

# Traffic Impact Analysis

## Marjorie K. Rawlings Transition School



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## 1. EXECUTIVE SUMMARY

Alachua County Public Schools has requested traffic studies to be performed at the following three school sites that are being considered to house a transition school for the 2020/2021, 2021/2022, and 2022/2023 school years:

- Howard Bishop Middle School
- Westwood Middle School
- Marjorie K Rawlings Elementary School

CHW has prepared this traffic study to review the traffic impacts of the proposed transition school located at the Rawlings site. The following schedule is anticipated by Alachua County Public Schools under a Marjorie K Rawlings (Rawlings) transition school scenario:

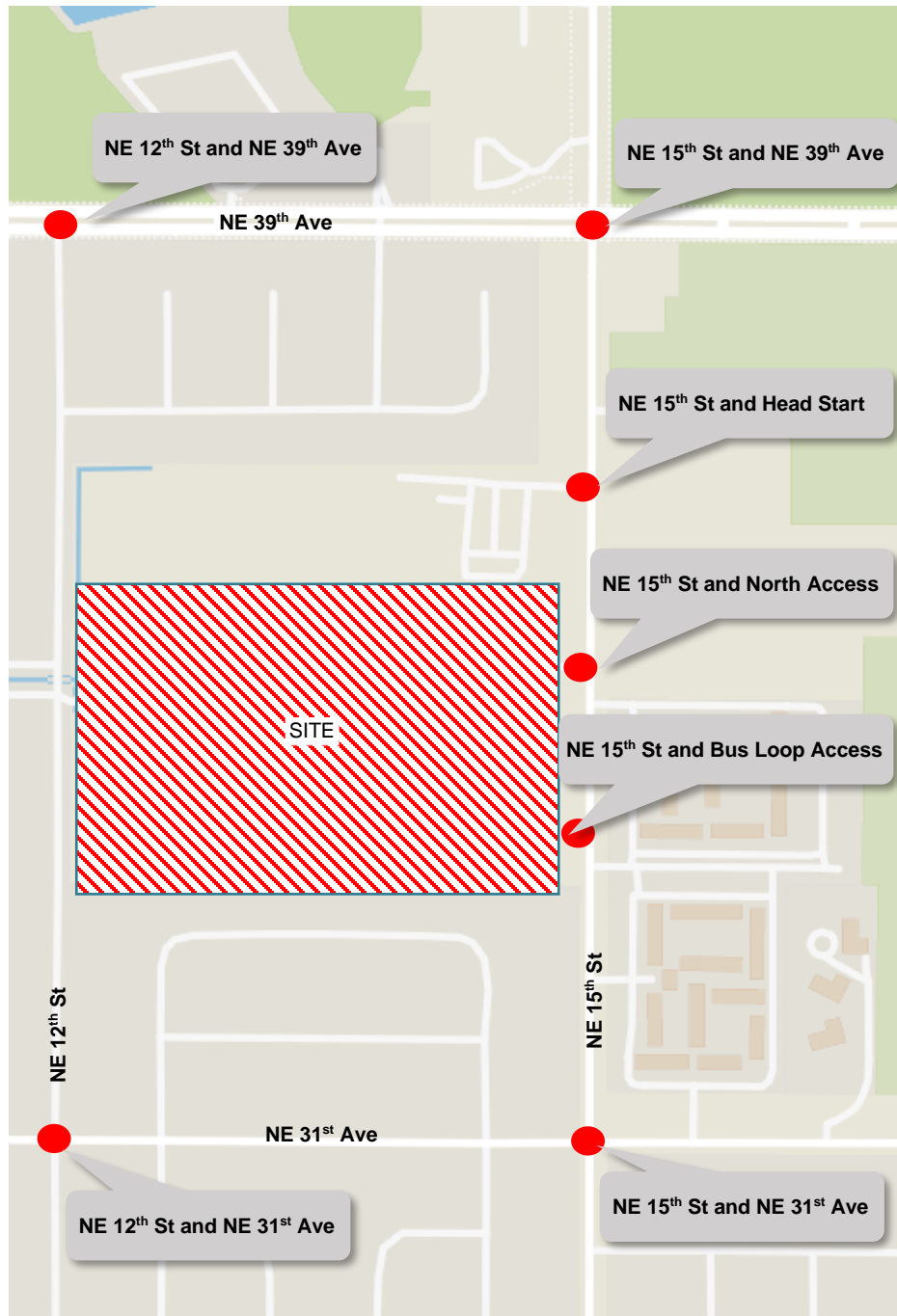
- 2020/2021 – Improvements occur at Howard Bishop Middle School (Howard Bishop). Howard Bishop faculty, staff, and students would utilize the Rawlings transition school with staff parking and parent/student drop-off parking located off NE 12<sup>th</sup> Street near the west side of the school property. The existing bus loop would be extended west to add a second bus loop for the transition school.
- 2021/2022 – Improvements occur at Westwood Middle School (Westwood). Westwood faculty, staff, and students would utilize the Rawlings transition school with staff parking and parent/student drop-off parking located off NE 12<sup>th</sup> Street near the west side of the school property. The existing lane would be extended west to add a second bus loop for the transition school.
- 2022/2023 – Improvements occur at Littlewood Elementary School (Littlewood). Littlewood faculty, staff, and students would utilize the Rawlings transition school with staff parking and parent/student drop-off parking located off NE 12<sup>th</sup> Street near the west side of the school property. The existing lane would be extended west to add a second bus loop for the transition school.

