1 EXECUTIVE SUMMARY

This report presents the findings of the traffic impact analysis for the proposed Revitalize RVA mixed-use development in the City of Richmond.

1.1 REPORT PURPOSE AND STUDY OBJECTIVES

The purpose of this traffic study is to determine the impacts of the proposed Revitalize RVA development on the transportation system and to recommend improvements to lessen or negate the impacts of the development. The objectives of the traffic study are as follows:

- Evaluate existing conditions and identify deficiencies in the existing roadway network.
- Evaluate future No Build conditions without the proposed development and identify deficiencies in the future roadway network as a result of background traffic growth.
- Evaluate future Build conditions with the proposed development and identify improvements that will lessen or negate the impacts of the proposed site on the transportation network.

This traffic impact analysis (TIA) has been prepared according to the procedures outlined in the Virginia Department of Transportation’s (VDOT) Traffic Impact Analysis Regulations (henceforth referred to as Chapter 527). The TIA has been completed in accordance with the Scope of Study agreed upon by the City of Richmond and VDOT.

1.2 INTRODUCTION

The proposed mixed-use development known as Revitalize RVA is roughly located in the southwest quadrant of the Interstate 95 interchange with East Broad Street (Exit 74) in the City of Richmond. The proposed development includes a minor league baseball stadium that would replace the Diamond, the home of the Richmond Flying Squirrels. Figure 1-1 shows the location of the proposed development along with the location of the Diamond (all figures are located after page 1-12). The Revitalize RVA site is located at the intersection of East Broad Street and Oliver Hill Way/North 17th Street as shown in Figure 1-2.

Analyses were performed for the 2016 volumes, which is the buildout year for the proposed development, and for the 2022 volumes, which is the buildout plus six years, as specified in the Chapter 527 regulations.

To evaluate the impacts of the traffic generated by the stadium, analyses were completed for four peak hours:

1. Weekday AM peak hour of the adjacent street (7:30-8:30 AM);
2. Weekday PM peak hour of the adjacent street (4:45-5:45 PM);
3. Weekday PM peak hour of the stadium (5:30-6:30 PM assuming a 6:35 PM start time); and
4. Saturday peak hour of the stadium (5:00-6:00 PM assuming a 6:05 PM start time)

For the future 2016 and 2022 Build analyses, site trips from the proposed development adjacent to the stadium were included in all four peak hours while the site trips from the proposed stadium were only included in the peak hour of the stadium analyses.
1.3 SITE LOCATION AND STUDY AREA

The Revitalize RVA site is located at the intersection of East Broad Street and Oliver Hill Way/North 17th Street in the City of Richmond as indicated on Figure 1-2. The proposed site has frontage on East Broad Street, Oliver Hill Way, North 18th Street, East Franklin Street, and Ambler Street. Access to the development will be provided via Oliver Hill Way/North 17th Street, East Broad Street, and East Franklin Street.

On the north side of East Broad Street the primary access to the Revitalize RVA site will be provided from Oliver Hill Way opposite the intersections of East Clay Street and East Marshall Street. Additional right-in/right-out access will be provided from East Broad Street at Old 16th Street. On the south side of East Broad Street the primary access to the Revitalize RVA site will be provided from East Franklin Street at Ambler Street. Additional right-in/right-out access will be provided from East Broad Street at North 17th Street.

The study area is indicated in Figure 1-3 and includes the following intersections:

1. East Broad Street at North 14th Street;
2. Bank Street/East Franklin Street at North 14th Street;
3. East Franklin Street at North 15th Street/I-95 SB off-ramp;
4. East Main Street at North 15th Street/South 15th Street;
5. East Main Street at North 17th Street/South 17th Street;
6. East Main Street at North 18th Street/South 18th Street;
7. East Franklin Street at North 18th Street;
8. East Grace Street at North 18th Street;
9. East Broad Street at Oliver Hill Way/North 17th Street;
10. East Broad Street at North 18th Street;
11. East Marshall Street at Oliver Hill Way;
12. East Marshall Street at North 18th Street;
13. East Clay Street at Oliver Hill Way;
14. East Broad Street at Old 16th Street (future Build conditions only).

The study also includes the following weaving segments at the interchange of East Broad Street and Interstate 95 (I-95):

1. I-95 northbound between the ramp from I-195 southbound and the ramp to East Broad Street/Oliver Hill Way;
2. I-95 northbound between the ramp from East Broad Street and the ramp to I-64 eastbound;
3. I-95 southbound between the ramp from I-64 westbound and the ramp to East Broad Street;
4. I-95 southbound between the ramp from East Broad Street and the ramp to East Franklin Street;
5. I-95 southbound between the ramp to East Franklin Street and the ramp to I-195 northbound; and
6. East Broad Street ramps to I-95 northbound and southbound.

