97                                                                                |                                                                                     | 0.86                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2067                                                                              | 2084                                                                              | 2084                                                                              | 2002                                                                              | 2100                                                                              | 2100                                                                              | 2100                                                                                | 2084                                                                                | 2018                                                                                | 2100                                                                                | 2084                                                                                | 2084                                                                                |
| Adj Flow Rate, veh/h         | 77                                                                                | 626                                                                               | 43                                                                                | 99                                                                                | 466                                                                               | 207                                                                               | 54                                                                                  | 452                                                                                 | 142                                                                                 | 280                                                                                 | 425                                                                                 | 78                                                                                  |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 1                                                                                 | 1                                                                                 | 6                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 5                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   |
| Cap, veh/h                   | 396                                                                               | 1475                                                                              | 101                                                                               | 489                                                                               | 839                                                                               | 623                                                                               | 312                                                                                 | 534                                                                                 | 385                                                                                 | 281                                                                                 | 1195                                                                                | 216                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.79                                                                              | 0.79                                                                              | 0.07                                                                              | 0.40                                                                              | 0.40                                                                              | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.08                                                                                | 0.37                                                                                | 0.37                                                                                |
| Sat Flow, veh/h              | 1969                                                                              | 3736                                                                              | 256                                                                               | 1906                                                                              | 2100                                                                              | 1559                                                                              | 903                                                                                 | 2084                                                                                | 1500                                                                                | 2000                                                                                | 3253                                                                                | 588                                                                                 |
| Grp Volume(v), veh/h         | 77                                                                                | 331                                                                               | 338                                                                               | 99                                                                                | 466                                                                               | 207                                                                               | 54                                                                                  | 452                                                                                 | 142                                                                                 | 280                                                                                 | 256                                                                                 | 247                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1969                                                                              | 1979                                                                              | 2013                                                                              | 1906                                                                              | 2100                                                                              | 1559                                                                              | 903                                                                                 | 2084                                                                                | 1500                                                                                | 2000                                                                                | 1979                                                                                | 1862                                                                                |
| Q Serve(g_s), s              | 1.9                                                                               | 4.8                                                                               | 4.8                                                                               | 2.6                                                                               | 15.4                                                                              | 8.3                                                                               | 4.3                                                                                 | 18.5                                                                                | 7.0                                                                                 | 7.0                                                                                 | 8.5                                                                                 | 8.7                                                                                 |
| Cycle Q Clear(g_c), s        | 1.9                                                                               | 4.8                                                                               | 4.8                                                                               | 2.6                                                                               | 15.4                                                                              | 8.3                                                                               | 4.3                                                                                 | 18.5                                                                                | 7.0                                                                                 | 7.0                                                                                 | 8.5                                                                                 | 8.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.13                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.32                                                                                |
| Lane Grp Cap(c), veh/h       | 396                                                                               | 781                                                                               | 794                                                                               | 489                                                                               | 839                                                                               | 623                                                                               | 312                                                                                 | 534                                                                                 | 385                                                                                 | 281                                                                                 | 727                                                                                 | 684                                                                                 |
| V/C Ratio(X)                 | 0.19                                                                              | 0.42                                                                              | 0.43                                                                              | 0.20                                                                              | 0.56                                                                              | 0.33                                                                              | 0.17                                                                                | 0.85                                                                                | 0.37                                                                                | 1.00                                                                                | 0.35                                                                                | 0.36                                                                                |
| Avail Cap(c_a), veh/h        | 419                                                                               | 781                                                                               | 794                                                                               | 501                                                                               | 839                                                                               | 623                                                                               | 371                                                                                 | 671                                                                                 | 483                                                                                 | 281                                                                                 | 858                                                                                 | 807                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 13.9                                                                              | 6.2                                                                               | 6.2                                                                               | 13.7                                                                              | 20.9                                                                              | 18.7                                                                              | 26.5                                                                                | 31.8                                                                                | 27.5                                                                                | 28.8                                                                                | 20.7                                                                                | 20.8                                                                                |
| Incr Delay (d2), s/veh       | 0.2                                                                               | 1.3                                                                               | 1.3                                                                               | 0.2                                                                               | 2.6                                                                               | 1.4                                                                               | 0.3                                                                                 | 8.1                                                                                 | 0.6                                                                                 | 53.0                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.4                                                                               | 3.2                                                                               | 3.3                                                                               | 2.0                                                                               | 12.5                                                                              | 5.8                                                                               | 1.7                                                                                 | 15.7                                                                                | 4.6                                                                                 | 10.7                                                                                | 7.1                                                                                 | 6.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 14.1                                                                              | 7.6                                                                               | 7.6                                                                               | 13.9                                                                              | 23.5                                                                              | 20.1                                                                              | 26.7                                                                                | 39.9                                                                                | 28.1                                                                                | 81.7                                                                                | 21.0                                                                                | 21.1                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | D                                                                                   | C                                                                                   | F                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 746                                                                               |                                                                                   |                                                                                   | 772                                                                               |                                                                                   |                                                                                   | 648                                                                                 |                                                                                     |                                                                                     | 783                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 8.2                                                                               |                                                                                   |                                                                                   | 21.4                                                                              |                                                                                   |                                                                                   | 36.2                                                                                |                                                                                     |                                                                                     | 42.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.0                                                                               | 42.0                                                                              | 10.0                                                                              | 29.1                                                                              | 9.4                                                                               | 41.5                                                                              | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.9                                                                               | 17.4                                                                              | 9.0                                                                               | 20.5                                                                              | 4.6                                                                               | 6.8                                                                               | 10.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.0                                                                               | 0.0                                                                               | 2.5                                                                               | 0.0                                                                               | 4.3                                                                               | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 27.0                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## HCM 6th Signalized Intersection Summary

### 2: South Orange Avenue & Vose Avenue

2023 No-Build Condition  
Weekday Evening Peak Hour



| Movement                     | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------------|------|------|------|------|------|------|
| Lane Configurations          |      |      |      |      |      |      |
| Traffic Volume (veh/h)       | 158  | 620  | 470  | 98   | 89   | 138  |
| Future Volume (veh/h)        | 158  | 620  | 470  | 98   | 89   | 138  |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 0.99 |      |      | 0.97 | 1.00 | 0.85 |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |      | No   | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 |
| Adj Flow Rate, veh/h         | 193  | 756  | 573  | 72   | 109  | 117  |
| Peak Hour Factor             | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| Percent Heavy Veh, %         | 0    | 0    | 0    | 0    | 0    | 0    |
| Cap, veh/h                   | 710  | 1517 | 1517 | 1249 | 128  | 137  |
| Arrive On Green              | 0.72 | 0.72 | 1.00 | 1.00 | 0.16 | 0.16 |
| Sat Flow, veh/h              | 871  | 2100 | 2100 | 1729 | 825  | 885  |
| Grp Volume(v), veh/h         | 193  | 756  | 573  | 72   | 227  | 0    |
| Grp Sat Flow(s),veh/h/ln     | 871  | 2100 | 2100 | 1729 | 1718 | 0    |
| Q Serve(g_s), s              | 7.1  | 14.0 | 0.0  | 0.0  | 11.6 | 0.0  |
| Cycle Q Clear(g_c), s        | 7.1  | 14.0 | 0.0  | 0.0  | 11.6 | 0.0  |
| Prop In Lane                 | 1.00 |      |      | 1.00 | 0.48 | 0.52 |
| Lane Grp Cap(c), veh/h       | 710  | 1517 | 1517 | 1249 | 267  | 0    |
| V/C Ratio(X)                 | 0.27 | 0.50 | 0.38 | 0.06 | 0.85 | 0.00 |
| Avail Cap(c_a), veh/h        | 710  | 1517 | 1517 | 1249 | 401  | 0    |
| HCM Platoon Ratio            | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00 | 1.00 | 0.83 | 0.83 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh     | 4.5  | 5.4  | 0.0  | 0.0  | 37.0 | 0.0  |
| Incr Delay (d2), s/veh       | 0.9  | 1.2  | 0.6  | 0.1  | 10.6 | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(95%),veh/ln     | 2.1  | 9.1  | 0.5  | 0.0  | 9.5  | 0.0  |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 5.4  | 6.6  | 0.6  | 0.1  | 47.6 | 0.0  |
| LnGrp LOS                    | A    | A    | A    | A    | D    | A    |
| Approach Vol, veh/h          |      | 949  | 645  |      | 227  |      |
| Approach Delay, s/veh        |      | 6.3  | 0.5  |      | 47.6 |      |
| Approach LOS                 |      | A    | A    |      | D    |      |
| Timer - Assigned Phs         |      | 2    |      | 4    |      | 6    |
| Phs Duration (G+Y+Rc), s     |      | 70.0 |      | 20.0 |      | 70.0 |
| Change Period (Y+Rc), s      |      | 5.0  |      | 6.0  |      | 5.0  |
| Max Green Setting (Gmax), s  |      | 58.0 |      | 21.0 |      | 58.0 |
| Max Q Clear Time (g_c+I1), s |      | 16.0 |      | 13.6 |      | 2.0  |
| Green Ext Time (p_c), s      |      | 4.9  |      | 0.4  |      | 2.8  |

#### Intersection Summary

|                    |     |
|--------------------|-----|
| HCM 6th Ctrl Delay | 9.4 |
| HCM 6th LOS        | A   |

#### Notes

User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

HCM 6th TWSC  
3: Scotland Road & Taylor Place

2023 No-Build Condition  
Weekday Evening Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.2                                                                               |        |       |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL   | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |       |  |  |      |
| Traffic Vol, veh/h       | 22                                                                                | 120    | 65    | 597                                                                               | 620                                                                               | 27   |
| Future Vol, veh/h        | 22                                                                                | 120    | 65    | 597                                                                               | 620                                                                               | 27   |
| Conflicting Peds, #/hr   | 13                                                                                | 13     | 26    | 0                                                                                 | 0                                                                                 | 26   |
| Sign Control             | Stop                                                                              | Stop   | Free  | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 97                                                                                | 97     | 97    | 97                                                                                | 97                                                                                | 97   |
| Heavy Vehicles, %        | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 23                                                                                | 124    | 67    | 615                                                                               | 639                                                                               | 28   |
| Major/Minor              | Minor2                                                                            | Major1 |       | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 1441                                                                              | 692    | 693   | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 679                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 762                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 5.4                                                                               | 5.2    | 4.1   | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.4                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.4                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.5                                                                               | 3.3    | 2.2   | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 220                                                                               | 542    | 912   | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 507                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 464                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |       | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 185                                                                               | 522    | 889   | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 185                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 438                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 452                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Approach                 | EB                                                                                | NB     |       | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 18.7                                                                              | 0.9    |       | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | C                                                                                 |        |       |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1 | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 889                                                                               | -      | 407   | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.075                                                                             | -      | 0.36  | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 9.4                                                                               | 0      | 18.7  | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | A      | C     | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0.2                                                                               | -      | 1.6   | -                                                                                 | -                                                                                 |      |

HCM 6th TWSC  
4: Vose Avenue & Taylor Place

2023 No-Build Condition  
Weekday Evening Peak Hour

| Intersection             |        |          |        |       |      |      |
|--------------------------|--------|----------|--------|-------|------|------|
| Int Delay, s/veh         | 3.2    |          |        |       |      |      |
| Movement                 | WBL    | WBR      | NBT    | NBR   | SBL  | SBT  |
| Lane Configurations      | W      | W        | T      | T     | T    | T    |
| Traffic Vol, veh/h       | 44     | 48       | 210    | 46    | 96   | 183  |
| Future Vol, veh/h        | 44     | 48       | 210    | 46    | 96   | 183  |
| Conflicting Peds, #/hr   | 19     | 19       | 0      | 38    | 38   | 0    |
| Sign Control             | Stop   | Stop     | Free   | Free  | Free | Free |
| RT Channelized           | -      | None     | -      | None  | -    | None |
| Storage Length           | 0      | -        | -      | -     | -    | -    |
| Veh in Median Storage, # | 0      | -        | 0      | -     | -    | 0    |
| Grade, %                 | 0      | -        | 0      | -     | -    | 0    |
| Peak Hour Factor         | 90     | 90       | 90     | 90    | 90   | 90   |
| Heavy Vehicles, %        | 0      | 0        | 0      | 0     | 0    | 1    |
| Mvmt Flow                | 49     | 53       | 233    | 51    | 107  | 203  |
| Major/Minor              | Minor1 | Major1   | Major2 |       |      |      |
| Conflicting Flow All     | 733    | 316      | 0      | 0     | 322  | 0    |
| Stage 1                  | 297    | -        | -      | -     | -    | -    |
| Stage 2                  | 436    | -        | -      | -     | -    | -    |
| Critical Hdwy            | 5.4    | 5.2      | -      | -     | 4.1  | -    |
| Critical Hdwy Stg 1      | 5.4    | -        | -      | -     | -    | -    |
| Critical Hdwy Stg 2      | 5.4    | -        | -      | -     | -    | -    |
| Follow-up Hdwy           | 3.5    | 3.3      | -      | -     | 2.2  | -    |
| Pot Cap-1 Maneuver       | 479    | 796      | -      | -     | 1249 | -    |
| Stage 1                  | 758    | -        | -      | -     | -    | -    |
| Stage 2                  | 656    | -        | -      | -     | -    | -    |
| Platoon blocked, %       |        |          | -      | -     |      | -    |
| Mov Cap-1 Maneuver       | 408    | 753      | -      | -     | 1204 | -    |
| Mov Cap-2 Maneuver       | 408    | -        | -      | -     | -    | -    |
| Stage 1                  | 731    | -        | -      | -     | -    | -    |
| Stage 2                  | 580    | -        | -      | -     | -    | -    |
| Approach                 | WB     | NB       | SB     |       |      |      |
| HCM Control Delay, s     | 13.3   | 0        | 2.8    |       |      |      |
| HCM LOS                  | B      |          |        |       |      |      |
| Minor Lane/Major Mvmt    | NBT    | NBRWBLn1 | SBL    | SBT   |      |      |
| Capacity (veh/h)         | -      | -        | 536    | 1204  | -    |      |
| HCM Lane V/C Ratio       | -      | -        | 0.191  | 0.089 | -    |      |
| HCM Control Delay (s)    | -      | -        | 13.3   | 8.3   | 0    |      |
| HCM Lane LOS             | -      | -        | B      | A     | A    |      |
| HCM 95th %tile Q(veh)    | -      | -        | 0.7    | 0.3   | -    |      |