## 2. STUDY AREA

The Study Area, as provided in **Figure 1**, consists of the following intersections:

- NE 12<sup>th</sup> Street and NE 31<sup>st</sup> Avenue
- NE 12<sup>th</sup> Street and NE 39<sup>th</sup> Avenue
- NE 15<sup>th</sup> Street and NE 31<sup>st</sup> Avenue
- NE 15<sup>th</sup> Street and Bus Loop Access
- NE 15<sup>th</sup> Street and North Site Access
- NE 15<sup>th</sup> Street and Head Start Access
- NE 15<sup>th</sup> Street and NE 39<sup>th</sup> Avenue

Figure 1 | Study Area



### 3. DATA COLLECTION

Turning movement counts were performed at all study area intersections during the arrival and departure times. The counts were performed on January 28<sup>th</sup>, 2020 (Tuesday) and January 30<sup>th</sup>, 2020 (Thursday). Kimley-Horn and Associates Inc. provided turning movements at the parent/student drop-off parking lots of Littlewood and Westwood, which were used to determine the number of trips generated to/from these schools. **Appendix A** provides the raw turning movement count data.

The count data was adjusted based on the peak season factor published by FDOT and by the growth rate, to determine the background and build-out condition, see **Appendix B**. If the historical growth rate was less than 1%, a minimum 1% growth rate was applied to turning movements to determine the 2021, 2022, and 2023 background trips. In cases where no historical ADT was available, a growth rate of 2% was applied.

Site visits were made to Marjorie K Rawlings Elementary to provide an understanding of the vehicular and pedestrian traffic circulation. Additionally, site visits were made to Littlewood Elementary School, Westwood Middle School, and Howard Bishop Middle School, to obtain the number of utilized parking spaces, queued buses, and queued parent/student drop-off vehicles during peak times to determine the needed infrastructure of the transition school to support all vehicles.

Alachua County Public Schools provided information regarding the number of existing and anticipated buses serving each school as well as the bus arrival and departure times, see **Appendix C**.

#### 4. HOWARD BISHOP TO MARJORIE K RAWLINGS TRANSITION

The proposed Marjorie K Rawlings transition school is expected to be available during the 2020/2021 school year. Howard Bishop would utilize the transition school during the 2020/2021 school year. The following analysis uses forecasted traffic volumes during year 2021.

### 4.1. Intersection Analysis

The study area intersections were analyzed with and without the Howard Bishop project trips. The no-build scenario analyzes all study area intersections during the Marjorie K Rawlings AM and PM 15-minute peaks starting at 7:30 AM and 3:00 PM. The transition school build-out scenario analyzes the study area intersections that are impacted by Howard Bishop project trips during the Howard Bishop 15-minute peaks starting at 8:30 AM and 3:45 PM. The peak 15-minute traffic volumes are multiplied by four so that they can be analyzed as hourly traffic volumes using traffic modeling software.

A significant portion of the Howard Bishop project trips will be pedestrian trips and some of the current pedestrian Howard Bishop trips will be replaced by bus trips. The analysis conservatively assumes that all pedestrian trips accessing Howard Bishop are replaced by parent/student drop-off vehicles. The calculations used to determine the number of Howard Bishop project vehicles accessing the Marjorie K Rawlings transition school site are provided in **Appendix D**.