1.4 PROPOSED DEVELOPMENT

On the north side of East Broad Street the development consists of 299 apartments, 150,000 square feet of office space, a 65,000 square-foot supermarket, a 150 room hotel, and 1,700 space parking deck. On the south side of East Broad Street the development consists of 200 apartments, 18,000 square feet of office space, a 30,000 square-foot museum, and 7,200 seat baseball stadium. The Revitalize RVA trip generation, without internal capture, walking, and transit reductions, is summarized in Table 1-1.

Table 1-1: Trip Generation Summary

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>ITE CODE</th>
<th>AMT UNITS</th>
<th>ITE AM PEAK HOUR</th>
<th>ITE PM PEAK HOUR</th>
<th>SATURDAY WITH STADIUM PM PEAK HOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>IN</td>
<td>OUT</td>
<td>TOTAL</td>
</tr>
<tr>
<td>Stadium Site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-Rise Apartment</td>
<td>223</td>
<td>200 DU</td>
<td>840</td>
<td>19</td>
<td>41</td>
</tr>
<tr>
<td>General Office</td>
<td>710</td>
<td>18,000 SF/GFA</td>
<td>357</td>
<td>43</td>
<td>6</td>
</tr>
<tr>
<td>Front Office (Stadium)</td>
<td>710</td>
<td>40 Employees</td>
<td>133</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>Baseball Stadium</td>
<td>N/A</td>
<td>7,200 Seats</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>SUBTOTAL:</strong></td>
<td></td>
<td></td>
<td>1,329</td>
<td>78</td>
<td>50</td>
</tr>
<tr>
<td>Between Broad and Marshall Streets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-Rise Apartment</td>
<td>223</td>
<td>200 DU</td>
<td>840</td>
<td>19</td>
<td>41</td>
</tr>
<tr>
<td>Hotel</td>
<td>310</td>
<td>150 Rooms</td>
<td>1,226</td>
<td>47</td>
<td>33</td>
</tr>
<tr>
<td>Supermarket</td>
<td>850</td>
<td>65,000 SF/GFA</td>
<td>6,646</td>
<td>137</td>
<td>84</td>
</tr>
<tr>
<td><strong>SUBTOTAL:</strong></td>
<td></td>
<td></td>
<td>10,498</td>
<td>435</td>
<td>190</td>
</tr>
<tr>
<td>North of Marshall Street</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-Rise Apartment</td>
<td>223</td>
<td>99 DU</td>
<td>416</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>Parking Deck</td>
<td>N/A</td>
<td>1,700 Spaces</td>
<td>2,690</td>
<td>867</td>
<td>0</td>
</tr>
<tr>
<td><strong>SUBTOTAL:</strong></td>
<td></td>
<td></td>
<td>3,306</td>
<td>876</td>
<td>20</td>
</tr>
<tr>
<td>Lumpkins Heritage Museum</td>
<td>N/A</td>
<td>30,000 SF</td>
<td>210</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td><strong>SUBTOTAL:</strong></td>
<td></td>
<td></td>
<td>210</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL DEVELOPMENT:</strong></td>
<td></td>
<td></td>
<td>15,343</td>
<td>1,398</td>
<td>263</td>
</tr>
<tr>
<td><strong>SOURCE:</strong> Institute of Transportation Engineers’ Trip Generation Manual 9th Edition (2012)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. ITE does not provide weekday ADT data or Saturday data for high-rise apartments (LUC 222) was used.
2. ITE does not provide data for the land use; data provided by Richmond Flying Squirrels. Trips estimated using 80% of maximum number of seats for weekend games assuming 3.2 persons per vehicle for fan trips plus trips for 200 event staff and that 75% of fans arrive during the peak hour (25% arrive 30 to 60 minutes before start, 50% arrive 0 to 30 minutes before start, and 25% arrive 0 to 30 minutes after start).
3. ITE does not provide data for this land use. 50% walking/transit/internal capture reduction for urban infill development based on ITE parking generation rates for urban (2.27 veh/1,000 SF) versus suburban (3.78 veh/1,000 SF) grocery store and VDOT’s internal capture rates for mixed used development (15%). No pass-by reduction is assumed.
4. Trip generation for PM Peak Hour of the Stadium assumed to be 85% of trip generation for PM Peak Hour of the Adjacent Street (ratio of intersection volumes for 5:30 to 6:30 PM to volumes for 4:45 to 5:45 PM).

As indicated in Table 1-1, on a typical weekday (not a game day), the Revitalize RVA development is anticipated to generate approximately 15,343 trips per day before internal capture, walking, and transit reductions are applied. When there is a baseball game on a weekday the Revitalize RVA development is anticipated to generate approximately 19,327 trips per day before internal capture, walking, and transit reductions are applied.
1.5 **ANTICIPATED CHANGES TO EXISTING ROADWAY NETWORK**

The City of Richmond has a programmed improvement to convert North 18th Street between East Grace Street and East Broad Street from one-way to two-way operations. This improvement will be in place prior to the completion of the Revitalize RVA development.