# HCM 6th Signalized Intersection Summary

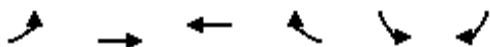
## 1: Valley Street/Scotland Road & South Orange Avenue

2023 No-Build Condition  
Saturday Midday Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 104                                                                               | 449                                                                               | 73                                                                                | 112                                                                               | 422                                                                               | 183                                                                               | 69                                                                                 | 346                                                                                 | 128                                                                                 | 236                                                                                 | 314                                                                                 | 83                                                                                  |
| Future Volume (veh/h)        | 104                                                                               | 449                                                                               | 73                                                                                | 112                                                                               | 422                                                                               | 183                                                                               | 69                                                                                 | 346                                                                                 | 128                                                                                 | 236                                                                                 | 314                                                                                 | 83                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.96                                                                              |                                                                                   | 0.92                                                                              | 0.97                                                                              |                                                                                   | 0.87                                                                              | 0.97                                                                               |                                                                                     | 0.97                                                                                | 0.99                                                                                |                                                                                     | 0.97                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                    | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2100                                                                              | 2100                                                                              | 2100                                                                              | 2034                                                                              | 2084                                                                              | 2100                                                                              | 2100                                                                               | 2084                                                                                | 2051                                                                                | 2067                                                                                | 2100                                                                                | 2100                                                                                |
| Adj Flow Rate, veh/h         | 108                                                                               | 468                                                                               | 76                                                                                | 117                                                                               | 440                                                                               | 191                                                                               | 72                                                                                 | 360                                                                                 | 133                                                                                 | 246                                                                                 | 327                                                                                 | 86                                                                                  |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 4                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 3                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 468                                                                               | 1476                                                                              | 238                                                                               | 593                                                                               | 907                                                                               | 677                                                                               | 308                                                                                | 446                                                                                 | 361                                                                                 | 283                                                                                 | 1013                                                                                | 262                                                                                 |
| Arrive On Green              | 0.15                                                                              | 0.87                                                                              | 0.87                                                                              | 0.07                                                                              | 0.44                                                                              | 0.44                                                                              | 0.21                                                                               | 0.21                                                                                | 0.21                                                                                | 0.08                                                                                | 0.33                                                                                | 0.33                                                                                |
| Sat Flow, veh/h              | 2000                                                                              | 3396                                                                              | 547                                                                               | 1938                                                                              | 2084                                                                              | 1555                                                                              | 1062                                                                               | 2084                                                                                | 1687                                                                                | 1969                                                                                | 3114                                                                                | 804                                                                                 |
| Grp Volume(v), veh/h         | 108                                                                               | 273                                                                               | 271                                                                               | 117                                                                               | 440                                                                               | 191                                                                               | 72                                                                                 | 360                                                                                 | 133                                                                                 | 246                                                                                 | 207                                                                                 | 206                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 2000                                                                              | 1995                                                                              | 1948                                                                              | 1938                                                                              | 2084                                                                              | 1555                                                                              | 1062                                                                               | 2084                                                                                | 1687                                                                                | 1969                                                                                | 1995                                                                                | 1924                                                                                |
| Q Serve(g_s), s              | 2.5                                                                               | 2.2                                                                               | 2.3                                                                               | 2.8                                                                               | 13.6                                                                              | 7.1                                                                               | 5.1                                                                                | 14.8                                                                                | 6.1                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.3                                                                                 |
| Cycle Q Clear(g_c), s        | 2.5                                                                               | 2.2                                                                               | 2.3                                                                               | 2.8                                                                               | 13.6                                                                              | 7.1                                                                               | 5.1                                                                                | 14.8                                                                                | 6.1                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.28                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.42                                                                                |
| Lane Grp Cap(c), veh/h       | 468                                                                               | 867                                                                               | 846                                                                               | 593                                                                               | 907                                                                               | 677                                                                               | 308                                                                                | 446                                                                                 | 361                                                                                 | 283                                                                                 | 649                                                                                 | 626                                                                                 |
| V/C Ratio(X)                 | 0.23                                                                              | 0.32                                                                              | 0.32                                                                              | 0.20                                                                              | 0.48                                                                              | 0.28                                                                              | 0.23                                                                               | 0.81                                                                                | 0.37                                                                                | 0.87                                                                                | 0.32                                                                                | 0.33                                                                                |
| Avail Cap(c_a), veh/h        | 478                                                                               | 867                                                                               | 846                                                                               | 601                                                                               | 907                                                                               | 677                                                                               | 422                                                                                | 671                                                                                 | 544                                                                                 | 283                                                                                 | 865                                                                                 | 834                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 11.7                                                                              | 3.5                                                                               | 3.5                                                                               | 11.6                                                                              | 18.2                                                                              | 16.3                                                                              | 29.8                                                                               | 33.6                                                                                | 30.2                                                                                | 29.1                                                                                | 22.9                                                                                | 22.9                                                                                |
| Incr Delay (d2), s/veh       | 0.2                                                                               | 0.8                                                                               | 0.9                                                                               | 0.2                                                                               | 1.9                                                                               | 1.0                                                                               | 0.4                                                                                | 4.4                                                                                 | 0.6                                                                                 | 24.1                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.8                                                                               | 1.7                                                                               | 1.7                                                                               | 2.1                                                                               | 11.0                                                                              | 4.8                                                                               | 2.4                                                                                | 12.6                                                                                | 4.5                                                                                 | 6.4                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 11.9                                                                              | 4.3                                                                               | 4.4                                                                               | 11.8                                                                              | 20.0                                                                              | 17.4                                                                              | 30.2                                                                               | 38.0                                                                                | 30.8                                                                                | 53.2                                                                                | 23.1                                                                                | 23.2                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                  | D                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 652                                                                               |                                                                                   |                                                                                   | 748                                                                               |                                                                                   |                                                                                    | 565                                                                                 |                                                                                     |                                                                                     | 659                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 18.1                                                                              |                                                                                   |                                                                                    | 35.3                                                                                |                                                                                     |                                                                                     | 34.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.5                                                                               | 45.2                                                                              | 10.0                                                                              | 25.3                                                                              | 9.6                                                                               | 45.1                                                                              |                                                                                    | 35.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               |                                                                                    | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              |                                                                                    | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.5                                                                               | 15.6                                                                              | 9.0                                                                               | 16.8                                                                              | 4.8                                                                               | 4.3                                                                               |                                                                                    | 9.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 3.0                                                                               | 0.0                                                                               | 2.5                                                                               | 0.1                                                                               | 3.5                                                                               |                                                                                    | 2.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 22.8                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## HCM 6th Signalized Intersection Summary 2: South Orange Avenue & Vose Avenue

2023 No-Build Condition  
Saturday Midday Peak Hour



| Movement                     | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|------------------------------|------|------|------|------|------|------|
| Lane Configurations          |      |      |      |      |      |      |
| Traffic Volume (veh/h)       | 90   | 517  | 441  | 133  | 109  | 102  |
| Future Volume (veh/h)        | 90   | 517  | 441  | 133  | 109  | 102  |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 0.96 |      |      | 0.91 | 1.00 | 0.79 |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |      | No   | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 2100 | 2100 | 2084 | 2100 | 2100 | 2100 |
| Adj Flow Rate, veh/h         | 93   | 533  | 455  | 131  | 112  | 97   |
| Peak Hour Factor             | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, %         | 0    | 0    | 1    | 0    | 0    | 0    |
| Cap, veh/h                   | 731  | 1531 | 1519 | 1176 | 132  | 115  |
| Arrive On Green              | 0.73 | 0.73 | 1.00 | 1.00 | 0.15 | 0.15 |
| Sat Flow, veh/h              | 893  | 2100 | 2084 | 1614 | 890  | 770  |
| Grp Volume(v), veh/h         | 93   | 533  | 455  | 131  | 210  | 0    |
| Grp Sat Flow(s),veh/h/ln     | 893  | 2100 | 2084 | 1614 | 1668 | 0    |
| Q Serve(g_s), s              | 2.8  | 8.3  | 0.0  | 0.0  | 11.0 | 0.0  |
| Cycle Q Clear(g_c), s        | 2.8  | 8.3  | 0.0  | 0.0  | 11.0 | 0.0  |
| Prop In Lane                 | 1.00 |      |      | 1.00 | 0.53 | 0.46 |
| Lane Grp Cap(c), veh/h       | 731  | 1531 | 1519 | 1176 | 248  | 0    |
| V/C Ratio(X)                 | 0.13 | 0.35 | 0.30 | 0.11 | 0.85 | 0.00 |
| Avail Cap(c_a), veh/h        | 731  | 1531 | 1519 | 1176 | 389  | 0    |
| HCM Platoon Ratio            | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00 | 1.00 | 0.88 | 0.88 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh     | 3.7  | 4.4  | 0.0  | 0.0  | 37.3 | 0.0  |
| Incr Delay (d2), s/veh       | 0.4  | 0.6  | 0.4  | 0.2  | 9.7  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(95%),veh/ln     | 0.9  | 5.5  | 0.3  | 0.1  | 8.9  | 0.0  |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 4.1  | 5.1  | 0.4  | 0.2  | 47.0 | 0.0  |
| LnGrp LOS                    | A    | A    | A    | A    | D    | A    |
| Approach Vol, veh/h          |      | 626  | 586  |      | 210  |      |
| Approach Delay, s/veh        |      | 4.9  | 0.4  |      | 47.0 |      |
| Approach LOS                 |      | A    | A    |      | D    |      |
| Timer - Assigned Phs         |      | 2    |      | 4    |      | 6    |
| Phs Duration (G+Y+Rc), s     |      | 70.6 |      | 19.4 |      | 70.6 |
| Change Period (Y+Rc), s      |      | 5.0  |      | 6.0  |      | 5.0  |
| Max Green Setting (Gmax), s  |      | 58.0 |      | 21.0 |      | 58.0 |
| Max Q Clear Time (g_c+I1), s |      | 10.3 |      | 13.0 |      | 2.0  |
| Green Ext Time (p_c), s      |      | 2.8  |      | 0.4  |      | 2.2  |

### Intersection Summary

|                    |     |
|--------------------|-----|
| HCM 6th Ctrl Delay | 9.3 |
| HCM 6th LOS        | A   |

### Notes

User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

HCM 6th TWSC  
3: Scotland Road & Taylor Place

2023 No-Build Condition  
Saturday Midday Peak Hour

Intersection

Int Delay, s/veh 2.7

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 25                                                                                | 125  | 69   | 524                                                                               | 492                                                                               | 28   |
| Future Vol, veh/h        | 25                                                                                | 125  | 69   | 524                                                                               | 492                                                                               | 28   |
| Conflicting Peds, #/hr   | 10                                                                                | 11   | 21   | 0                                                                                 | 0                                                                                 | 21   |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | -    | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 88                                                                                | 88   | 88   | 88                                                                                | 88                                                                                | 88   |
| Heavy Vehicles, %        | 0                                                                                 | 1    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 28                                                                                | 142  | 78   | 595                                                                               | 559                                                                               | 32   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 1357   | 607    | 612    |
| Stage 1              | 596    | -      | -      |
| Stage 2              | 761    | -      | -      |
| Critical Hdwy        | 5.4    | 5.2    | 4.1    |
| Critical Hdwy Stg 1  | 5.4    | -      | -      |
| Critical Hdwy Stg 2  | 5.4    | -      | -      |
| Follow-up Hdwy       | 3.5    | 3.309  | 2.2    |
| Pot Cap-1 Maneuver   | 242    | 591    | 977    |
| Stage 1              | 554    | -      | -      |
| Stage 2              | 465    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 204    | 573    | 957    |
| Mov Cap-2 Maneuver   | 204    | -      | -      |
| Stage 1              | 476    | -      | -      |
| Stage 2              | 456    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 18.3 | 1.1 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 957   | -   | 440   | -   | -   |
| HCM Lane V/C Ratio    | 0.082 | -   | 0.387 | -   | -   |
| HCM Control Delay (s) | 9.1   | 0   | 18.3  | -   | -   |
| HCM Lane LOS          | A     | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 1.8   | -   | -   |

HCM 6th TWSC  
4: Vose Avenue & Taylor Place

2023 No-Build Condition  
Saturday Midday Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.6                                                                               |          |                                                                                   |       |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |       |       |  |
| Traffic Vol, veh/h       | 48                                                                                | 49       | 159                                                                               | 64    | 86    | 163                                                                               |
| Future Vol, veh/h        | 48                                                                                | 49       | 159                                                                               | 64    | 86    | 163                                                                               |
| Conflicting Peds, #/hr   | 32                                                                                | 32       | 0                                                                                 | 64    | 64    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Peak Hour Factor         | 89                                                                                | 89       | 89                                                                                | 89    | 89    | 89                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 1                                                                                 | 0     | 1     | 1                                                                                 |
| Mvmt Flow                | 54                                                                                | 55       | 179                                                                               | 72    | 97    | 183                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |       |                                                                                   |
| Conflicting Flow All     | 688                                                                               | 311      | 0                                                                                 | 0     | 315   | 0                                                                                 |
| Stage 1                  | 279                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 409                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy            | 5.4                                                                               | 5.2      | -                                                                                 | -     | 4.11  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -     | 2.209 | -                                                                                 |
| Pot Cap-1 Maneuver       | 503                                                                               | 800      | -                                                                                 | -     | 1251  | -                                                                                 |
| Stage 1                  | 773                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 675                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 416                                                                               | 728      | -                                                                                 | -     | 1175  | -                                                                                 |
| Mov Cap-2 Maneuver       | 416                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 1                  | 726                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 594                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB    |       |                                                                                   |
| HCM Control Delay, s     | 13.5                                                                              | 0        |                                                                                   | 2.9   |       |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |       |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 531                                                                               | 1175  | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.205                                                                             | 0.082 | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 13.5                                                                              | 8.3   | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.8                                                                               | 0.3   | -     |                                                                                   |

# HCM 6th Signalized Intersection Summary

## 1: Valley Street/Scotland Road & South Orange Avenue

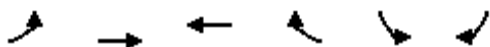
2023 Build Condition  
Weekday Morning Peak Hour