The trip distribution is based on the location of the Howard Bishop school zone boundary in relation to the Marjorie K Rawlings transition school site. As illustrated in **Figure 2**, approximately 67% of the Howard Bishop project trips are expected to access the transition school site to and from the south, 18% are expected to access the transition school via **Waldo Road**, and the remaining 5% are expected to access the site to and from the east via NE 39<sup>th</sup> Avenue. **Figure 3** provides the anticipated project turning movements that would result from the trip distribution percentages.

**Tables 1 and 2** provide a comparison of the study area intersections under a no-build scenario and under a build-out scenario to demonstrate the impacts of providing the transition school at Marjorie K Rawlings during the 2020/2021 year with project trips from Howard Bishop. The forecasted turning movements at all study area intersections are provided in **Appendix E**.

The following intersection movement deficiencies are highlighted in **Tables 1 and 2**:

- Movements operating with a LOS of F
- V/C ratios exceeding 1.0
- 95<sup>th</sup> percentile queue lengths exceeding the available storage



Figure 2 | Howard Bishop to Marjorie K Rawlings Transition – Trip Distribution (1 of 2)

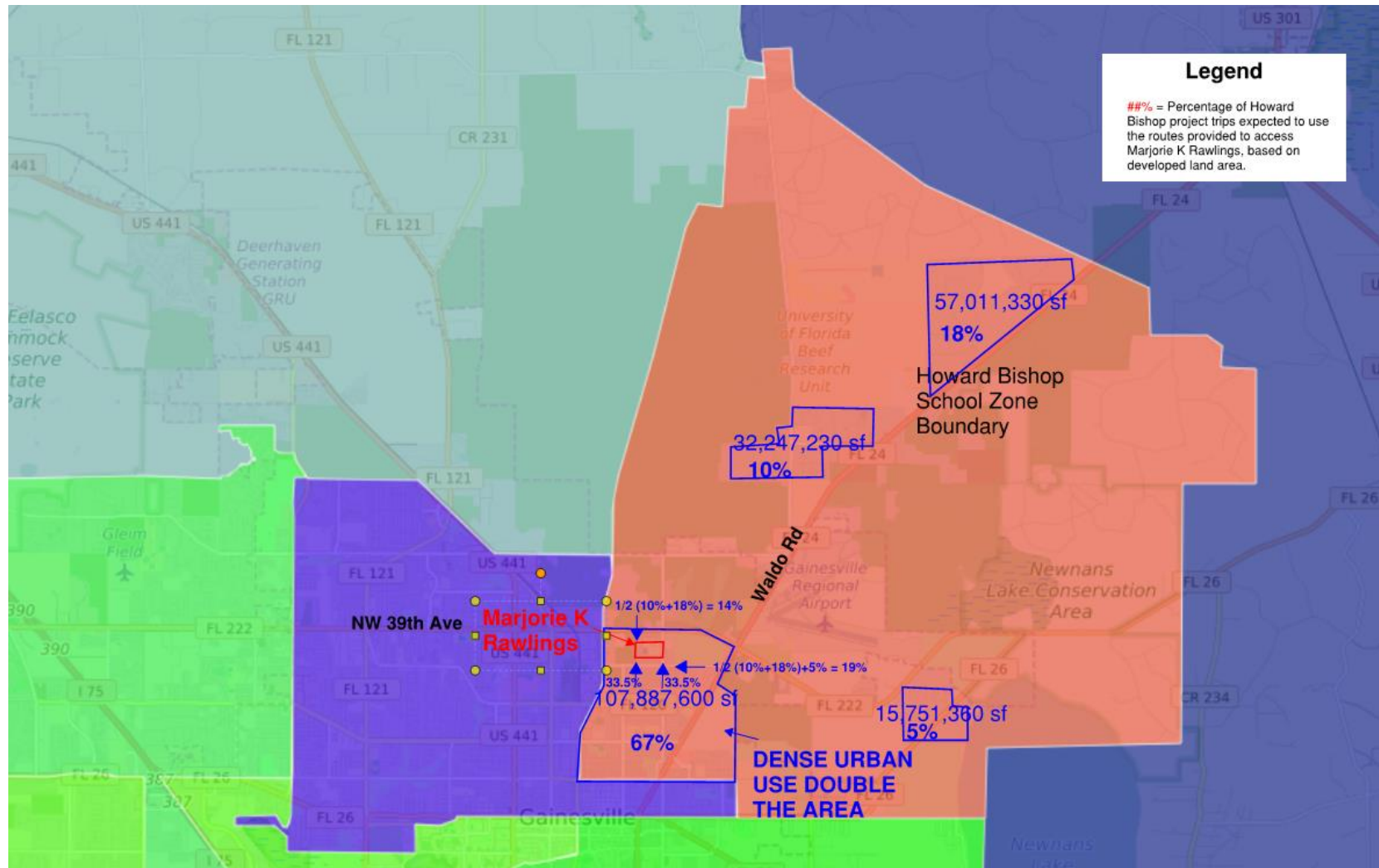


Figure 3 | Howard Bishop to Marjorie K Rawlings Transition – Trip Distribution (2 of 2)





## Traffic Impact Analysis

Marjorie K. Rawlings Transition School

| Table 1 - AM Intersection Analysis Summary - Howard to Rawlings Transition |          |                        |                      |          |      |                |  |          |      |                |
|--|----------|------------------------|----------------------|----------|------|----------------|--|----------|------|----------------|
| Intersection   | Movement | Available Storage (ft) | 2020/2021 - No-build |          |      |                | 2020/2021 Howard Bishop at Marjorie K. Rawlings - With Project |          |      |                |
|  |          |                        | LOS                  | Delay(s) | v/c  | 95% Queue (ft) | LOS  | Delay(s) | v/c  | 95% Queue (ft) |
| Signalized Intersections   |          |                        |                      |          |      |                |  |          |      |                |
| NE 15th Street at NE 39th Avenue   | EBL      | 143                    | B                    | 18.9     | 0.45 | 75             |  |          |      |                |
|  | EBT      | N/A                    | B                    | 18.0     | 0.46 | 175            |  |          |      |                |
|  | WBL      | 135                    | B                    | 12.4     | 0.08 | 25             |  |          |      |                |
|  | WBT      | N/A                    | C                    | 31.3     | 0.83 | 300            |  |          |      |                |
|  | NBL      | 120                    | B                    | 14.7     | 0.21 | 50             |  |          |      |                |
|  | NBT      | N/A                    | C                    | 21.1     | 0.23 | 100            |  |          |      |                |
|  | SBL      | 128                    | B                    | 16.7     | 0.35 | 100            |  |          |      |                |
|  | SBT      | N/A                    | B                    | 19.5     | 0.55 | 175            |  |          |      |                |