As identified in the *I-95/I-64 Overlap Study* Final Report dated March 2013, VDOT has a programmed improvement to add an additional lane to the I-95 southbound off-ramp at East Franklin Street (see Exhibit 1-1). The improvement will also involve modifying the lane assignments on North 15th Street between East Franklin Street and East Main Street to switch from two lanes in each direction to three lanes southbound and one lane northbound. This improvement is anticipated to be constructed after buildout of the Revitalize RVA development in 2016 but prior to the horizon year of 2022.

There are several proposed changes to the existing roadway network associated with the Revitalize RVA development. Due to the construction of the stadium complex, several streets will be eliminated:

1. East Grace Street between Ambler Street and North 18th Street;
2. North 17th Street between East Broad Street and East Main Street;
3. Crane Street East Broad Street and East Grace Street; and
4. East Broad Street at Old 16th Street (future Build conditions only).

Additionally, several one-way streets will be converted to two-way operations in conjunction with the proposed development:

1. East Franklin Street between Ambler Street and North 18th Street; and
2. Ambler Street between East Grace Street and East Franklin Street.

1.6 **MITIGATION STRATEGIES**

Based on the preliminary analyses of the 2016 Build volumes it was determined that the existing roadway network would need to be modified in order to accommodate the additional traffic associated with the Revitalized RVA development. In order to mitigate the impacts of the additional daily traffic (without the stadium) the following strategies were developed.

1.6.1 **Modify On-Street Parking**

On-street parking was restricted at certain locations to provide additional travel lanes to increase capacity.

- North of East Broad Street:
  - East Clay Street between Oliver Hill Way and North 18th Street – no parking from 7 to 9 AM and from 4 to 6 PM along the north side of East Clay Street and eliminate all on-street parking (all day) along the south side of East Clay Street to provide for an additional travel lane.
o East Marshall Street between Oliver Hill Way and North 18th Street - no parking from 7 to 9 AM and from 4 to 6 PM along the north side of East Marshall Street and eliminate all on-street parking (all day) along the south side of East Marshall Street to provide for an additional travel lane.

o North 18th Street between East Broad Street and East Marshall Street – eliminate all on-street parking (all day) to accommodate additional width needed for two-way traffic.

o North 18th Street between East Marshall Street and Venable Street – no parking from 7 to 9 AM and from 4 to 6 PM to provide an additional travel lane in both directions.

• South of East Broad Street:

o North 18th Street between East Broad Street and East Grace Street – eliminate all on-street parking (all day) to accommodate additional width needed for two-way traffic.

o North/South 18th Street between East Grace Street and East Cary Street – no parking from 7 to 9 AM and from 4 to 6 PM to provide an additional travel lane in both directions.

o East Main Street between North/South 18th Street and Main Street Station – no parking from 7 to 9 AM and from 4 to 6 PM along the south side of East Main Street to provide an additional travel lane.

1.6.2 Modify Existing Traffic Signal Timings

Increased traffic volumes and directional flows will necessitate the re-timing and/or re-phasing of the following eight (8) signalized intersections within the study area:

1. East Broad Street at North 14th Street;
2. Bank Street/East Franklin Street at North 14th Street;
3. East Franklin Street at North 15th Street/I-95 SB off-ramp;
4. East Main Street at North 15th Street/South 15th Street;
5. East Main Street at North 17th Street/South 17th Street;
6. East Main Street at North 18th Street/South 18th Street;
7. East Broad Street at Oliver Hill Way/North 17th Street;
8. East Broad Street at North 18th Street.

1.6.3 Modify Existing Traffic Controls

The conversion of several streets from one-way to two-way operations will require modifications to the existing traffic signals at the following intersections:

1. East Broad Street at Oliver Hill Way (potential for future multi-lane roundabout); and
2. East Broad Street at North 18th Street.

Increased traffic volumes and directional flows will necessitate replacing two-way stop controls with traffic signals at the following intersections:
1. East Marshall Street at Oliver Hill Way;
2. East Marshall Street at North 18th Street; and
3. East Clay Street at Oliver Hill Way.

1.6.4 Other Operational and Capacity Improvements

In order to accommodate the increased traffic volumes associated with the proposed Revitalize RVA development, the following operational and capacity improvements are recommended:

1. Redirect Oliver Hill Way southbound, north of the I-95 ramp, to North 18th Street (via Venable Street) to disperse heavy directional traffic flows.

2. Convert Oliver Hill Way, north of East Broad Street from a three-lane, one-way facility to a four-lane, two-way facility between East Broad Street and East Clay Street. Construct an additional lane on southbound Oliver Hill Way between East Marshall Street and East Broad Street to accommodate dual lefts and rights at East Broad Street. The widening is anticipated to be accomplished using both sides of Oliver Hill Way based on the very wide sidewalk and available right of way on the east side of the existing roadway.