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 82                                                                                | 650                                                                               | 44                                                                                | 99                                                                                | 617                                                                               | 165                                                                               | 68                                                                                  | 398                                                                                 | 124                                                                                 | 246                                                                                 | 392                                                                                 | 67                                                                                  |
| Future Volume (veh/h)        | 82                                                                                | 650                                                                               | 44                                                                                | 99                                                                                | 617                                                                               | 165                                                                               | 68                                                                                  | 398                                                                                 | 124                                                                                 | 246                                                                                 | 392                                                                                 | 67                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.97                                                                              |                                                                                   | 0.92                                                                              | 0.97                                                                              |                                                                                   | 0.87                                                                              | 0.90                                                                                |                                                                                     | 0.88                                                                                | 0.97                                                                                |                                                                                     | 0.86                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2034                                                                              | 2067                                                                              | 2067                                                                              | 2067                                                                              | 2084                                                                              | 2100                                                                              | 2002                                                                                | 2018                                                                                | 1969                                                                                | 2084                                                                                | 2051                                                                                | 2051                                                                                |
| Adj Flow Rate, veh/h         | 85                                                                                | 677                                                                               | 46                                                                                | 103                                                                               | 643                                                                               | 172                                                                               | 71                                                                                  | 415                                                                                 | 129                                                                                 | 256                                                                                 | 408                                                                                 | 70                                                                                  |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 4                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 0                                                                                 | 6                                                                                   | 5                                                                                   | 8                                                                                   | 1                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 314                                                                               | 1500                                                                              | 102                                                                               | 496                                                                               | 850                                                                               | 630                                                                               | 297                                                                                 | 496                                                                                 | 362                                                                                 | 282                                                                                 | 1160                                                                                | 196                                                                                 |
| Arrive On Green              | 0.14                                                                              | 0.81                                                                              | 0.81                                                                              | 0.07                                                                              | 0.41                                                                              | 0.41                                                                              | 0.25                                                                                | 0.25                                                                                | 0.25                                                                                | 0.08                                                                                | 0.36                                                                                | 0.36                                                                                |
| Sat Flow, veh/h              | 1938                                                                              | 3708                                                                              | 252                                                                               | 1969                                                                              | 2084                                                                              | 1544                                                                              | 881                                                                                 | 2018                                                                                | 1471                                                                                | 1984                                                                                | 3249                                                                                | 549                                                                                 |
| Grp Volume(v), veh/h         | 85                                                                                | 358                                                                               | 365                                                                               | 103                                                                               | 643                                                                               | 172                                                                               | 71                                                                                  | 415                                                                                 | 129                                                                                 | 256                                                                                 | 242                                                                                 | 236                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1938                                                                              | 1964                                                                              | 1996                                                                              | 1969                                                                              | 2084                                                                              | 1544                                                                              | 881                                                                                 | 2018                                                                                | 1471                                                                                | 1984                                                                                | 1948                                                                                | 1850                                                                                |
| Q Serve(g_s), s              | 2.1                                                                               | 4.9                                                                               | 5.0                                                                               | 2.6                                                                               | 23.8                                                                              | 6.7                                                                               | 5.9                                                                                 | 17.6                                                                                | 6.5                                                                                 | 7.0                                                                                 | 8.2                                                                                 | 8.5                                                                                 |
| Cycle Q Clear(g_c), s        | 2.1                                                                               | 4.9                                                                               | 5.0                                                                               | 2.6                                                                               | 23.8                                                                              | 6.7                                                                               | 5.9                                                                                 | 17.6                                                                                | 6.5                                                                                 | 7.0                                                                                 | 8.2                                                                                 | 8.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.13                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.30                                                                                |
| Lane Grp Cap(c), veh/h       | 314                                                                               | 794                                                                               | 807                                                                               | 496                                                                               | 850                                                                               | 630                                                                               | 297                                                                                 | 496                                                                                 | 362                                                                                 | 282                                                                                 | 696                                                                                 | 661                                                                                 |
| V/C Ratio(X)                 | 0.27                                                                              | 0.45                                                                              | 0.45                                                                              | 0.21                                                                              | 0.76                                                                              | 0.27                                                                              | 0.24                                                                                | 0.84                                                                                | 0.36                                                                                | 0.91                                                                                | 0.35                                                                                | 0.36                                                                                |
| Avail Cap(c_a), veh/h        | 332                                                                               | 794                                                                               | 807                                                                               | 507                                                                               | 850                                                                               | 630                                                                               | 364                                                                                 | 650                                                                                 | 474                                                                                 | 282                                                                                 | 844                                                                                 | 802                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.82                                                                              | 0.82                                                                              | 0.82                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 15.3                                                                              | 5.6                                                                               | 5.6                                                                               | 13.2                                                                              | 22.8                                                                              | 17.8                                                                              | 27.8                                                                                | 32.2                                                                                | 28.1                                                                                | 27.9                                                                                | 21.2                                                                                | 21.3                                                                                |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 1.5                                                                               | 1.5                                                                               | 0.2                                                                               | 6.2                                                                               | 1.1                                                                               | 0.4                                                                                 | 7.3                                                                                 | 0.6                                                                                 | 31.2                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.6                                                                               | 3.2                                                                               | 3.3                                                                               | 2.0                                                                               | 18.4                                                                              | 4.6                                                                               | 2.3                                                                                 | 14.5                                                                                | 4.2                                                                                 | 7.7                                                                                 | 6.8                                                                                 | 6.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 15.7                                                                              | 7.1                                                                               | 7.1                                                                               | 13.4                                                                              | 29.1                                                                              | 18.8                                                                              | 28.2                                                                                | 39.5                                                                                | 28.6                                                                                | 59.1                                                                                | 21.5                                                                                | 21.7                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                   | D                                                                                   | C                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 808                                                                               |                                                                                   |                                                                                   | 918                                                                               |                                                                                   |                                                                                   | 615                                                                                 |                                                                                     |                                                                                     | 734                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 8.0                                                                               |                                                                                   |                                                                                   | 25.4                                                                              |                                                                                   |                                                                                   | 35.9                                                                                |                                                                                     |                                                                                     | 34.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.2                                                                               | 42.7                                                                              | 10.0                                                                              | 28.1                                                                              | 9.5                                                                               | 42.4                                                                              | 38.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.1                                                                               | 25.8                                                                              | 9.0                                                                               | 19.6                                                                              | 4.6                                                                               | 7.0                                                                               | 10.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.5                                                                               | 0.0                                                                               | 2.6                                                                               | 0.0                                                                               | 4.7                                                                               | 3.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 25.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## HCM 6th Signalized Intersection Summary

### 2: South Orange Avenue & Vose Avenue

2023 Build Condition  
Weekday Morning Peak Hour



| Movement                                                             | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|----------------------------------------------------------------------|------|------|------|------|------|------|
| Lane Configurations                                                  |      |      |      |      |      |      |
| Traffic Volume (veh/h)                                               | 77   | 650  | 691  | 61   | 126  | 115  |
| Future Volume (veh/h)                                                | 77   | 650  | 691  | 61   | 126  | 115  |
| Initial Q (Qb), veh                                                  | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)                                                  | 0.97 |      |      | 0.92 | 1.00 | 0.77 |
| Parking Bus, Adj                                                     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach                                                |      | No   | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln                                               | 2100 | 2084 | 2084 | 2067 | 2100 | 2100 |
| Adj Flow Rate, veh/h                                                 | 83   | 699  | 743  | 63   | 135  | 122  |
| Peak Hour Factor                                                     | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, %                                                 | 0    | 1    | 1    | 2    | 0    | 0    |
| Cap, veh/h                                                           | 596  | 1455 | 1455 | 1127 | 154  | 140  |
| Arrive On Green                                                      | 0.70 | 0.70 | 1.00 | 1.00 | 0.18 | 0.18 |
| Sat Flow, veh/h                                                      | 739  | 2084 | 2084 | 1614 | 861  | 778  |
| Grp Volume(v), veh/h                                                 | 83   | 699  | 743  | 63   | 258  | 0    |
| Grp Sat Flow(s),veh/h/ln                                             | 739  | 2084 | 2084 | 1614 | 1645 | 0    |
| Q Serve(g_s), s                                                      | 3.4  | 13.7 | 0.0  | 0.0  | 13.7 | 0.0  |
| Cycle Q Clear(g_c), s                                                | 3.4  | 13.7 | 0.0  | 0.0  | 13.7 | 0.0  |
| Prop In Lane                                                         | 1.00 |      |      | 1.00 | 0.52 | 0.47 |
| Lane Grp Cap(c), veh/h                                               | 596  | 1455 | 1455 | 1127 | 295  | 0    |
| V/C Ratio(X)                                                         | 0.14 | 0.48 | 0.51 | 0.06 | 0.87 | 0.00 |
| Avail Cap(c_a), veh/h                                                | 596  | 1455 | 1455 | 1127 | 384  | 0    |
| HCM Platoon Ratio                                                    | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I)                                                   | 1.00 | 1.00 | 0.60 | 0.60 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh                                             | 4.6  | 6.2  | 0.0  | 0.0  | 35.9 | 0.0  |
| Incr Delay (d2), s/veh                                               | 0.5  | 1.1  | 0.8  | 0.1  | 16.0 | 0.0  |
| Initial Q Delay(d3),s/veh                                            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(95%),veh/ln                                             | 0.9  | 9.1  | 0.6  | 0.0  | 11.0 | 0.0  |
| Unsig. Movement Delay, s/veh                                         |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh                                                 | 5.1  | 7.3  | 0.8  | 0.1  | 52.0 | 0.0  |
| LnGrp LOS                                                            | A    | A    | A    | A    | D    | A    |
| Approach Vol, veh/h                                                  |      | 782  | 806  |      | 258  |      |
| Approach Delay, s/veh                                                |      | 7.1  | 0.7  |      | 52.0 |      |
| Approach LOS                                                         |      | A    | A    |      | D    |      |
| Timer - Assigned Phs                                                 |      | 2    |      | 4    |      | 6    |
| Phs Duration (G+Y+Rc), s                                             |      | 67.9 |      | 22.1 |      | 67.9 |
| Change Period (Y+Rc), s                                              |      | 5.0  |      | 6.0  |      | 5.0  |
| Max Green Setting (Gmax), s                                          |      | 58.0 |      | 21.0 |      | 58.0 |
| Max Q Clear Time (g_c+I1), s                                         |      | 15.7 |      | 15.7 |      | 2.0  |
| Green Ext Time (p_c), s                                              |      | 4.0  |      | 0.4  |      | 4.0  |
| <b>Intersection Summary</b>                                          |      |      |      |      |      |      |
| HCM 6th Ctrl Delay                                                   |      |      | 10.6 |      |      |      |
| HCM 6th LOS                                                          |      |      | B    |      |      |      |
| <b>Notes</b>                                                         |      |      |      |      |      |      |
| User approved volume balancing among the lanes for turning movement. |      |      |      |      |      |      |
| User approved changes to right turn type.                            |      |      |      |      |      |      |

HCM 6th TWSC  
3: Scotland Road & Taylor Place

2023 Build Condition  
Weekday Morning Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.4                                                                               |        |       |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL   | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |       |  |  |      |
| Traffic Vol, veh/h       | 22                                                                                | 103    | 72    | 573                                                                               | 602                                                                               | 31   |
| Future Vol, veh/h        | 22                                                                                | 103    | 72    | 573                                                                               | 602                                                                               | 31   |
| Conflicting Peds, #/hr   | 12                                                                                | 13     | 15    | 0                                                                                 | 0                                                                                 | 15   |
| Sign Control             | Stop                                                                              | Stop   | Free  | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 87                                                                                | 87     | 87    | 87                                                                                | 87                                                                                | 87   |
| Heavy Vehicles, %        | 8                                                                                 | 0      | 2     | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 25                                                                                | 118    | 83    | 659                                                                               | 692                                                                               | 36   |
| Major/Minor              | Minor2                                                                            | Major1 |       | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 1562                                                                              | 738    | 743   | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 725                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 837                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 5.4                                                                               | 5.2    | 4.12  | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.48                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.48                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.572                                                                             | 3.3    | 2.218 | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 190                                                                               | 517    | 864   | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 469                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 415                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |       | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 156                                                                               | 503    | 852   | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 156                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 391                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 409                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Approach                 | EB                                                                                | NB     |       | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 21.4                                                                              | 1.1    |       | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | C                                                                                 |        |       |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1 | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 852                                                                               | -      | 361   | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.097                                                                             | -      | 0.398 | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 9.7                                                                               | 0      | 21.4  | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | A      | C     | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0.3                                                                               | -      | 1.9   | -                                                                                 | -                                                                                 |      |

HCM 6th TWSC  
4: Vose Avenue & Taylor Place

2023 Build Condition  
Weekday Morning Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.6                                                                               |          |                                                                                   |        |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL  | SBT                                                                               |
| Lane Configurations      |  |          |  |        |      |  |
| Traffic Vol, veh/h       | 34                                                                                | 61       | 95                                                                                | 45     | 83   | 194                                                                               |
| Future Vol, veh/h        | 34                                                                                | 61       | 95                                                                                | 45     | 83   | 194                                                                               |
| Conflicting Peds, #/hr   | 46                                                                                | 46       | 0                                                                                 | 82     | 82   | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -    | 0                                                                                 |
| Peak Hour Factor         | 94                                                                                | 94       | 94                                                                                | 94     | 94   | 94                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 0                                                                                 | 3      | 0    | 0                                                                                 |
| Mvmt Flow                | 36                                                                                | 65       | 101                                                                               | 48     | 88   | 206                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |      |                                                                                   |
| Conflicting Flow All     | 635                                                                               | 253      | 0                                                                                 | 0      | 231  | 0                                                                                 |
| Stage 1                  | 207                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 2                  | 428                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Critical Hdwy            | 5.4                                                                               | 5.2      | -                                                                                 | -      | 4.1  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -      | 2.2  | -                                                                                 |
| Pot Cap-1 Maneuver       | 532                                                                               | 848      | -                                                                                 | -      | 1349 | -                                                                                 |
| Stage 1                  | 832                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 2                  | 662                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |      | -                                                                                 |
| Mov Cap-1 Maneuver       | 431                                                                               | 748      | -                                                                                 | -      | 1244 | -                                                                                 |
| Mov Cap-2 Maneuver       | 431                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 1                  | 767                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 2                  | 583                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |      |                                                                                   |
| HCM Control Delay, s     | 12.3                                                                              | 0        |                                                                                   | 2.4    |      |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |      |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT  |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | - 592    |                                                                                   | 1244   | -    |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.171  |                                                                                   | 0.071  | -    |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | - 12.3   |                                                                                   | 8.1    | 0    |                                                                                   |
| HCM Lane LOS             | -                                                                                 | - B      |                                                                                   | A      | A    |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.6    |                                                                                   | 0.2    | -    |                                                                                   |