| Total  |          | C                      | 23.2                 |          |      |                |  |          |      |                |
| Non-signalized Intersections   |          |                        |                      |          |      |                |  |          |      |                |
| NE 15th Street and North Access  | EBT      | N/A                    | B                    | 12.7     | 0.23 | 25             |  |          |      |                |
|  | NBL      | N/A                    | A                    | 8.1      | 0.09 | 25             |  |          |      |                |
|  | Total    |                        |                      | 3.7      |      |                |  |          |      |                |
| NE 15th Street and South Access  | EBT      | N/A                    | B                    | 12.7     | 0.08 | 25             |  |          |      |                |
|  | NBL      | N/A                    | A                    | 8.0      | 0.03 | 25             |  |          |      |                |
|  | Total    |                        |                      | 1.3      |      |                |  |          |      |                |
| NE 15th Street and NE 31st Avenue  | EBT      | N/A                    | A                    | 9.1      | 0.1  | 25             | B  | 10.8     | 0.3  | 50             |
|  | WBT      | N/A                    | A                    | 9.1      | 0.2  | 25             | B  | 10.3     | 0.2  | 25             |
|  | NBL      | N/A                    | A                    | 9.8      | 0.3  | 50             | B  | 12.7     | 0.4  | 75             |
|  | SBL      | N/A                    | B                    | 11.1     | 0.4  | 50             | B  | 10.8     | 0.3  | 50             |
|  | Total    |                        | B                    | 10.2     |      |                | B  | 11.3     |      |                |
| NE 12th Street and NE 31st Avenue  | EBL      | N/A                    | A                    | 7.5      | 0.1  | 25             | A  | 8.7      | 0.1  | 25             |
|  | WBL      | N/A                    | A                    | 7.5      | 0.1  | 25             | A  | 9.5      | 0.3  | 50             |
|  | NBL      | N/A                    | A                    | 7.2      | 0.0  | 25             | A  | 9.2      | 0.2  | 25             |
|  | SBL      | N/A                    | A                    | 7.2      | 0.1  | 25             | B  | 10.3     | 0.4  | 50             |
|  | Total    |                        | A                    | 7.4      |      |                | A  | 9.7      |      |                |
| NE 12th Street and NE 39th Avenue  | WBL      | 168                    | A                    | 9.2      | 0.03 | 25             | A  | 8.7      | 0.06 | 25             |
|  | NBT      | N/A                    | B                    | 13.5     | 0.10 | 25             | B  | 10.7     | 0.1  | 25             |
|  | Total    |                        |                      | 0.5      |      |                |  | 0.9      |      |                |
| NE 15th Street and Head Start Pre-K Driveway                               | EBT      | N/A                    | B                    | 12.0     | 0.16 | 25             |  |          |      |                |
|  | NBL      | N/A                    | A                    | 8.0      | 0.07 | 25             |  |          |      |                |
|  | Total    |                        |                      | 3.1      |      |                |  |          |      |                |