3. Convert East Broad Street between North 18th Street and the I-95 ramps from two lanes in each direction one lane eastbound and three lanes westbound to better accommodate peak hour traffic flows (consistent in both the AM and PM peak hours). Most of this work can be accomplished through restriping. However, widening along the south side of East Broad Street between North 18th Street and the railroad tracks will be required to allow construction of an eastbound left turn lane onto Oliver Hill Way and to accommodate dual southbound left turns from Oliver Hill Way. It is assumed that widening along the north side of East Broad Street is not feasible based on the existing development between Oliver Hill Way and North 18th Street.

4. Convert North 18th Street to two-way operations between East Broad Street and Venable Street to accommodate traffic diverted from Oliver Hill Way; two northbound lanes and two southbound lanes are anticipated during peak hour. It is assumed that this widening can be accommodated through the elimination of on-street parking during peak traffic periods.

The above improvements are illustrated on Figure 1-4. These operational and capacity improvements are consistent with the long range improvements identified for this area the I-95/I-64 Overlap Study (see Exhibit 1-2). It is intended that all proposed improvements would be constructed within either existing right of way or new right of way (or easements) to be provided by the development. Furthermore, it is anticipated that all site improvements will be constructed in a manner that does not restrict the future implementation of other potential street improvements identified in the approved VDOT study.

VDOT has a programmed improvement to add an additional lane to the I-95 southbound off-ramp at East Franklin Street (also identified in the I-95/I-64 Overlap Study, see Exhibit 1-1). This project is included in the current draft of VDOT’s Six-Year Improvement Program. The improvement will also involve modifying the lane assignments on North 15th Street between East Franklin Street and East Main Street to switch from two lanes in each direction to three lanes southbound and one lane northbound. This improvement is illustrated on Figure 1-5.

All of these recommended and programmed improvements are illustrated on Exhibit 1-3 (labeled Revitalize RVA: Proposed Transportation Improvements).
1.7 FUTURE VOLUMES

A 2% annual growth rate was applied to the 2014 existing volumes to generate the 2016 and 2022 No Build volumes. The 2016 and 2022 No Build volumes were then adjusted to account for the conversion of North 18th Street from one-way to two-way operations between East Broad Street and East Grace Street. This is an improvement that the City of Richmond will make prior to the completion of the Revitalize RVA development.

To generate the 2016 and 2022 Build volumes used in the analyses the 2016 and 2022 No Build volumes were re-routed to account for the proposed changes to the roadway network (described above) and then the site trips were added.

1.8 PRINCIPAL FINDINGS

Analyses were performed for the 2014 existing volumes, the 2016 volumes, which is the buildout year for the proposed development, and the 2022 volumes, which is the buildout plus six years, as specified in the Chapter 527 regulations.

1.8.1 2014 Existing Volumes

Analysis of the 2014 existing conditions included 14 existing intersections – eight signalized and six unsignalized. As indicated in Table 1-2 and on Figures 1-6 through 1-9, all of the signalized intersection operate at an overall level of service (LOS) D or better (the intersection numbers in the table correspond to Figure 1-3) during the four peak hours analyzed. Two of the unsignalized intersections have stop-controlled movements that operate at LOS E during the AM and/or PM peak hours.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>2014 Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM</td>
</tr>
<tr>
<td>1. Broad St at 14th St</td>
<td>Signalized</td>
<td>B</td>
</tr>
<tr>
<td>2. Bank/Franklin St at 14th St</td>
<td>Signalized</td>
<td>B</td>
</tr>
<tr>
<td>3. Franklin St at 15th St/Ramp</td>
<td>Signalized</td>
<td>C</td>
</tr>
<tr>
<td>4. Main St at 15th St</td>
<td>Signalized</td>
<td>C</td>
</tr>
<tr>
<td>5A. Main St at 17th St SB</td>
<td>Unsignalized</td>
<td>B</td>
</tr>
<tr>
<td>5. Main St at 17th St NB</td>
<td>Signalized</td>
<td>A</td>
</tr>
<tr>
<td>6. Main St at 18th St</td>
<td>Signalized</td>
<td>C</td>
</tr>
<tr>
<td>7. Franklin St at 18th St</td>
<td>Unsignalized</td>
<td>B</td>
</tr>
<tr>
<td>8. Grace St at 18th St</td>
<td>Unsignalized</td>
<td>B</td>
</tr>
<tr>
<td>9. Broad St at Oliver Hill Way</td>
<td>Signalized</td>
<td>D</td>
</tr>
<tr>
<td>10. Broad St at 18th St</td>
<td>Signalized</td>
<td>C</td>
</tr>
<tr>
<td>11. Marshall St at Oliver Hill Way</td>
<td>Unsignalized</td>
<td>E</td>
</tr>
<tr>
<td>12. Marshall St at 18th St</td>
<td>Unsignalized</td>
<td>C</td>
</tr>
<tr>
<td>13. Clay St at Oliver Hill Way</td>
<td>Unsignalized</td>
<td>C</td>
</tr>
<tr>
<td>14. Broad St at Old 16th St</td>
<td>Unsignalized</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Overall LOS reported for signalized intersections and LOS for worst movement reported for unsignalized intersections.
1.8.2 2016 Future Volumes

Analysis of the 2016 No Build conditions included 14 existing intersections – eight signalized and six unsignalized. The analysis of the 2016 Build conditions included 14 intersections – eleven signalized and three unsignalized. The 2016 Build analyses include the recommended improvements adjacent to the Revitalize RVA site.