HCM 6th TWSC  
5: Vose Avenue & Driveway

2023 Build Condition  
Weekday Morning Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.7                                                                               |          |                                                                                   |        |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL  | SBT                                                                               |
| Lane Configurations      |  |          |  |        |      |  |
| Traffic Vol, veh/h       | 15                                                                                | 7        | 133                                                                               | 5      | 2    | 226                                                                               |
| Future Vol, veh/h        | 15                                                                                | 7        | 133                                                                               | 5      | 2    | 226                                                                               |
| Conflicting Peds, #/hr   | 46                                                                                | 46       | 0                                                                                 | 82     | 82   | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -    | 0                                                                                 |
| Peak Hour Factor         | 91                                                                                | 91       | 91                                                                                | 91     | 91   | 91                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 1                                                                                 | 0      | 0    | 0                                                                                 |
| Mvmt Flow                | 16                                                                                | 8        | 146                                                                               | 5      | 2    | 248                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |      |                                                                                   |
| Conflicting Flow All     | 529                                                                               | 277      | 0                                                                                 | 0      | 233  | 0                                                                                 |
| Stage 1                  | 231                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 2                  | 298                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Critical Hdwy            | 5.4                                                                               | 5.2      | -                                                                                 | -      | 4.1  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -      | 2.2  | -                                                                                 |
| Pot Cap-1 Maneuver       | 595                                                                               | 828      | -                                                                                 | -      | 1346 | -                                                                                 |
| Stage 1                  | 812                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 2                  | 758                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |      | -                                                                                 |
| Mov Cap-1 Maneuver       | 524                                                                               | 730      | -                                                                                 | -      | 1241 | -                                                                                 |
| Mov Cap-2 Maneuver       | 524                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 1                  | 749                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Stage 2                  | 723                                                                               | -        | -                                                                                 | -      | -    | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |      |                                                                                   |
| HCM Control Delay, s     | 11.5                                                                              | 0        |                                                                                   | 0.1    |      |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |      |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT    |      |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 576                                                                               | 1241   | -    |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.042                                                                             | 0.002  | -    |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 11.5                                                                              | 7.9    | 0    |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A      | A    |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.1                                                                               | 0      | -    |                                                                                   |

HCM 6th TWSC  
6: Driveway & Taylor Place

2023 Build Condition  
Weekday Morning Peak Hour

Intersection

Int Delay, s/veh 0.5

| Movement                 | EBT                                                                               | EBR  | WBL  | WBT                                                                               | NBL                                                                               | NBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 122                                                                               | 6    | 10   | 93                                                                                | 2                                                                                 | 3    |
| Future Vol, veh/h        | 122                                                                               | 6    | 10   | 93                                                                                | 2                                                                                 | 3    |
| Conflicting Peds, #/hr   | 0                                                                                 | 46   | 46   | 0                                                                                 | 28                                                                                | 28   |
| Sign Control             | Free                                                                              | Free | Free | Free                                                                              | Stop                                                                              | Stop |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | -                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 89                                                                                | 89   | 89   | 89                                                                                | 89                                                                                | 89   |
| Heavy Vehicles, %        | 2                                                                                 | 0    | 0    | 2                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 137                                                                               | 7    | 11   | 104                                                                               | 2                                                                                 | 3    |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 190    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.1    |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.2    |
| Pot Cap-1 Maneuver   | -      | -      | 1396   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1335   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB  |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0  | 0.7 | 9.8 |
| HCM LOS              |    |     | A   |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 752   | -   | -   | 1335  | -   |
| HCM Lane V/C Ratio    | 0.007 | -   | -   | 0.008 | -   |
| HCM Control Delay (s) | 9.8   | -   | -   | 7.7   | 0   |
| HCM Lane LOS          | A     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 0     | -   |

# HCM 6th Signalized Intersection Summary

## 1: Valley Street/Scotland Road & South Orange Avenue

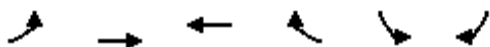
2023 Build Condition  
Weekday Evening Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)       | 73                                                                                | 592                                                                               | 43                                                                                | 94                                                                                | 442                                                                               | 209                                                                               | 54                                                                                  | 436                                                                                 | 135                                                                                 | 281                                                                                 | 412                                                                                 | 74                                                                                  |
| Future Volume (veh/h)        | 73                                                                                | 592                                                                               | 43                                                                                | 94                                                                                | 442                                                                               | 209                                                                               | 54                                                                                  | 436                                                                                 | 135                                                                                 | 281                                                                                 | 412                                                                                 | 74                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.96                                                                              |                                                                                   | 0.92                                                                              | 0.97                                                                              |                                                                                   | 0.86                                                                              | 0.89                                                                                |                                                                                     | 0.87                                                                                | 0.97                                                                                |                                                                                     | 0.84                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2067                                                                              | 2084                                                                              | 2084                                                                              | 2002                                                                              | 2100                                                                              | 2100                                                                              | 2100                                                                                | 2084                                                                                | 2018                                                                                | 2100                                                                                | 2084                                                                                | 2084                                                                                |
| Adj Flow Rate, veh/h         | 77                                                                                | 623                                                                               | 45                                                                                | 99                                                                                | 465                                                                               | 220                                                                               | 57                                                                                  | 459                                                                                 | 142                                                                                 | 296                                                                                 | 434                                                                                 | 78                                                                                  |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 1                                                                                 | 1                                                                                 | 6                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 5                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   |
| Cap, veh/h                   | 391                                                                               | 1456                                                                              | 105                                                                               | 484                                                                               | 832                                                                               | 608                                                                               | 311                                                                                 | 541                                                                                 | 385                                                                                 | 280                                                                                 | 1207                                                                                | 214                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.78                                                                              | 0.78                                                                              | 0.07                                                                              | 0.40                                                                              | 0.40                                                                              | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.08                                                                                | 0.37                                                                                | 0.37                                                                                |
| Sat Flow, veh/h              | 1969                                                                              | 3718                                                                              | 268                                                                               | 1906                                                                              | 2100                                                                              | 1535                                                                              | 889                                                                                 | 2084                                                                                | 1483                                                                                | 2000                                                                                | 3258                                                                                | 577                                                                                 |
| Grp Volume(v), veh/h         | 77                                                                                | 331                                                                               | 337                                                                               | 99                                                                                | 465                                                                               | 220                                                                               | 57                                                                                  | 459                                                                                 | 142                                                                                 | 296                                                                                 | 261                                                                                 | 251                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1969                                                                              | 1979                                                                              | 2007                                                                              | 1906                                                                              | 2100                                                                              | 1535                                                                              | 889                                                                                 | 2084                                                                                | 1483                                                                                | 2000                                                                                | 1979                                                                                | 1855                                                                                |
| Q Serve(g_s), s              | 1.9                                                                               | 4.9                                                                               | 4.9                                                                               | 2.6                                                                               | 15.5                                                                              | 9.1                                                                               | 4.6                                                                                 | 18.8                                                                                | 7.1                                                                                 | 7.0                                                                                 | 8.6                                                                                 | 8.9                                                                                 |
| Cycle Q Clear(g_c), s        | 1.9                                                                               | 4.9                                                                               | 4.9                                                                               | 2.6                                                                               | 15.5                                                                              | 9.1                                                                               | 4.6                                                                                 | 18.8                                                                                | 7.1                                                                                 | 7.0                                                                                 | 8.6                                                                                 | 8.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.13                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.31                                                                                |
| Lane Grp Cap(c), veh/h       | 391                                                                               | 775                                                                               | 786                                                                               | 484                                                                               | 832                                                                               | 608                                                                               | 311                                                                                 | 541                                                                                 | 385                                                                                 | 280                                                                                 | 734                                                                                 | 687                                                                                 |
| V/C Ratio(X)                 | 0.20                                                                              | 0.43                                                                              | 0.43                                                                              | 0.20                                                                              | 0.56                                                                              | 0.36                                                                              | 0.18                                                                                | 0.85                                                                                | 0.37                                                                                | 1.06                                                                                | 0.36                                                                                | 0.36                                                                                |
| Avail Cap(c_a), veh/h        | 413                                                                               | 775                                                                               | 786                                                                               | 497                                                                               | 832                                                                               | 608                                                                               | 366                                                                                 | 671                                                                                 | 478                                                                                 | 280                                                                                 | 858                                                                                 | 804                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.0                                                                              | 6.5                                                                               | 6.5                                                                               | 13.9                                                                              | 21.1                                                                              | 19.1                                                                              | 26.4                                                                                | 31.6                                                                                | 27.3                                                                                | 28.6                                                                                | 20.5                                                                                | 20.6                                                                                |
| Incr Delay (d2), s/veh       | 0.2                                                                               | 1.3                                                                               | 1.3                                                                               | 0.2                                                                               | 2.7                                                                               | 1.7                                                                               | 0.3                                                                                 | 8.4                                                                                 | 0.6                                                                                 | 69.3                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.5                                                                               | 3.3                                                                               | 3.4                                                                               | 2.0                                                                               | 12.5                                                                              | 6.2                                                                               | 1.8                                                                                 | 15.9                                                                                | 4.6                                                                                 | 12.6                                                                                | 7.2                                                                                 | 6.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 14.2                                                                              | 7.8                                                                               | 7.8                                                                               | 14.1                                                                              | 23.8                                                                              | 20.8                                                                              | 26.6                                                                                | 40.0                                                                                | 27.9                                                                                | 97.9                                                                                | 20.8                                                                                | 20.9                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | D                                                                                   | C                                                                                   | F                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 745                                                                               |                                                                                   |                                                                                   | 784                                                                               |                                                                                   |                                                                                   | 658                                                                                 |                                                                                     |                                                                                     | 808                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 8.5                                                                               |                                                                                   |                                                                                   | 21.7                                                                              |                                                                                   |                                                                                   | 36.3                                                                                |                                                                                     |                                                                                     | 49.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.0                                                                               | 41.7                                                                              | 10.0                                                                              | 29.4                                                                              | 9.4                                                                               | 41.2                                                                              | 39.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.9                                                                               | 17.5                                                                              | 9.0                                                                               | 20.8                                                                              | 4.6                                                                               | 6.9                                                                               | 10.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.0                                                                               | 0.0                                                                               | 2.5                                                                               | 0.0                                                                               | 4.2                                                                               | 3.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 29.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## HCM 6th Signalized Intersection Summary

### 2: South Orange Avenue & Vose Avenue

2023 Build Condition  
Weekday Evening Peak Hour



| Movement                                                             | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|----------------------------------------------------------------------|------|------|------|------|------|------|
| Lane Configurations                                                  |      |      |      |      |      |      |
| Traffic Volume (veh/h)                                               | 172  | 615  | 466  | 104  | 93   | 152  |
| Future Volume (veh/h)                                                | 172  | 615  | 466  | 104  | 93   | 152  |
| Initial Q (Qb), veh                                                  | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)                                                  | 0.99 |      |      | 0.96 | 1.00 | 0.84 |
| Parking Bus, Adj                                                     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach                                                |      | No   | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln                                               | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 |
| Adj Flow Rate, veh/h                                                 | 210  | 750  | 568  | 79   | 113  | 134  |
| Peak Hour Factor                                                     | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| Percent Heavy Veh, %                                                 | 0    | 0    | 0    | 0    | 0    | 0    |
| Cap, veh/h                                                           | 694  | 1486 | 1486 | 1214 | 131  | 155  |
| Arrive On Green                                                      | 0.71 | 0.71 | 1.00 | 1.00 | 0.17 | 0.17 |
| Sat Flow, veh/h                                                      | 867  | 2100 | 2100 | 1716 | 768  | 911  |
| Grp Volume(v), veh/h                                                 | 210  | 750  | 568  | 79   | 248  | 0    |
| Grp Sat Flow(s),veh/h/ln                                             | 867  | 2100 | 2100 | 1716 | 1686 | 0    |
| Q Serve(g_s), s                                                      | 8.4  | 14.6 | 0.0  | 0.0  | 12.9 | 0.0  |
| Cycle Q Clear(g_c), s                                                | 8.4  | 14.6 | 0.0  | 0.0  | 12.9 | 0.0  |
| Prop In Lane                                                         | 1.00 |      |      | 1.00 | 0.46 | 0.54 |
| Lane Grp Cap(c), veh/h                                               | 694  | 1486 | 1486 | 1214 | 287  | 0    |
| V/C Ratio(X)                                                         | 0.30 | 0.50 | 0.38 | 0.07 | 0.87 | 0.00 |
| Avail Cap(c_a), veh/h                                                | 694  | 1486 | 1486 | 1214 | 393  | 0    |
| HCM Platoon Ratio                                                    | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I)                                                   | 1.00 | 1.00 | 0.83 | 0.83 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh                                             | 5.1  | 6.0  | 0.0  | 0.0  | 36.3 | 0.0  |
| Incr Delay (d2), s/veh                                               | 1.1  | 1.2  | 0.6  | 0.1  | 13.8 | 0.0  |
| Initial Q Delay(d3),s/veh                                            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(95%),veh/ln                                             | 2.6  | 9.6  | 0.5  | 0.1  | 10.5 | 0.0  |
| Unsig. Movement Delay, s/veh                                         |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh                                                 | 6.2  | 7.2  | 0.6  | 0.1  | 50.1 | 0.0  |
| LnGrp LOS                                                            | A    | A    | A    | A    | D    | A    |
| Approach Vol, veh/h                                                  |      | 960  | 647  |      | 248  |      |
| Approach Delay, s/veh                                                |      | 7.0  | 0.6  |      | 50.1 |      |
| Approach LOS                                                         |      | A    | A    |      | D    |      |
| Timer - Assigned Phs                                                 |      | 2    |      | 4    |      | 6    |
| Phs Duration (G+Y+Rc), s                                             |      | 68.7 |      | 21.3 |      | 68.7 |
| Change Period (Y+Rc), s                                              |      | 5.0  |      | 6.0  |      | 5.0  |
| Max Green Setting (Gmax), s                                          |      | 58.0 |      | 21.0 |      | 58.0 |
| Max Q Clear Time (g_c+I1), s                                         |      | 16.6 |      | 14.9 |      | 2.0  |
| Green Ext Time (p_c), s                                              |      | 5.0  |      | 0.5  |      | 2.7  |
| <b>Intersection Summary</b>                                          |      |      |      |      |      |      |
| HCM 6th Ctrl Delay                                                   |      |      | 10.5 |      |      |      |
| HCM 6th LOS                                                          |      |      | B    |      |      |      |
| <b>Notes</b>                                                         |      |      |      |      |      |      |
| User approved volume balancing among the lanes for turning movement. |      |      |      |      |      |      |
| User approved changes to right turn type.                            |      |      |      |      |      |      |