Yellow highlight = deficiency occurring without project traffic

Red highlight = deficiency occurs due to added project trips

## Traffic Impact Analysis

Marjorie K. Rawlings Transition School

| Table 2 - PM Intersection Analysis Summary - Howard to Rawlings Transition |          |                        |                      |          |      |                |  |          |      |                |
|--|----------|------------------------|----------------------|----------|------|----------------|--|----------|------|----------------|
| Intersection   | Movement | Available Storage (ft) | 2020/2021 - No-build |          |      |                | 2020/2021 Howard Bishop at Marjorie K. Rawlings - With Project |          |      |                |
|  |          |                        | LOS                  | Delay(s) | v/c  | 95% Queue (ft) | LOS  | Delay(s) | v/c  | 95% Queue (ft) |
| Signalized Intersections   |          |                        |                      |          |      |                |  |          |      |                |
| NE 15th Street at NE 39th Avenue   | EBL      | 143                    | B                    | 15.2     | 0.30 | 50             |  |          |      |                |
|  | EBT      | N/A                    | B                    | 18       | 0.56 | 200            |  |          |      |                |
|  | WBL      | 135                    | B                    | 12.5     | 0.07 | 25             |  |          |      |                |
|  | WBT      | N/A                    | C                    | 26.2     | 0.70 | 175            |  |          |      |                |
|  | NBL      | 120                    | B                    | 14.8     | 0.25 | 75             |  |          |      |                |
|  | NBT      | N/A                    | B                    | 19.5     | 0.18 | 75             |  |          |      |                |
|  | SBL      | 128                    | B                    | 14.4     | 0.22 | 75             |  |          |      |                |
|  | SBT      | N/A                    | B                    | 15.6     | 0.34 | 100            |  |          |      |                |
| Total  |          |                        | B                    | 20.0     |      |                |  |          |      |                |
| Non-signalized Intersections   |          |                        |                      |          |      |                |  |          |      |                |
| NE 15th Street and North Access  | EBT      | N/A                    | B                    | 11.9     | 0.16 | 25             |  |          |      |                |
|  | NBL      | N/A                    | A                    | 7.9      | 0.04 | 25             |  |          |      |                |
|  | Total    |                        |                      | 2.8      |      |                |  |          |      |                |
| NE 15th Street and South Access  | EBT      | N/A                    | B                    | 10.8     | 0.03 | 25             |  |          |      |                |
|  | NBL      | N/A                    | A                    | 8.1      | 0.01 | 0              |  |          |      |                |
|  | Total    |                        |                      | 0.5      |      |                |  |          |      |                |
| NE 15th Street and NE 31st Avenue  | EBT      | N/A                    | A                    | 9        | 0.1  | 25             | B  | 13.9     | 0.5  | 75             |
|  | WBT      | N/A                    | A                    | 9.4      | 0.2  | 25             | B  | 12.2     | 0.4  | 50             |
|  | NBL      | N/A                    | A                    | 9.6      | 0.2  | 25             | C  | 15.3     | 0.5  | 75             |
|  | SBL      | N/A                    | B                    | 12.1     | 0.5  | 75             | B  | 12.8     | 0.4  | 50             |
|  | Total    |                        | B                    | 10.7     |      |                | B  | 13.8     |      |                |
| NE 12th Street and NE 31st Avenue  | EBL      | N/A                    | A                    | 7.4      | 0.1  | 25             | A  | 9.8      | 0.1  | 25             |
|  | WBL      | N/A                    | A                    | 7.6      | 0.1  | 25             | B  | 11.3     | 0.4  | 50             |
|  | NBL      | N/A                    | A                    | 7.4      | 0.0  | 25             | B  | 10.2     | 0.2  | 25             |
|  | SBL      | N/A                    | A                    | 7.5      | 0.0  | 25             | C  | 15.9     | 0.6  | 200            |
|  | Total    |                        | A                    | 7.5      |      |                | B  | 13.0     |      |                |
| NE 12th Street and NE 39th Avenue  | WBL      | 168                    | A                    | 9.2      | 0.02 | 25             | A  | 9.4      | 0.07 | 25             |
|  | NBT      | N/A                    | C                    | 15.2     | 0.07 | 25             | B  | 12.3     | 0.13 | 25             |
|  | Total    |                        |                      | 0.4      |      |                |  | 0.9      |      |                |
| NE 15th Street and Head Start Pre-K Driveway                               | EBT      | N/A                    | B                    | 10.9     | 0.06 | 25             |  |          |      |                |
|  | NBL      | N/A                    | A                    | 7.9      | 0.01 | 0              |  |          |      |                |
|  | Total    |                        |                      | 1.1      |      |                |  |          |      |                |