As indicated in Table 1-3 and on Figures 1-10 through 1-13, under 2016 No Build conditions all of the signalized intersections are anticipated to operate at an overall LOS D or better during the four peak hours analyzed with the exception of the intersection of East Broad Street and Oliver Hill Way which operates at LOS E during the AM peak hour. Three of the unsignalized intersections have stop-controlled movements that are anticipated to operate at LOS E or F during the AM and/or PM peak hours.

With the addition of the site traffic and the implementation of the mitigation strategies described in Section 1.6, under 2016 Build conditions all of the signalized intersections are anticipated to operate at an overall LOS D or better during the four peak hours analyzed. The unsignalized intersection of East Franklin Street and North 18th Street is anticipated to have stop-controlled movements that operate at LOS E during the PM and Stadium PM peak hours. The 2016 Build LOS is included in Table 1-3 and shown on Figures 1-14 through 1-17.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>2016 No Build</th>
<th>2016 Build</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM</td>
<td>PM</td>
</tr>
<tr>
<td>1. Broad St at 14th St</td>
<td>Signalized</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>2. Bank/Franklin St at 14th St</td>
<td>Signalized</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>3. Franklin St at 15th St/Ramp</td>
<td>Signalized</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>4. Main St at 15th St</td>
<td>Signalized</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>5A. Main St at 17th St SB</td>
<td>Unsignalized</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>5. Main St at 17th St NB</td>
<td>Signalized</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>6. Main St at 18th St</td>
<td>Signalized</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>7. Franklin St at 18th St</td>
<td>Unsignalized</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>8. Grace St at 18th St</td>
<td>Unsignalized</td>
<td>B</td>
<td>F</td>
</tr>
<tr>
<td>9. Broad St at Oliver Hill Way</td>
<td>Signalized</td>
<td>E</td>
<td>B</td>
</tr>
<tr>
<td>10. Broad St at 18th St</td>
<td>Signalized</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>11. Marshall St at Oliver Hill Way</td>
<td>Unsignalized</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>Signalized</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>12. Marshall St at 18th St</td>
<td>Unsignalized</td>
<td>C</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>Signalized</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Clay St at Oliver Hill Way</td>
<td>Unsignalized</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Signalized</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>14. Broad St at Old 16th St</td>
<td>Unsignalized</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

NOTE: Overall LOS reported for signalized intersections and LOS for worst movement reported for unsignalized intersections.
1.8.3 2022 Future Volumes

Analysis of the 2022 No Build conditions included 14 existing intersections – eight signalized and six unsignalized. The analysis of the 2022 Build conditions included 14 intersections – eleven signalized and three unsignalized. The 2022 Build analyses include the recommended improvements adjacent to the Revitalize RVA site.

As indicated in Table 1-4 and on Figures 1-18 through 1-21, under 2022 No Build conditions five of the eight signalized intersections are anticipated to operate at an overall LOS D during the four peak hours analyzed. Three signalized intersections operate at an overall LOS E or F during the AM or PM peak hours:

1. East Main Street at North 18th Street/South 18th Street;
2. East Broad Street at Oliver Hill Way; and
3. East Broad Street at North 18th Street.

Three of the unsignalized intersections have stop-controlled movements that are anticipated to operate at LOS E or F during the AM, PM, or Stadium PM peak hours.

With the addition of the site traffic and the implementation of the mitigation strategies described in Section 1.6, under 2022 Build conditions nine of the signalized intersections are anticipated to operate at an overall LOS D or better during the four peak hours analyzed. Two signalized intersections operate at an overall LOS E or F during the AM, PM, or Stadium PM peak hours:

1. East Broad Street at North 14th Street; and
2. East Broad Street at North 18th Street.

Two of the unsignalized intersections have stop-controlled movements that are anticipated to operate at LOS E or F during the PM, or Stadium PM peak hours. The 2022 Build LOS is included in Table 1-4 and shown on Figures 1-22 through 1-25.
Table 1-4: 2022 Intersection Level of Service Comparison