HCM 6th TWSC  
3: Scotland Road & Taylor Place

2023 Build Condition  
Weekday Evening Peak Hour

| Intersection             |                                                                                   |      |      |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 3.6                                                                               |      |      |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 35                                                                                | 146  | 87   | 594                                                                               | 617                                                                               | 40   |
| Future Vol, veh/h        | 35                                                                                | 146  | 87   | 594                                                                               | 617                                                                               | 40   |
| Conflicting Peds, #/hr   | 23                                                                                | 23   | 36   | 0                                                                                 | 0                                                                                 | 36   |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | -    | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 97                                                                                | 97   | 97   | 97                                                                                | 97                                                                                | 97   |
| Heavy Vehicles, %        | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 36                                                                                | 151  | 90   | 612                                                                               | 636                                                                               | 41   |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 1508   | 716    | 713    | 0 | - | 0 |
| Stage 1              | 693    | -      | -      | - | - | - |
| Stage 2              | 815    | -      | -      | - | - | - |
| Critical Hdwy        | 5.4    | 5.2    | 4.1    | - | - | - |
| Critical Hdwy Stg 1  | 5.4    | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.4    | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.5    | 3.3    | 2.2    | - | - | - |
| Pot Cap-1 Maneuver   | 204    | 529    | 896    | - | - | - |
| Stage 1              | 500    | -      | -      | - | - | - |
| Stage 2              | 439    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 160    | 500    | 865    | - | - | - |
| Mov Cap-2 Maneuver   | 160    | -      | -      | - | - | - |
| Stage 1              | 407    | -      | -      | - | - | - |
| Stage 2              | 424    | -      | -      | - | - | - |

| Approach             | EB | NB  | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 26 | 1.2 | 0  |
| HCM LOS              | D  |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 865   | -   | 354   | -   | -   |
| HCM Lane V/C Ratio    | 0.104 | -   | 0.527 | -   | -   |
| HCM Control Delay (s) | 9.6   | 0   | 26    | -   | -   |
| HCM Lane LOS          | A     | A   | D     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 2.9   | -   | -   |

HCM 6th TWSC  
4: Vose Avenue & Taylor Place

2023 Build Condition  
Weekday Evening Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.6                                                                               |          |                                                                                   |       |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL  | SBT                                                                               |
| Lane Configurations      |  |          |  |       |      |  |
| Traffic Vol, veh/h       | 60                                                                                | 51       | 211                                                                               | 60    | 100  | 183                                                                               |
| Future Vol, veh/h        | 60                                                                                | 51       | 211                                                                               | 60    | 100  | 183                                                                               |
| Conflicting Peds, #/hr   | 29                                                                                | 29       | 0                                                                                 | 48    | 48   | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -    | 0                                                                                 |
| Peak Hour Factor         | 90                                                                                | 90       | 90                                                                                | 90    | 90   | 90                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 0                                                                                 | 0     | 0    | 1                                                                                 |
| Mvmt Flow                | 67                                                                                | 57       | 234                                                                               | 67    | 111  | 203                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |      |                                                                                   |
| Conflicting Flow All     | 770                                                                               | 345      | 0                                                                                 | 0     | 349  | 0                                                                                 |
| Stage 1                  | 316                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 454                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Critical Hdwy            | 5                                                                                 | 5.2      | -                                                                                 | -     | 4.1  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -     | 2.2  | -                                                                                 |
| Pot Cap-1 Maneuver       | 501                                                                               | 773      | -                                                                                 | -     | 1221 | -                                                                                 |
| Stage 1                  | 744                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 644                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |      | -                                                                                 |
| Mov Cap-1 Maneuver       | 415                                                                               | 717      | -                                                                                 | -     | 1165 | -                                                                                 |
| Mov Cap-2 Maneuver       | 415                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 1                  | 710                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 559                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB    |      |                                                                                   |
| HCM Control Delay, s     | 14.2                                                                              | 0        |                                                                                   | 3     |      |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |      |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |      |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 515                                                                               | 1165  | -    |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.239                                                                             | 0.095 | -    |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 14.2                                                                              | 8.4   | 0    |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | A    |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.9                                                                               | 0.3   | -    |                                                                                   |

HCM 6th TWSC  
5: Vose Avenue & Driveway

2023 Build Condition  
Weekday Evening Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.3                                                                               |          |                                                                                   |       |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL  | SBT                                                                               |
| Lane Configurations      |  |          |  |       |      |  |
| Traffic Vol, veh/h       | 6                                                                                 | 3        | 268                                                                               | 8     | 4    | 239                                                                               |
| Future Vol, veh/h        | 6                                                                                 | 3        | 268                                                                               | 8     | 4    | 239                                                                               |
| Conflicting Peds, #/hr   | 29                                                                                | 29       | 0                                                                                 | 48    | 48   | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -    | 0                                                                                 |
| Peak Hour Factor         | 82                                                                                | 82       | 82                                                                                | 82    | 82   | 82                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 0                                                                                 | 0     | 0    | 0                                                                                 |
| Mvmt Flow                | 7                                                                                 | 4        | 327                                                                               | 10    | 5    | 291                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |      |                                                                                   |
| Conflicting Flow All     | 710                                                                               | 409      | 0                                                                                 | 0     | 385  | 0                                                                                 |
| Stage 1                  | 380                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 330                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Critical Hdwy            | 5.4                                                                               | 5.2      | -                                                                                 | -     | 4.1  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -     | 2.2  | -                                                                                 |
| Pot Cap-1 Maneuver       | 491                                                                               | 725      | -                                                                                 | -     | 1185 | -                                                                                 |
| Stage 1                  | 696                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 733                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |      | -                                                                                 |
| Mov Cap-1 Maneuver       | 453                                                                               | 673      | -                                                                                 | -     | 1131 | -                                                                                 |
| Mov Cap-2 Maneuver       | 453                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 1                  | 664                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 710                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB    |      |                                                                                   |
| HCM Control Delay, s     | 12.2                                                                              | 0        |                                                                                   | 0.1   |      |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |      |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |      |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 508                                                                               | 1131  | -    |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.022                                                                             | 0.004 | -    |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 12.2                                                                              | 8.2   | 0    |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | A    |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.1                                                                               | 0     | -    |                                                                                   |

HCM 6th TWSC  
6: Driveway & Taylor Place

2023 Build Condition  
Weekday Evening Peak Hour

| Intersection             |                                                                                   |      |        |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.3                                                                               |      |        |                                                                                   |                                                                                   |      |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL                                                                               | NBR  |
| Lane Configurations      |  |      |        |  |  |      |
| Traffic Vol, veh/h       | 144                                                                               | 16   | 32     | 95                                                                                | 16                                                                                | 37   |
| Future Vol, veh/h        | 144                                                                               | 16   | 32     | 95                                                                                | 16                                                                                | 37   |
| Conflicting Peds, #/hr   | 0                                                                                 | 30   | 30     | 0                                                                                 | 20                                                                                | 20   |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop                                                                              | Stop |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -                                                                                 | None |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | 0                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 92                                                                                | 92   | 92     | 92                                                                                | 92                                                                                | 92   |
| Heavy Vehicles, %        | 0                                                                                 | 0    | 0      | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 157                                                                               | 17   | 35     | 103                                                                               | 17                                                                                | 40   |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1                                                                            |      |
| Conflicting Flow All     | 0                                                                                 | 0    | 204    | 0                                                                                 | 389                                                                               | 216  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 196                                                                               | -    |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 193                                                                               | -    |
| Critical Hdwy            | -                                                                                 | -    | 4.1    | -                                                                                 | 5.4                                                                               | 5.2  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | 5.4                                                                               | -    |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | 5.4                                                                               | -    |
| Follow-up Hdwy           | -                                                                                 | -    | 2.2    | -                                                                                 | 3.5                                                                               | 3.3  |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1380   | -                                                                                 | 689                                                                               | 880  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 842                                                                               | -    |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 845                                                                               | -    |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |                                                                                   |      |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1341   | -                                                                                 | 638                                                                               | 839  |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | 638                                                                               | -    |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 818                                                                               | -    |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 805                                                                               | -    |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB                                                                                |      |
| HCM Control Delay, s     | 0                                                                                 |      | 2      |                                                                                   | 10.1                                                                              |      |
| HCM LOS                  |                                                                                   |      |        |                                                                                   | B                                                                                 |      |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBL                                                                               | WBT                                                                               |      |
| Capacity (veh/h)         | 766                                                                               | -    | -      | 1341                                                                              | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.075                                                                             | -    | -      | 0.026                                                                             | -                                                                                 |      |
| HCM Control Delay (s)    | 10.1                                                                              | -    | -      | 7.8                                                                               | 0                                                                                 |      |
| HCM Lane LOS             | B                                                                                 | -    | -      | A                                                                                 | A                                                                                 |      |
| HCM 95th %tile O(veh)    | 0.2                                                                               | -    | -      | 0.1                                                                               | -                                                                                 |      |

# HCM 6th Signalized Intersection Summary

## 1: Valley Street/Scotland Road & South Orange Avenue

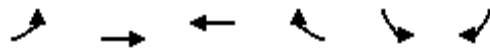
2023 Build Condition  
Saturday Midday Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 104                                                                               | 449                                                                               | 76                                                                                | 112                                                                               | 422                                                                               | 198                                                                               | 71                                                                                 | 355                                                                                 | 128                                                                                 | 248                                                                                 | 321                                                                                 | 83                                                                                  |
| Future Volume (veh/h)        | 104                                                                               | 449                                                                               | 76                                                                                | 112                                                                               | 422                                                                               | 198                                                                               | 71                                                                                 | 355                                                                                 | 128                                                                                 | 248                                                                                 | 321                                                                                 | 83                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.95                                                                              |                                                                                   | 0.92                                                                              | 0.96                                                                              |                                                                                   | 0.86                                                                              | 0.96                                                                               |                                                                                     | 0.96                                                                                | 0.99                                                                                |                                                                                     | 0.95                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                    | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2100                                                                              | 2100                                                                              | 2100                                                                              | 2034                                                                              | 2084                                                                              | 2100                                                                              | 2100                                                                               | 2084                                                                                | 2051                                                                                | 2067                                                                                | 2100                                                                                | 2100                                                                                |
| Adj Flow Rate, veh/h         | 108                                                                               | 468                                                                               | 79                                                                                | 117                                                                               | 440                                                                               | 206                                                                               | 74                                                                                 | 370                                                                                 | 133                                                                                 | 258                                                                                 | 334                                                                                 | 86                                                                                  |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 4                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 3                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 459                                                                               | 1447                                                                              | 242                                                                               | 584                                                                               | 897                                                                               | 660                                                                               | 308                                                                                | 457                                                                                 | 365                                                                                 | 283                                                                                 | 1030                                                                                | 260                                                                                 |
| Arrive On Green              | 0.15                                                                              | 0.86                                                                              | 0.86                                                                              | 0.07                                                                              | 0.43                                                                              | 0.43                                                                              | 0.22                                                                               | 0.22                                                                                | 0.22                                                                                | 0.08                                                                                | 0.33                                                                                | 0.33                                                                                |
| Sat Flow, veh/h              | 2000                                                                              | 3369                                                                              | 564                                                                               | 1938                                                                              | 2084                                                                              | 1532                                                                              | 1043                                                                               | 2084                                                                                | 1664                                                                                | 1969                                                                                | 3119                                                                                | 788                                                                                 |
| Grp Volume(v), veh/h         | 108                                                                               | 275                                                                               | 272                                                                               | 117                                                                               | 440                                                                               | 206                                                                               | 74                                                                                 | 370                                                                                 | 133                                                                                 | 258                                                                                 | 211                                                                                 | 209                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 2000                                                                              | 1995                                                                              | 1938                                                                              | 1938                                                                              | 2084                                                                              | 1532                                                                              | 1043                                                                               | 2084                                                                                | 1664                                                                                | 1969                                                                                | 1995                                                                                | 1912                                                                                |
| Q Serve(g_s), s              | 2.5                                                                               | 2.4                                                                               | 2.5                                                                               | 2.9                                                                               | 13.7                                                                              | 8.0                                                                               | 5.4                                                                                | 15.2                                                                                | 6.1                                                                                 | 7.0                                                                                 | 7.1                                                                                 | 7.4                                                                                 |
| Cycle Q Clear(g_c), s        | 2.5                                                                               | 2.4                                                                               | 2.5                                                                               | 2.9                                                                               | 13.7                                                                              | 8.0                                                                               | 5.4                                                                                | 15.2                                                                                | 6.1                                                                                 | 7.0                                                                                 | 7.1                                                                                 | 7.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.29                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.41                                                                                |
| Lane Grp Cap(c), veh/h       | 459                                                                               | 857                                                                               | 832                                                                               | 584                                                                               | 897                                                                               | 660                                                                               | 308                                                                                | 457                                                                                 | 365                                                                                 | 283                                                                                 | 659                                                                                 | 631                                                                                 |
| V/C Ratio(X)                 | 0.24                                                                              | 0.32                                                                              | 0.33                                                                              | 0.20                                                                              | 0.49                                                                              | 0.31                                                                              | 0.24                                                                               | 0.81                                                                                | 0.36                                                                                | 0.91                                                                                | 0.32                                                                                | 0.33                                                                                |
| Avail Cap(c_a), veh/h        | 469                                                                               | 857                                                                               | 832                                                                               | 593                                                                               | 897                                                                               | 660                                                                               | 416                                                                                | 671                                                                                 | 536                                                                                 | 283                                                                                 | 865                                                                                 | 829                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 11.9                                                                              | 3.8                                                                               | 3.8                                                                               | 11.9                                                                              | 18.5                                                                              | 16.9                                                                              | 29.5                                                                               | 33.4                                                                                | 29.8                                                                                | 29.6                                                                                | 22.6                                                                                | 22.7                                                                                |
| Incr Delay (d2), s/veh       | 0.2                                                                               | 0.9                                                                               | 0.9                                                                               | 0.2                                                                               | 1.9                                                                               | 1.2                                                                               | 0.4                                                                                | 4.7                                                                                 | 0.6                                                                                 | 31.9                                                                                | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.8                                                                               | 1.8                                                                               | 1.8                                                                               | 2.2                                                                               | 11.1                                                                              | 5.4                                                                               | 2.5                                                                                | 12.9                                                                                | 4.5                                                                                 | 7.9                                                                                 | 6.1                                                                                 | 6.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 12.2                                                                              | 4.7                                                                               | 4.7                                                                               | 12.0                                                                              | 20.4                                                                              | 18.1                                                                              | 29.9                                                                               | 38.1                                                                                | 30.4                                                                                | 61.5                                                                                | 22.9                                                                                | 23.0                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | C                                                                                  | D                                                                                   | C                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 655                                                                               |                                                                                   |                                                                                   | 763                                                                               |                                                                                   |                                                                                    | 577                                                                                 |                                                                                     |                                                                                     | 678                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 5.9                                                                               |                                                                                   |                                                                                   | 18.5                                                                              |                                                                                   |                                                                                    | 35.3                                                                                |                                                                                     |                                                                                     | 37.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.5                                                                               | 44.8                                                                              | 10.0                                                                              | 25.7                                                                              | 9.6                                                                               | 44.7                                                                              |                                                                                    | 35.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               |                                                                                    | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              | 7.0                                                                               | 29.0                                                                              |                                                                                    | 39.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.5                                                                               | 15.7                                                                              | 9.0                                                                               | 17.2                                                                              | 4.9                                                                               | 4.5                                                                               |                                                                                    | 9.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 3.1                                                                               | 0.0                                                                               | 2.5                                                                               | 0.1                                                                               | 3.5                                                                               |                                                                                    | 2.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 23.9                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## HCM 6th Signalized Intersection Summary