Yellow highlight = deficiency occurring without project traffic

Red highlight = deficiency occurs due to added project trips

Tables 1 and 2 indicate that all intersections operate without deficiencies during the AM and PM peak school times under the No-build and Build-out scenarios.

## 5. WESTWOOD TO MARJORIE K RAWLINGS TRANSITION

The following analysis provides a comparison between a build and no-build option at the Marjorie K Rawlings transition school, during the 2021/2022 year. Westwood would utilize the transition school during the 2021/2022 school year. The following analysis uses forecasted traffic volumes during year 2022.

### 5.1. Intersection Analysis

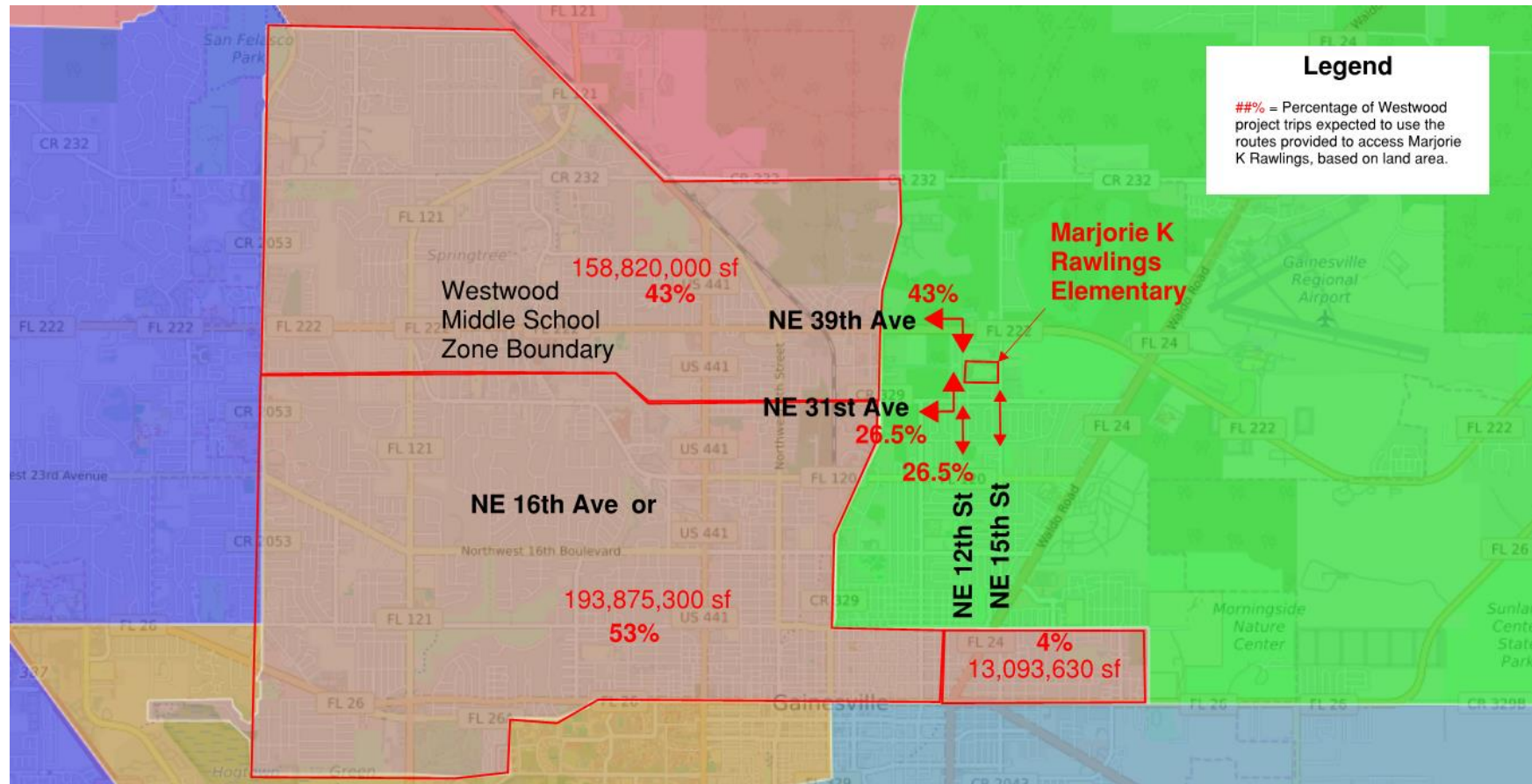
The study area intersections were analyzed with and without the Westwood project trips. The no-build scenario analyzes all study area intersections during the Marjorie K Rawlings AM and PM 15-minute peaks starting at 7:30 AM and 3:00 PM. The transition school build-out scenario analyzes the study area intersections that are impacted by Westwood project trips during the Westwood 15-minute peaks starting at 9:00 AM and 3:45 PM. The peak 15-minute traffic volumes are multiplied by four so that they can be analyzed as hourly traffic volumes using traffic modeling software.