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>2022 No Build</th>
<th>2022 Build</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM</td>
<td>PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PM</td>
<td>SAT</td>
</tr>
<tr>
<td>1. Broad St at 14th St</td>
<td>Signalized</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>2. Bank/Franklin St at 14th St</td>
<td>Signalized</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>3. Franklin St at 15th St/Ramp</td>
<td>Signalized</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>4. Main St at 15th St</td>
<td>Signalized</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>5A. Main St at 17th St SB</td>
<td>Unsignalized</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>5. Main St at 17th St NB</td>
<td>Signalized</td>
<td>C</td>
<td>E</td>
</tr>
<tr>
<td>6. Main St at 18th St</td>
<td>Signalized</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>7. Franklin St at 18th St</td>
<td>Unsignalized</td>
<td>C</td>
<td>F</td>
</tr>
<tr>
<td>8. Grace St at 18th St</td>
<td>Unsignalized</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>9. Broad St at Oliver Hill Way</td>
<td>Signalized</td>
<td>F</td>
<td>C</td>
</tr>
<tr>
<td>10. Broad St at 18th St</td>
<td>Signalized</td>
<td>C</td>
<td>E</td>
</tr>
<tr>
<td>11. Marshall St at Oliver Hill Way</td>
<td>Unsignalized</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>Signalized</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>12. Marshall St at 18th St</td>
<td>Signalized</td>
<td>C</td>
<td>F</td>
</tr>
<tr>
<td>13. Clay St at Oliver Hill Way</td>
<td>Unsignalized</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Signalized</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

NOTE: Overall LOS reported for signalized intersections and LOS for worst movement reported for unsignalized intersections.

1.9 PARKING EVALUATION

A parking inventory and analysis for the proposed stadium site was prepared in conjunction with the traffic impact study. This work took into consideration existing surface lots, parking decks, and on-street parking that will be impacted by the stadium as well as the proposed supporting development.

Nine existing off-street parking facilities (both surface lots and decks) within and adjacent to the Revitalize RVA site were included in the analysis and are shown graphically on Figure 1-26.

To assess the utilization of spaces within each of the off-street facilities, accumulation counts were collected at the following times:

1. 7:00 AM;
2. 9:00 AM;
3. 4:00 PM; and
4. 5:30 PM.

The off-street parking data was grouped based on location (north or south of East Broad Street) and by its respective classification (honor, permit, deck). This information is summarized below in Table 1-5. Utilization rates (shown in italics) were then calculated using occupied versus available spaces.
On-street parking within the study area was also surveyed. A detailed summary of the number of on-street parking spaces currently available on the north and south sides of East Broad Street is shown on Figures 1-27 and 1-28. During the survey it was noted that most vehicles arrive early in the morning and remain parked throughout the day. In addition, there were numerous vehicles that remained in the same space throughout the data collection effort, indicating that nearby residents are using the on-street spaces for long-term parking.

Based on the existing parking survey and the anticipated demand of the proposed stadium, the following is offered:

- There are approximately 3,900 parking spaces contained within the study area. This number consists of approximately 3,550 off-street spaces and 350 on-street spaces.
- The construction of the stadium will displace approximately 750 permit-parkers who currently use the existing surface lots; however, it is anticipated that these individuals will be relocated to the proposed 1,700-space parking deck on Oliver Hill Way.
- There are approximately 450 off-street honor spaces that will be eliminated through the construction of the stadium and the proposed ancillary development. It is anticipated that portion of these will also be relocated to the proposed parking deck.
- With regard to on-street parking:
  - 170 spaces will be eliminated by the construction of the proposed stadium (south of East Broad Street);
  - 25 spaces will be eliminated to accommodate additional travel lanes north of East Broad Street;
  - 100 spaces north of East Broad Street that currently provide unrestricted parking will no longer be available during the AM and PM peak hours; and
  - 50 spaces along the North 18th Street corridor will no longer be available during the AM and PM peak hours.

### Table 1-5: Off-Street Parking Utilization

<table>
<thead>
<tr>
<th>Lots</th>
<th>Type</th>
<th>Total Number of Spaces</th>
<th>7:00 AM Occupied</th>
<th>7:00 AM Empty</th>
<th>9:00 AM Occupied</th>
<th>9:00 AM Empty</th>
<th>4:00 PM Occupied</th>
<th>4:00 PM Empty</th>
<th>5:30 PM Occupied</th>
<th>5:30 PM Empty</th>
</tr>
</thead>
<tbody>
<tr>
<td>North of Broad</td>
<td>Honor</td>
<td>305</td>
<td>64 (21%)</td>
<td>241</td>
<td>275 (90%)</td>
<td>30</td>
<td>277 (91%)</td>
<td>28</td>
<td>36 (12%)</td>
<td>269</td>
</tr>
<tr>
<td>South of Broad</td>
<td>Honor</td>
<td>142</td>
<td>45 (32%)</td>
<td>97</td>
<td>78 (55%)</td>
<td>64</td>
<td>81 (57%)</td>
<td>61</td>
<td>12 (8%)</td>
<td>130</td>
</tr>
<tr>
<td>VCU South</td>
<td>Permit</td>
<td>754</td>
<td>124 (16%)</td>
<td>630</td>
<td>503 (67%)</td>
<td>251</td>
<td>335 (44%)</td>
<td>419</td>
<td>81 (11%)</td>
<td>673</td>
</tr>
<tr>
<td>DGS (14th/Main)</td>
<td>Deck</td>
<td>1,468</td>
<td>419 (29%)</td>
<td>1,049</td>
<td>985 (67%)</td>
<td>483</td>
<td>957 (65%)</td>
<td>511</td>
<td>360 (25%)</td>
<td>1,108</td>
</tr>
<tr>
<td>14th/Cary</td>
<td>Deck</td>
<td>868</td>
<td>135 (16%)</td>
<td>733</td>
<td>410 (47%)</td>
<td>458</td>
<td>482 (56%)</td>
<td>386</td>
<td>226 (26%)</td>
<td>642</td>
</tr>
</tbody>
</table>