### 2: South Orange Avenue & Vose Avenue

2023 Build Condition  
Saturday Midday Peak Hour



| Movement                                                             | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|----------------------------------------------------------------------|------|------|------|------|------|------|
| Lane Configurations                                                  |      |      |      |      |      |      |
| Traffic Volume (veh/h)                                               | 106  | 514  | 438  | 138  | 115  | 117  |
| Future Volume (veh/h)                                                | 106  | 514  | 438  | 138  | 115  | 117  |
| Initial Q (Qb), veh                                                  | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)                                                  | 0.95 |      |      | 0.90 | 1.00 | 0.78 |
| Parking Bus, Adj                                                     | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach                                                |      | No   | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln                                               | 2100 | 2100 | 2084 | 2100 | 2100 | 2100 |
| Adj Flow Rate, veh/h                                                 | 109  | 530  | 452  | 136  | 119  | 113  |
| Peak Hour Factor                                                     | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, %                                                 | 0    | 0    | 1    | 0    | 0    | 0    |
| Cap, veh/h                                                           | 713  | 1497 | 1486 | 1139 | 138  | 131  |
| Arrive On Green                                                      | 0.71 | 0.71 | 1.00 | 1.00 | 0.16 | 0.16 |
| Sat Flow, veh/h                                                      | 888  | 2100 | 2084 | 1597 | 839  | 797  |
| Grp Volume(v), veh/h                                                 | 109  | 530  | 452  | 136  | 233  | 0    |
| Grp Sat Flow(s),veh/h/ln                                             | 888  | 2100 | 2084 | 1597 | 1643 | 0    |
| Q Serve(g_s), s                                                      | 3.6  | 8.7  | 0.0  | 0.0  | 12.4 | 0.0  |
| Cycle Q Clear(g_c), s                                                | 3.6  | 8.7  | 0.0  | 0.0  | 12.4 | 0.0  |
| Prop In Lane                                                         | 1.00 |      |      | 1.00 | 0.51 | 0.48 |
| Lane Grp Cap(c), veh/h                                               | 713  | 1497 | 1486 | 1139 | 271  | 0    |
| V/C Ratio(X)                                                         | 0.15 | 0.35 | 0.30 | 0.12 | 0.86 | 0.00 |
| Avail Cap(c_a), veh/h                                                | 713  | 1497 | 1486 | 1139 | 383  | 0    |
| HCM Platoon Ratio                                                    | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I)                                                   | 1.00 | 1.00 | 0.87 | 0.87 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh                                             | 4.2  | 5.0  | 0.0  | 0.0  | 36.6 | 0.0  |
| Incr Delay (d2), s/veh                                               | 0.5  | 0.7  | 0.5  | 0.2  | 13.1 | 0.0  |
| Initial Q Delay(d3),s/veh                                            | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(95%),veh/ln                                             | 1.1  | 6.0  | 0.3  | 0.1  | 9.9  | 0.0  |
| Unsig. Movement Delay, s/veh                                         |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh                                                 | 4.7  | 5.6  | 0.5  | 0.2  | 49.7 | 0.0  |
| LnGrp LOS                                                            | A    | A    | A    | A    | D    | A    |
| Approach Vol, veh/h                                                  |      | 639  | 588  |      | 233  |      |
| Approach Delay, s/veh                                                |      | 5.5  | 0.4  |      | 49.7 |      |
| Approach LOS                                                         |      | A    | A    |      | D    |      |
| Timer - Assigned Phs                                                 |      | 2    |      | 4    |      | 6    |
| Phs Duration (G+Y+Rc), s                                             |      | 69.2 |      | 20.8 |      | 69.2 |
| Change Period (Y+Rc), s                                              |      | 5.0  |      | 6.0  |      | 5.0  |
| Max Green Setting (Gmax), s                                          |      | 58.0 |      | 21.0 |      | 58.0 |
| Max Q Clear Time (g_c+I1), s                                         |      | 10.7 |      | 14.4 |      | 2.0  |
| Green Ext Time (p_c), s                                              |      | 2.8  |      | 0.4  |      | 2.2  |
| <b>Intersection Summary</b>                                          |      |      |      |      |      |      |
| HCM 6th Ctrl Delay                                                   |      |      | 10.5 |      |      |      |
| HCM 6th LOS                                                          |      |      | B    |      |      |      |
| <b>Notes</b>                                                         |      |      |      |      |      |      |
| User approved volume balancing among the lanes for turning movement. |      |      |      |      |      |      |
| User approved changes to right turn type.                            |      |      |      |      |      |      |

HCM 6th TWSC  
3: Scotland Road & Taylor Place

2023 Build Condition  
Saturday Midday Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 4.2                                                                               |        |       |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL   | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |       |  |  |      |
| Traffic Vol, veh/h       | 37                                                                                | 146    | 95    | 522                                                                               | 490                                                                               | 41   |
| Future Vol, veh/h        | 37                                                                                | 146    | 95    | 522                                                                               | 490                                                                               | 41   |
| Conflicting Peds, #/hr   | 20                                                                                | 21     | 31    | 0                                                                                 | 0                                                                                 | 31   |
| Sign Control             | Stop                                                                              | Stop   | Free  | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 88                                                                                | 88     | 88    | 88                                                                                | 88                                                                                | 88   |
| Heavy Vehicles, %        | 0                                                                                 | 1      | 0     | 0                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 42                                                                                | 166    | 108   | 593                                                                               | 557                                                                               | 47   |
| Major/Minor              | Minor2                                                                            | Major1 |       | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 1441                                                                              | 633    | 635   | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 612                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 829                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 5.4                                                                               | 5.2    | 4.1   | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.4                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.4                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.5                                                                               | 3.309  | 2.2   | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 220                                                                               | 575    | 958   | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 545                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 432                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |       | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 171                                                                               | 547    | 930   | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 171                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 437                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 419                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Approach                 | EB                                                                                | NB     |       | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 25.5                                                                              | 1.4    |       | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | D                                                                                 |        |       |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1 | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 930                                                                               | -      | 379   | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.116                                                                             | -      | 0.549 | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 9.4                                                                               | 0      | 25.5  | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | A      | D     | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0.4                                                                               | -      | 3.2   | -                                                                                 | -                                                                                 |      |

HCM 6th TWSC  
4: Vose Avenue & Taylor Place

2023 Build Condition  
Saturday Midday Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 4.1                                                                               |          |                                                                                   |        |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |        |       |  |
| Traffic Vol, veh/h       | 63                                                                                | 52       | 160                                                                               | 81     | 91    | 163                                                                               |
| Future Vol, veh/h        | 63                                                                                | 52       | 160                                                                               | 81     | 91    | 163                                                                               |
| Conflicting Peds, #/hr   | 42                                                                                | 42       | 0                                                                                 | 74     | 74    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Peak Hour Factor         | 89                                                                                | 89       | 89                                                                                | 89     | 89    | 89                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 1                                                                                 | 0      | 1     | 1                                                                                 |
| Mvmt Flow                | 71                                                                                | 58       | 180                                                                               | 91     | 102   | 183                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |       |                                                                                   |
| Conflicting Flow All     | 729                                                                               | 342      | 0                                                                                 | 0      | 345   | 0                                                                                 |
| Stage 1                  | 300                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 429                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy            | 5.4                                                                               | 5.2      | -                                                                                 | -      | 4.11  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -      | 2.209 | -                                                                                 |
| Pot Cap-1 Maneuver       | 481                                                                               | 775      | -                                                                                 | -      | 1220  | -                                                                                 |
| Stage 1                  | 756                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 661                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 387                                                                               | 692      | -                                                                                 | -      | 1134  | -                                                                                 |
| Mov Cap-2 Maneuver       | 387                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 1                  | 703                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 571                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |       |                                                                                   |
| HCM Control Delay, s     | 15.2                                                                              | 0        |                                                                                   | 3      |       |                                                                                   |
| HCM LOS                  | C                                                                                 |          |                                                                                   |        |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | - 483    |                                                                                   | 1134   | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.268  |                                                                                   | 0.09   | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | - 15.2   |                                                                                   | 8.5    | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | - C      |                                                                                   | A      | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 1.1    |                                                                                   | 0.3    | -     |                                                                                   |

HCM 6th TWSC  
5: Vose Avenue & Driveway

2023 Build Condition  
Saturday Midday Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.4                                                                               |          |                                                                                   |       |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL  | SBT                                                                               |
| Lane Configurations      |  |          |  |       |      |  |
| Traffic Vol, veh/h       | 9                                                                                 | 4        | 237                                                                               | 7     | 3    | 223                                                                               |
| Future Vol, veh/h        | 9                                                                                 | 4        | 237                                                                               | 7     | 3    | 223                                                                               |
| Conflicting Peds, #/hr   | 42                                                                                | 42       | 0                                                                                 | 74    | 74   | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -    | 0                                                                                 |
| Peak Hour Factor         | 98                                                                                | 98       | 98                                                                                | 98    | 98   | 98                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0        | 1                                                                                 | 0     | 0    | 1                                                                                 |
| Mvmt Flow                | 9                                                                                 | 4        | 242                                                                               | 7     | 3    | 228                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |      |                                                                                   |
| Conflicting Flow All     | 596                                                                               | 362      | 0                                                                                 | 0     | 323  | 0                                                                                 |
| Stage 1                  | 320                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 276                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Critical Hdwy            | 5.4                                                                               | 5.2      | -                                                                                 | -     | 4.1  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.4                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Critical Hdwy Stg 2      | 5.4                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Follow-up Hdwy           | 3.5                                                                               | 3.3      | -                                                                                 | -     | 2.2  | -                                                                                 |
| Pot Cap-1 Maneuver       | 554                                                                               | 760      | -                                                                                 | -     | 1248 | -                                                                                 |
| Stage 1                  | 741                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 775                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |      | -                                                                                 |
| Mov Cap-1 Maneuver       | 493                                                                               | 678      | -                                                                                 | -     | 1160 | -                                                                                 |
| Mov Cap-2 Maneuver       | 493                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 1                  | 689                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Stage 2                  | 742                                                                               | -        | -                                                                                 | -     | -    | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |      |                                                                                   |
| HCM Control Delay, s     | 11.9                                                                              | 0        | 0.1                                                                               |       |      |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |      |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |      |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 538                                                                               | 1160  | -    |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.025                                                                             | 0.003 | -    |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 11.9                                                                              | 8.1   | 0    |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | A    |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.1                                                                               | 0     | -    |                                                                                   |

HCM 6th TWSC  
6: Driveway & Taylor Place

2023 Build Condition  
Saturday Midday Peak Hour

| Intersection             |                                                                                   |      |        |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.2                                                                               |      |        |                                                                                   |                                                                                   |      |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL                                                                               | NBR  |
| Lane Configurations      |  |      |        |  |  |      |
| Traffic Vol, veh/h       | 153                                                                               | 19   | 37     | 99                                                                                | 16                                                                                | 30   |
| Future Vol, veh/h        | 153                                                                               | 19   | 37     | 99                                                                                | 16                                                                                | 30   |
| Conflicting Peds, #/hr   | 0                                                                                 | 46   | 46     | 0                                                                                 | 28                                                                                | 28   |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop                                                                              | Stop |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -                                                                                 | None |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | 0                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 94                                                                                | 94   | 94     | 94                                                                                | 94                                                                                | 94   |
| Heavy Vehicles, %        | 1                                                                                 | 0    | 0      | 1                                                                                 | 0                                                                                 | 0    |
| Mvmt Flow                | 163                                                                               | 20   | 39     | 105                                                                               | 17                                                                                | 32   |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1                                                                            |      |
| Conflicting Flow All     | 0                                                                                 | 0    | 229    | 0                                                                                 | 430                                                                               | 247  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 219                                                                               | -    |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 211                                                                               | -    |
| Critical Hdwy            | -                                                                                 | -    | 4.1    | -                                                                                 | 5.4                                                                               | 5.2  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | 5.4                                                                               | -    |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | 5.4                                                                               | -    |
| Follow-up Hdwy           | -                                                                                 | -    | 2.2    | -                                                                                 | 3.5                                                                               | 3.3  |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1351   | -                                                                                 | 660                                                                               | 853  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 822                                                                               | -    |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 829                                                                               | -    |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |                                                                                   |      |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1292   | -                                                                                 | 594                                                                               | 794  |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | 594                                                                               | -    |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 786                                                                               | -    |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 781                                                                               | -    |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB                                                                                |      |
| HCM Control Delay, s     | 0                                                                                 |      | 2.1    |                                                                                   | 10.4                                                                              |      |
| HCM LOS                  | B                                                                                 |      |        |                                                                                   |                                                                                   |      |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBL                                                                               | WBT                                                                               |      |
| Capacity (veh/h)         | 711                                                                               | -    | -      | 1292                                                                              | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.069                                                                             | -    | -      | 0.03                                                                              | -                                                                                 |      |
| HCM Control Delay (s)    | 10.4                                                                              | -    | -      | 7.9                                                                               | 0                                                                                 |      |
| HCM Lane LOS             | B                                                                                 | -    | -      | A                                                                                 | A                                                                                 |      |
| HCM 95th %tile O(veh)    | 0.2                                                                               | -    | -      | 0.1                                                                               | -                                                                                 |      |