**NOTE:** Utilization rates shown in italics.
• With respect to parking demand generated by the proposed stadium:
  
  o For a typical game (80% occupancy) 1,900 parking spaces are anticipated to be necessary for the proposed 7,200 seat stadium.
  
  o It is assumed that approximately 700 spaces will be necessary at both the DGS deck at 14th and Main Streets and the proposed 1,700-space deck on Oliver Hill Way; 500 spaces will be provided on-site adjacent to the stadium to accommodate handicapped and reserved parking.
  
  o Based on the current parking inventory, there are over 1,100 vacant spaces in the DGS deck at 5:30 pm.
  
  o Based on the utilization rates noted at the displaced surface lots, there should be approximately 1,500 vacant spaces in the proposed deck on Oliver Hill Way at 5:30 PM.

The stadium parking supply and demand for a weekday game is summarized on Figure 1-29. As indicated on Figure 1-29, it is anticipated that adequate parking will be available within the vicinity of the proposed ballpark to support stadium operations during evening and weekend games.

1.10 CONCLUSIONS

Figures 1-14 through 1-17 show acceptable (i.e. LOS D or better) conditions under 2016 Build conditions throughout the study area with the exception of one unsignalized intersection on North 18th Street (which has poor LOS because of the stop controlled minor street approach). As indicated in Table 1-3, the addition of the site traffic in conjunction with the implementation of the proposed mitigation measures will have minor impacts on operating conditions within the study area.

Figures 1-22 through 1-25 show acceptable (i.e. LOS D or better) conditions under 2022 Build conditions throughout the study area with the exception of two unsignalized intersections on North 18th Street (which have poor LOS because of the stop controlled minor street approaches) and two signalized intersections on East Broad Street. East Broad Street at North 18th Street operates at LOS E during the AM and PM peak hours while East Broad Street at North 14th Street operates at LOS E during the PM and Stadium PM peak hours. While not desirable, these conditions are not unusual in an urban environment and they typically do not last for an extended period of time. The implementation of proposed improvements, consistent with the VDOT I-95/I-64 Overlap Study, will also help provide much-needed transportation relief to the East Broad Street corridor between Church Hill and I-95.

It should also be noted that during the Stadium Saturday peak hour (5:00 to 6:00 PM) all intersections (signalized and unsignalized) operate at a LOS C or better under 2016 and 2022 Build conditions (with stadium traffic).

Based on the Stadium PM and Saturday analyses, the traffic generated by the proposed baseball stadium in and of itself does not have a significant negative impact on traffic operations within the study area.
Site Location within Region

Figure 1-1

LEGEND:
- Proposed Site
- Existing Stadium
Figure 1-2

Surrounding Roadway Network and Site Location

LEGEND:

- Proposed Site
Figure 1-3

LEGEND:
- Study Area Boundary
- Intersection #
- Weaving Segment #

Study Area Boundary Intersections and Weaving Segments

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Proposed Transportation Improvements

Figure 1-4
Programmed VDOT Improvements
LEGEND:

- **A**: Signalized Intersection (Overall LOS Reported)
- **A**: Stop-Controlled Intersection (Worst Movement LOS Reported)
- **GREEN**: LOS A, B, or C
- **YELLOW**: LOS D
- **RED**: LOS E or F

Figure 1-6

2014 Existing Volumes
AM Peak Hour
Intersection Levels of Service
Legend:

- **A** Signalized Intersection (Overall LOS Reported)
- **A** Stop-Controlled Intersection (Worst Movement LOS Reported)
- **GREEN** LOS A, B, or C
- **YELLOW** LOS D
- **RED** LOS E or F

**Figure 1-7**

2014 Existing Volumes
PM Peak Hour
Intersection Levels of Service
2014 Existing Volumes
Stadium PM Peak Hour
Intersection Levels of Service

Figure 1-8
LEGEND:

A

Signalized Intersection
(Overall LOS Reported)

A

Stop-Controlled Intersection
(Worst Movement LOS Reported)

GREEN

LOS A, B, or C

YELLOW

LOS D

RED

LOS E or F

Figure 1-9

2014 Existing Volumes
Stadium SAT Peak Hour
Intersection Levels of Service

Figure 1-9
LEGEND:

A A
Signalized Intersection
(Overall LOS Reported)

Stop-Controlled Intersection
(Worst Movement LOS Reported)

GREEN
LOS A, B, or C

YELLOW
LOS D

RED
LOS E or F

Figure 1-10
2016 No Build Volumes
AM Peak Hour Levels of Service

Figure 1-10
LEGEND:

- Signalized Intersection (Overall LOS Reported)
- Stop-Controlled Intersection (Worst Movement LOS Reported)
- LOS A, B, or C
- LOS D
- LOS E or F

Figure 1-11
2016 No Build Volumes
PM Peak Hour Levels of Service

Figure 1-11
LEGEND:

A

Signalized Intersection
(Overall LOS Reported)

A

Stop-Controlled Intersection
(Worst Movement LOS Reported)

GREEN

LOS A, B, or C

YELLOW

LOS D

RED

LOS E or F

Figure 1-12

2016 No Build Volumes
Stadium PM Peak Hour Levels of Service

Figure 1-12
2016 No Build Volumes
Stadium SAT Peak Hour Levels of Service

Figure 1-13
Figure 1-15 2016 Build Volumes
PM Peak Hour Levels of Service
LEGEND:

- **A** Signalized Intersection (Overall LOS Reported)
- **A** Stop-Controlled Intersection (Worst Movement LOS Reported)
- **GREEN** LOS A, B, or C
- **YELLOW** LOS D
- **RED** LOS E or F
- **Proposed Site**
- **Proposed Site Access**

Figure 1-16 2016 Build Volumes Stadium PM Peak Hour Levels of Service
Figure 1-18

2022 No Build Volumes
AM Peak Hour Levels of Service
LEGEND:

A Signalized Intersection (Overall LOS Reported)
A Stop-Controlled Intersection (Worst Movement LOS Reported)
GREEN LOS A, B, or C
YELLOW LOS D
RED LOS E or F

Figure 1-20
2022 No Build Volumes
Stadium PM Peak Hour Levels of Service

Figure 1-20
2022 No Build Volumes
Stadium SAT Peak Hour Levels of Service

Figure 1-21

LEGEND:

A

B

C

D

E

F

Signalized Intersection
(Overall LOS Reported)

Stop-Controlled Intersection
(Worst Movement LOS Reported)

GREEN

YELLOW

RED

LOS A, B, or C

LOS D

LOS E or F

NO SCALE

TIMMONS GROUP

Your vision achieved through ours
Figure 1-22 2022 Build Volumes AM Peak Hour Levels of Service
Figure 1-23 2022 Build Volumes PM Peak Hour Levels of Service
Figure 1-24 2022 Build Volumes Stadium PM Peak Hour Levels of Service
Figure 1-26: Adjacent Off-Street Parking Facilities

LEGEND:
- Privately Owned Honor Lots
- City-Owned; VCU Leased
- State-Owned DGS Deck
  14th and Main Streets
- Public Parking Deck
  14th and Cary Streets
  (use for game day event staff)
Adjacent On-Street Parking Facilities
North of East Broad Street
Adjacent On-Street Parking Facilities
South of East Broad Street

Figure 1-28
**Existing Private Deck (14th & Cary Street)**
- Capacity: 868 vehicles
- Availability (after 4:00): 386
- Availability (after 5:30): 642
  (assumed location for event staff – approx. 200 vehicles)

**Existing State (DGS) Parking Deck**
- Capacity: 1,468 vehicles
- Availability (after 5:30): 1,108
- Stadium demand (@ 80%): 700
- Stadium demand (sell-out): 875
  **Surplus: 233-408 spaces**

**Proposed Parking Deck**
- Capacity: 1,700 vehicles
- Availability (after 5:30): 1,530
- Stadium demand (@ 80%): 700
- Stadium demand (sell-out): 875
  **Surplus: 655-830 spaces**

**Notes:**
1. Stadium demand assumes 3.2 persons/vehicle with no reduction for biking, walking or transit (conservative)
2. Stadium demand also reflects 400-600 spaces to be provided on (or adjacent to) site to accommodate preferred parking for players, front office & coaching staff, adjoining office/apartment development, handicapped and premium ticket holders
FRANKLIN STREET OFF-RAMP AREA IMPROVEMENTS
I-95/I-64 Overlap Study
City of Richmond and Henrico County, VA

LEGEND
- Proposed Pavement
- Existing Pavement
- Existing Sidewalk

SOURCE: Figure 46: SYIP #7 - Franklin Street Off-Ramp Area Improvements from the I-95/I-64 Overlap Study Final Report dated March 2013