# HCM 6th Signalized Intersection Summary

## 1: Valley Street/Scotland Road & South Orange Avenue

2023 Mitigation Condition  
Weekday Evening Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |   |  |  |  |  |  |
| Traffic Volume (veh/h)       | 73                                                                                | 592                                                                               | 43                                                                                | 94                                                                                | 442                                                                               | 209                                                                               | 54                                                                                  | 436                                                                                 | 135                                                                                 | 281                                                                                 | 412                                                                                 | 74                                                                                  |
| Future Volume (veh/h)        | 73                                                                                | 592                                                                               | 43                                                                                | 94                                                                                | 442                                                                               | 209                                                                               | 54                                                                                  | 436                                                                                 | 135                                                                                 | 281                                                                                 | 412                                                                                 | 74                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.96                                                                              |                                                                                   | 0.91                                                                              | 0.97                                                                              |                                                                                   | 0.85                                                                              | 0.89                                                                                |                                                                                     | 0.87                                                                                | 0.97                                                                                |                                                                                     | 0.86                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2067                                                                              | 2084                                                                              | 2084                                                                              | 2002                                                                              | 2100                                                                              | 2100                                                                              | 2100                                                                                | 2084                                                                                | 2018                                                                                | 2100                                                                                | 2084                                                                                | 2084                                                                                |
| Adj Flow Rate, veh/h         | 77                                                                                | 623                                                                               | 45                                                                                | 99                                                                                | 465                                                                               | 220                                                                               | 57                                                                                  | 459                                                                                 | 142                                                                                 | 296                                                                                 | 434                                                                                 | 78                                                                                  |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 1                                                                                 | 1                                                                                 | 6                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 1                                                                                   | 5                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   |
| Cap, veh/h                   | 356                                                                               | 1331                                                                              | 96                                                                                | 444                                                                               | 762                                                                               | 549                                                                               | 311                                                                                 | 541                                                                                 | 385                                                                                 | 347                                                                                 | 1320                                                                                | 234                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.72                                                                              | 0.72                                                                              | 0.07                                                                              | 0.36                                                                              | 0.36                                                                              | 0.26                                                                                | 0.26                                                                                | 0.26                                                                                | 0.11                                                                                | 0.40                                                                                | 0.40                                                                                |
| Sat Flow, veh/h              | 1969                                                                              | 3715                                                                              | 268                                                                               | 1906                                                                              | 2100                                                                              | 1512                                                                              | 889                                                                                 | 2084                                                                                | 1483                                                                                | 2000                                                                                | 3267                                                                                | 579                                                                                 |
| Grp Volume(v), veh/h         | 77                                                                                | 331                                                                               | 337                                                                               | 99                                                                                | 465                                                                               | 220                                                                               | 57                                                                                  | 459                                                                                 | 142                                                                                 | 296                                                                                 | 261                                                                                 | 251                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1969                                                                              | 1979                                                                              | 2004                                                                              | 1906                                                                              | 2100                                                                              | 1512                                                                              | 889                                                                                 | 2084                                                                                | 1483                                                                                | 2000                                                                                | 1979                                                                                | 1866                                                                                |
| Q Serve(g_s), s              | 2.0                                                                               | 6.4                                                                               | 6.5                                                                               | 2.8                                                                               | 16.3                                                                              | 9.8                                                                               | 4.6                                                                                 | 18.8                                                                                | 7.1                                                                                 | 9.5                                                                                 | 8.1                                                                                 | 8.4                                                                                 |
| Cycle Q Clear(g_c), s        | 2.0                                                                               | 6.4                                                                               | 6.5                                                                               | 2.8                                                                               | 16.3                                                                              | 9.8                                                                               | 4.6                                                                                 | 18.8                                                                                | 7.1                                                                                 | 9.5                                                                                 | 8.1                                                                                 | 8.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.13                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.31                                                                                |
| Lane Grp Cap(c), veh/h       | 356                                                                               | 709                                                                               | 718                                                                               | 444                                                                               | 762                                                                               | 549                                                                               | 311                                                                                 | 541                                                                                 | 385                                                                                 | 347                                                                                 | 800                                                                                 | 754                                                                                 |
| V/C Ratio(X)                 | 0.22                                                                              | 0.47                                                                              | 0.47                                                                              | 0.22                                                                              | 0.61                                                                              | 0.40                                                                              | 0.18                                                                                | 0.85                                                                                | 0.37                                                                                | 0.85                                                                                | 0.33                                                                                | 0.33                                                                                |
| Avail Cap(c_a), veh/h        | 378                                                                               | 709                                                                               | 718                                                                               | 456                                                                               | 762                                                                               | 549                                                                               | 366                                                                                 | 671                                                                                 | 478                                                                                 | 347                                                                                 | 924                                                                                 | 871                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 15.8                                                                              | 9.1                                                                               | 9.1                                                                               | 15.7                                                                              | 23.5                                                                              | 21.4                                                                              | 26.4                                                                                | 31.6                                                                                | 27.3                                                                                | 22.7                                                                                | 18.4                                                                                | 18.5                                                                                |
| Incr Delay (d2), s/veh       | 0.2                                                                               | 1.7                                                                               | 1.7                                                                               | 0.3                                                                               | 3.6                                                                               | 2.2                                                                               | 0.3                                                                                 | 8.4                                                                                 | 0.6                                                                                 | 18.2                                                                                | 0.2                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 1.6                                                                               | 4.4                                                                               | 4.4                                                                               | 2.2                                                                               | 13.4                                                                              | 6.7                                                                               | 1.8                                                                                 | 15.9                                                                                | 4.6                                                                                 | 10.1                                                                                | 6.7                                                                                 | 6.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 16.0                                                                              | 10.8                                                                              | 10.8                                                                              | 16.0                                                                              | 27.1                                                                              | 23.5                                                                              | 26.6                                                                                | 40.0                                                                                | 27.9                                                                                | 40.9                                                                                | 18.6                                                                                | 18.7                                                                                |
| LnGrp LOS                    | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | D                                                                                   | C                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 745                                                                               |                                                                                   |                                                                                   | 784                                                                               |                                                                                   |                                                                                     | 658                                                                                 |                                                                                     |                                                                                     | 808                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 24.7                                                                              |                                                                                   |                                                                                     | 36.3                                                                                |                                                                                     |                                                                                     | 26.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.0                                                                               | 38.7                                                                              | 13.0                                                                              | 29.4                                                                              | 9.4                                                                               | 38.2                                                                              |                                                                                     | 42.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               |                                                                                     | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 26.0                                                                              | 10.0                                                                              | 29.0                                                                              | 7.0                                                                               | 26.0                                                                              |                                                                                     | 42.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.0                                                                               | 18.3                                                                              | 11.5                                                                              | 20.8                                                                              | 4.8                                                                               | 8.5                                                                               |                                                                                     | 10.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 2.4                                                                               | 0.0                                                                               | 2.5                                                                               | 0.0                                                                               | 3.9                                                                               |                                                                                     | 3.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 24.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
1: Valley Street/Scotland Road & South Orange Avenue

2023 Mitigation Condition  
Weekday Evening Peak Hour



| Phase Number           | 1     | 2     | 3     | 4     | 5     | 6     | 8     |
|------------------------|-------|-------|-------|-------|-------|-------|-------|
| Movement               | EBL   | WBTL  | SBL   | NBTL  | WBL   | EBTL  | SBTL  |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag   |       |
| Lead-Lag Optimize      |       |       |       |       |       |       |       |
| Recall Mode            | None  | C-Max | None  | None  | None  | C-Max | None  |
| Maximum Split (s)      | 10    | 32    | 13    | 35    | 10    | 32    | 48    |
| Maximum Split (%)      | 11.1% | 35.6% | 14.4% | 38.9% | 11.1% | 35.6% | 53.3% |
| Minimum Split (s)      | 10    | 32    | 10    | 13    | 10    | 32    | 13    |
| Yellow Time (s)        | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
| All-Red Time (s)       | 0     | 3     | 0     | 3     | 0     | 3     | 3     |
| Minimum Initial (s)    | 7     | 26    | 7     | 7     | 7     | 26    | 7     |
| Vehicle Extension (s)  | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
| Minimum Gap (s)        | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
| Time Before Reduce (s) | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Time To Reduce (s)     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Walk Time (s)          |       |       |       |       |       |       |       |
| Flash Dont Walk (s)    |       |       |       |       |       |       |       |
| Dual Entry             | No    | Yes   | No    | Yes   | No    | Yes   | Yes   |
| Inhibit Max            | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Start Time (s)         | 37    | 47    | 79    | 2     | 37    | 47    | 79    |
| End Time (s)           | 47    | 79    | 2     | 37    | 47    | 79    | 37    |
| Yield/Force Off (s)    | 44    | 73    | 89    | 31    | 44    | 73    | 31    |
| Yield/Force Off 170(s) | 44    | 73    | 89    | 31    | 44    | 73    | 31    |
| Local Start Time (s)   | 54    | 64    | 6     | 19    | 54    | 64    | 6     |
| Local Yield (s)        | 61    | 0     | 16    | 48    | 61    | 0     | 48    |
| Local Yield 170(s)     | 61    | 0     | 16    | 48    | 61    | 0     | 48    |

Intersection Summary

Cycle Length 90  
Control Type Actuated-Coordinated  
Natural Cycle 80  
Offset: 73 (81%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Splits and Phases: 1: Valley Street/Scotland Road & South Orange Avenue

|      |        |  |  |      |      |  |  |
|------|--------|--|--|------|------|--|--|
|      |        |  |  |      |      |  |  |
| Ø1   | Ø2 (R) |  |  | Ø3   | Ø4   |  |  |
| 10 s | 32 s   |  |  | 13 s | 35 s |  |  |
| Ø5   | Ø6 (R) |  |  | Ø7   | Ø8   |  |  |
| 10 s | 32 s   |  |  | 48 s |      |  |  |

# HCM 6th Signalized Intersection Summary

## 1: Valley Street/Scotland Road & South Orange Avenue

2023 Mitigation Condition  
Saturday Midday Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 104                                                                               | 449                                                                               | 76                                                                                | 112                                                                               | 422                                                                               | 198                                                                               | 71                                                                                 | 355                                                                                 | 128                                                                                 | 248                                                                                 | 321                                                                                 | 83                                                                                  |
| Future Volume (veh/h)        | 104                                                                               | 449                                                                               | 76                                                                                | 112                                                                               | 422                                                                               | 198                                                                               | 71                                                                                 | 355                                                                                 | 128                                                                                 | 248                                                                                 | 321                                                                                 | 83                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 0.95                                                                              |                                                                                   | 0.91                                                                              | 0.96                                                                              |                                                                                   | 0.85                                                                              | 0.96                                                                               |                                                                                     | 0.96                                                                                | 0.99                                                                                |                                                                                     | 0.96                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                    | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 2100                                                                              | 2100                                                                              | 2100                                                                              | 2034                                                                              | 2084                                                                              | 2100                                                                              | 2100                                                                               | 2084                                                                                | 2051                                                                                | 2067                                                                                | 2100                                                                                | 2100                                                                                |
| Adj Flow Rate, veh/h         | 108                                                                               | 468                                                                               | 79                                                                                | 117                                                                               | 440                                                                               | 206                                                                               | 74                                                                                 | 370                                                                                 | 133                                                                                 | 258                                                                                 | 334                                                                                 | 86                                                                                  |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 4                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 3                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 423                                                                               | 1333                                                                              | 223                                                                               | 542                                                                               | 828                                                                               | 600                                                                               | 308                                                                                | 457                                                                                 | 365                                                                                 | 348                                                                                 | 1135                                                                                | 287                                                                                 |
| Arrive On Green              | 0.15                                                                              | 0.79                                                                              | 0.79                                                                              | 0.07                                                                              | 0.40                                                                              | 0.40                                                                              | 0.22                                                                               | 0.22                                                                                | 0.22                                                                                | 0.11                                                                                | 0.36                                                                                | 0.36                                                                                |
| Sat Flow, veh/h              | 2000                                                                              | 3365                                                                              | 563                                                                               | 1938                                                                              | 2084                                                                              | 1511                                                                              | 1043                                                                               | 2084                                                                                | 1664                                                                                | 1969                                                                                | 3122                                                                                | 789                                                                                 |
| Grp Volume(v), veh/h         | 108                                                                               | 276                                                                               | 271                                                                               | 117                                                                               | 440                                                                               | 206                                                                               | 74                                                                                 | 370                                                                                 | 133                                                                                 | 258                                                                                 | 211                                                                                 | 209                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 2000                                                                              | 1995                                                                              | 1932                                                                              | 1938                                                                              | 2084                                                                              | 1511                                                                              | 1043                                                                               | 2084                                                                                | 1664                                                                                | 1969                                                                                | 1995                                                                                | 1916                                                                                |
| Q Serve(g_s), s              | 2.7                                                                               | 3.6                                                                               | 3.6                                                                               | 3.1                                                                               | 14.5                                                                              | 8.6                                                                               | 5.4                                                                                | 15.2                                                                                | 6.1                                                                                 | 8.8                                                                                 | 6.8                                                                                 | 7.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.7                                                                               | 3.6                                                                               | 3.6                                                                               | 3.1                                                                               | 14.5                                                                              | 8.6                                                                               | 5.4                                                                                | 15.2                                                                                | 6.1                                                                                 | 8.8                                                                                 | 6.8                                                                                 | 7.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.29                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.41                                                                                |
| Lane Grp Cap(c), veh/h       | 423                                                                               | 790                                                                               | 766                                                                               | 542                                                                               | 828                                                                               | 600                                                                               | 308                                                                                | 457                                                                                 | 365                                                                                 | 348                                                                                 | 725                                                                                 | 697                                                                                 |
| V/C Ratio(X)                 | 0.26                                                                              | 0.35                                                                              | 0.35                                                                              | 0.22                                                                              | 0.53                                                                              | 0.34                                                                              | 0.24                                                                               | 0.81                                                                                | 0.36                                                                                | 0.74                                                                                | 0.29                                                                                | 0.30                                                                                |
| Avail Cap(c_a), veh/h        | 433                                                                               | 790                                                                               | 766                                                                               | 550                                                                               | 828                                                                               | 600                                                                               | 416                                                                                | 671                                                                                 | 536                                                                                 | 348                                                                                 | 931                                                                                 | 894                                                                                 |
| HCM Platoon Ratio            | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 13.6                                                                              | 6.0                                                                               | 6.0                                                                               | 13.5                                                                              | 20.7                                                                              | 18.9                                                                              | 29.5                                                                               | 33.4                                                                                | 29.8                                                                                | 23.9                                                                                | 20.4                                                                                | 20.5                                                                                |
| Incr Delay (d2), s/veh       | 0.3                                                                               | 1.1                                                                               | 1.1                                                                               | 0.2                                                                               | 2.4                                                                               | 1.6                                                                               | 0.4                                                                                | 4.7                                                                                 | 0.6                                                                                 | 8.2                                                                                 | 0.2                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(95%),veh/ln     | 2.0                                                                               | 2.6                                                                               | 2.6                                                                               | 2.4                                                                               | 11.8                                                                              | 5.8                                                                               | 2.5                                                                                | 12.9                                                                                | 4.5                                                                                 | 8.4                                                                                 | 5.7                                                                                 | 5.7                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 13.8                                                                              | 7.1                                                                               | 7.2                                                                               | 13.7                                                                              | 23.2                                                                              | 20.5                                                                              | 29.9                                                                               | 38.1                                                                                | 30.4                                                                                | 32.1                                                                                | 20.6                                                                                | 20.7                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  | D                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 655                                                                               |                                                                                   |                                                                                   | 763                                                                               |                                                                                   |                                                                                    | 577                                                                                 |                                                                                     |                                                                                     | 678                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 8.2                                                                               |                                                                                   |                                                                                   | 21.0                                                                              |                                                                                   |                                                                                    | 35.3                                                                                |                                                                                     |                                                                                     | 25.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.5                                                                               | 41.8                                                                              | 13.0                                                                              | 25.7                                                                              | 9.6                                                                               | 41.7                                                                              |                                                                                    | 38.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               | 3.0                                                                               | 6.0                                                                               |                                                                                    | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 26.0                                                                              | 10.0                                                                              | 29.0                                                                              | 7.0                                                                               | 26.0                                                                              |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.7                                                                               | 16.5                                                                              | 10.8                                                                              | 17.2                                                                              | 5.1                                                                               | 5.6                                                                               |                                                                                    | 9.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 2.6                                                                               | 0.0                                                                               | 2.5                                                                               | 0.0                                                                               | 3.3                                                                               |                                                                                    | 2.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 22.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Timing Report, Sorted By Phase  
1: Valley Street/Scotland Road & South Orange Avenue

2023 Mitigation Condition  
Saturday Midday Peak Hour



| Phase Number           | 1     | 2     | 3     | 4     | 5     | 6     | 8     |
|------------------------|-------|-------|-------|-------|-------|-------|-------|
| Movement               | EBL   | WBTL  | SBL   | NBTL  | WBL   | EBTL  | SBTL  |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag   |       |
| Lead-Lag Optimize      |       |       |       |       |       |       |       |
| Recall Mode            | None  | C-Max | None  | None  | None  | C-Max | None  |
| Maximum Split (s)      | 10    | 32    | 13    | 35    | 10    | 32    | 48    |
| Maximum Split (%)      | 11.1% | 35.6% | 14.4% | 38.9% | 11.1% | 35.6% | 53.3% |
| Minimum Split (s)      | 10    | 32    | 10    | 13    | 10    | 32    | 13    |
| Yellow Time (s)        | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
| All-Red Time (s)       | 0     | 3     | 0     | 3     | 0     | 3     | 3     |
| Minimum Initial (s)    | 7     | 26    | 7     | 7     | 7     | 26    | 7     |
| Vehicle Extension (s)  | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
| Minimum Gap (s)        | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
| Time Before Reduce (s) | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Time To Reduce (s)     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Walk Time (s)          |       |       |       |       |       |       |       |
| Flash Dont Walk (s)    |       |       |       |       |       |       |       |
| Dual Entry             | No    | Yes   | No    | Yes   | No    | Yes   | Yes   |
| Inhibit Max            | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Start Time (s)         | 37    | 47    | 79    | 2     | 37    | 47    | 79    |
| End Time (s)           | 47    | 79    | 2     | 37    | 47    | 79    | 37    |
| Yield/Force Off (s)    | 44    | 73    | 89    | 31    | 44    | 73    | 31    |
| Yield/Force Off 170(s) | 44    | 73    | 89    | 31    | 44    | 73    | 31    |
| Local Start Time (s)   | 54    | 64    | 6     | 19    | 54    | 64    | 6     |
| Local Yield (s)        | 61    | 0     | 16    | 48    | 61    | 0     | 48    |
| Local Yield 170(s)     | 61    | 0     | 16    | 48    | 61    | 0     | 48    |

Intersection Summary

Cycle Length 90  
Control Type Actuated-Coordinated  
Natural Cycle 70  
Offset: 73 (81%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Splits and Phases: 1: Valley Street/Scotland Road & South Orange Avenue

|      |        |      |      |
|------|--------|------|------|
|      |        |      |      |
| Ø1   | Ø2 (R) | Ø3   | Ø4   |
| 10 s | 32 s   | 13 s | 35 s |
|      |        |      |      |
| Ø5   | Ø6 (R) | Ø7   | Ø8   |
| 10 s | 32 s   | 48 s |      |

## **EXISTING TRAFFIC SIGNAL TIMING DIRECTIVE**

| INTERSECTION NAME: |   | SOUTH ORANGE AVENUE AND<br>VALLEY STREET/SCOTLAND ROAD<br>TOWNSHIP OF SOUTH ORANGE VILLAGE |                                                                                     |                                                                                     |                                                                                     |                                                                                   |                                                                                   |   | CHECKED:<br>2/25/2020                                                             |                                               | CONTROLLER TYPE: ASC/2S-2100 |  |  |
|--------------------|---|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|-----------------------------------------------|------------------------------|--|--|
| INTERVAL           | # | 1                                                                                          | 2                                                                                   | 3                                                                                   | 4                                                                                   | 5                                                                                 | 6                                                                                 | 7 | 8                                                                                 | FLASH TIME: N/A                               |                              |  |  |
| PHASING            |   |         |  |  |  |  |  |   |  | CYCLE = 90 sec                                |                              |  |  |
| MODE/RECALL        | 0 |                                                                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                   |                                                                                   |   |                                                                                   | PHASE 1+5: EB & WB LTs<br>South Orange Ave    |                              |  |  |
| MIN. GREEN         | 1 | 7                                                                                          | 22                                                                                  | 7                                                                                   | 7                                                                                   | 7                                                                                 | 22                                                                                |   | 7                                                                                 | PHASE 2+6: EB & WB<br>South Orange Ave        |                              |  |  |
| WALK               | 2 | 0                                                                                          | 10                                                                                  | 0                                                                                   | 9                                                                                   | 0                                                                                 | 10                                                                                |   | 9                                                                                 | PHASE 3: SB Scotland Rd                       |                              |  |  |
| PED. CLR.          | 3 | 0                                                                                          | 19                                                                                  | 7                                                                                   | 20                                                                                  | 7                                                                                 | 19                                                                                |   | 20                                                                                | PHASE 4+8: NB & SB<br>Scotland Rd & Valley St |                              |  |  |
| VEH. EXT.          | 4 | 3.0                                                                                        | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                               | 3.0                                                                               |   | 3.0                                                                               |                                               |                              |  |  |
| MAX I              | 5 | 7                                                                                          | 26                                                                                  | 7                                                                                   | 27                                                                                  | 7                                                                                 | 26                                                                                |   | 27                                                                                | OFFSET: 73 SEC                                |                              |  |  |
| MAX II             | 6 | -                                                                                          | -                                                                                   | -                                                                                   | -                                                                                   | -                                                                                 | -                                                                                 |   | -                                                                                 |                                               |                              |  |  |
| MAX SPLITS         | 7 | 7                                                                                          | 29                                                                                  | 7                                                                                   | 29                                                                                  | 7                                                                                 | 29                                                                                |   | 29                                                                                |                                               |                              |  |  |
| AMBER              | 8 | 3.0                                                                                        | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                               | 3.0                                                                               |   | 3.0                                                                               |                                               |                              |  |  |
| ALL RED            | 9 | 0.0                                                                                        | 3.0                                                                                 | 0.0                                                                                 | 3.0                                                                                 | 0.0                                                                               | 3.0                                                                               |   | 3.0                                                                               |                                               |                              |  |  |
|                    |   |                                                                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                   |                                                                                   |   |                                                                                   |                                               |                              |  |  |

NOTES:

DIRECTIVE NUMBER: 512

| INTERSECTION NAME: |   | SOUTH ORANGE AVENUE AND<br>VOSE AVENUE<br>TOWNSHIP OF SOUTH ORANGE VILLAGE |     |   |     |   |     | CHECKED:<br>2/25/2020 |   | CONTROLLER TYPE: ASC/2S-2100           |  |  |
|--------------------|---|----------------------------------------------------------------------------|-----|---|-----|---|-----|-----------------------|---|----------------------------------------|--|--|
| INTERVAL           | # | 1                                                                          | 2   | 3 | 4   | 5 | 6   | 7                     | 8 | FLASH TIME: N/A                        |  |  |
| PHASING            |   |                                                                            | ↕   |   | ↕   |   | ↕   |                       |   | CYCLE = 90 sec                         |  |  |
| MODE/RECALL        | 0 |                                                                            |     |   |     |   |     |                       |   |                                        |  |  |
| MIN. GREEN         | 1 |                                                                            | 25  |   | 7   |   | 25  |                       |   | PHASE 2+6: EB & WB<br>South Orange Ave |  |  |
| WALK               | 2 |                                                                            | 11  |   | 7   |   | 11  |                       |   | PHASE 4: SB Vose Ave                   |  |  |
| PED. CLR.          | 3 |                                                                            | 14  |   | 14  |   | 14  |                       |   |                                        |  |  |
| VEH. EXT.          | 4 |                                                                            | 2.0 |   | 2.0 |   | 2.0 |                       |   | OFFSET: 2 SEC                          |  |  |
| MAX I              | 5 |                                                                            | 25  |   | 27  |   | 25  |                       |   |                                        |  |  |
| MAX II             | 6 |                                                                            | -   |   | -   |   | -   |                       |   |                                        |  |  |
| MAX SPLITS         | 7 |                                                                            | 58  |   | 21  |   | 58  |                       |   |                                        |  |  |
| AMBER              | 8 |                                                                            | 3.0 |   | 3.0 |   | 3.0 |                       |   |                                        |  |  |
| ALL RED            | 9 |                                                                            | 2.0 |   | 3.0 |   | 2.0 |                       |   |                                        |  |  |
|                    |   |                                                                            |     |   |     |   |     |                       |   |                                        |  |  |

NOTES:

DIRECTIVE NUMBER: 520

## **PROPOSED TRAFFIC SIGNAL TIMING DIRECTIVE**

| INTERSECTION NAME: |   | SOUTH ORANGE AVENUE AND<br>VALLEY STREET/SCOTLAND ROAD<br>TOWNSHIP OF SOUTH ORANGE VILLAGE |                                                                                     |                                                                                     |                                                                                     |                                                                                   |                                                                                   |   | CHECKED:<br>2/25/2020                                                             |                                               | CONTROLLER TYPE: ASC/2S-2100 |  |  |
|--------------------|---|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|-----------------------------------------------|------------------------------|--|--|
| INTERVAL           | # | 1                                                                                          | 2                                                                                   | 3                                                                                   | 4                                                                                   | 5                                                                                 | 6                                                                                 | 7 | 8                                                                                 | FLASH TIME: N/A                               |                              |  |  |
| PHASING            |   |         |  |  |  |  |  |   |  | CYCLE = 90 sec                                |                              |  |  |
| MODE/RECALL        | 0 |                                                                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                   |                                                                                   |   |                                                                                   | PHASE 1+5: EB & WB LTs<br>South Orange Ave    |                              |  |  |
| MIN. GREEN         | 1 | 7                                                                                          | 22                                                                                  | 7                                                                                   | 7                                                                                   | 7                                                                                 | 22                                                                                |   | 7                                                                                 | PHASE 2+6: EB & WB<br>South Orange Ave        |                              |  |  |
| WALK               | 2 | 0                                                                                          | 10                                                                                  | 0                                                                                   | 9                                                                                   | 0                                                                                 | 10                                                                                |   | 9                                                                                 | PHASE 3: SB Scotland Rd                       |                              |  |  |
| PED. CLR.          | 3 | 0                                                                                          | 19                                                                                  | 7                                                                                   | 20                                                                                  | 7                                                                                 | 19                                                                                |   | 20                                                                                | PHASE 4+8: NB & SB<br>Scotland Rd & Valley St |                              |  |  |
| VEH. EXT.          | 4 | 3.0                                                                                        | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                               | 3.0                                                                               |   | 3.0                                                                               |                                               |                              |  |  |
| MAX I              | 5 | 7                                                                                          | 26                                                                                  | 10                                                                                  | 27                                                                                  | 7                                                                                 | 26                                                                                |   | 27                                                                                | OFFSET: 73 SEC                                |                              |  |  |
| MAX II             | 6 | -                                                                                          | -                                                                                   | -                                                                                   | -                                                                                   | -                                                                                 | -                                                                                 |   | -                                                                                 |                                               |                              |  |  |
| MAX SPLITS         | 7 | 7                                                                                          | 26                                                                                  | 10                                                                                  | 29                                                                                  | 7                                                                                 | 26                                                                                |   | 29                                                                                |                                               |                              |  |  |
| AMBER              | 8 | 3.0                                                                                        | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                               | 3.0                                                                               |   | 3.0                                                                               |                                               |                              |  |  |
| ALL RED            | 9 | 0.0                                                                                        | 3.0                                                                                 | 0.0                                                                                 | 3.0                                                                                 | 0.0                                                                               | 3.0                                                                               |   | 3.0                                                                               |                                               |                              |  |  |
|                    |   |                                                                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                   |                                                                                   |   |                                                                                   |                                               |                              |  |  |

NOTES:

DIRECTIVE NUMBER: 512