Some of the Westwood project trips will be pedestrian trips and some of the current pedestrian Westwood trips will be replaced by bus trips. However, the analysis conservatively assumes that all pedestrian trips accessing Westwood are replaced by parent/student drop-off vehicles. The calculations used to determine the number of Westwood project vehicles accessing the Marjorie K Rawlings transition school site are provided in **Appendix D**.

The trip distribution is based on the location of the Westwood school zone boundary related to the Marjorie K Rawlings transition school site. As illustrated in **Figure 4**, approximately 43% of the Westwood project trips are expected to access the transition school site via NE 39<sup>th</sup> Avenue, 26.5% are expected to access the transition school via NE 31<sup>st</sup> Avenue and NE 12<sup>th</sup> Street, and the remaining 4% are expected to access the site via NE 15<sup>th</sup> Street. **Figure 5** provides the anticipated project turning movements that would result from the trip distribution percentages. The forecasted turning movements at all study area intersections are provided in **Appendix E**.

**Tables 3 and 4** provide a comparison of the study area intersections under a no-build scenario and under a build-out scenario to demonstrate the impacts of providing the transition school at Marjorie K Rawlings during the 2021/2022 year with project trips from Westwood.

Figure 4 | Westwood to Marjorie K Rawlings Transition – Trip Distribution (1 of 2)





**Figure 5 | Westwood to Marjorie K Rawlings Transition – Trip Distribution (2 of 2)**





## Traffic Impact Analysis

Marjorie K. Rawlings Transition School

| Table 3 - AM Intersection Analysis Summary - Westwood to Rawlings Transition |          |                        |                      |          |      |                |   |          |      |                |
|--|----------|------------------------|----------------------|----------|------|----------------|---|----------|------|----------------|
| Intersection   | Movement | Available Storage (ft) | 2021/2022 - No-build |          |      |                | 2021/2022 Westwood at Marjorie K. Rawlings - With Project |          |      |                |
|  |          |                        | LOS                  | Delay(s) | v/c  | 95% Queue (ft) | LOS   | Delay(s) | v/c  | 95% Queue (ft) |
| Signalized Intersections   |          |                        |                      |          |      |                |   |          |      |                |
| NE 15th Street at NE 39th Avenue   | EBL      | 143                    | B                    | 19.9     | 0.48 | 75             |   |          |      |                |
|  | EBT      | N/A                    | B                    | 18.7     | 0.48 | 175            |   |          |      |                |
|  | WBL      | 135                    | B                    | 12.4     | 0.09 | 25             |   |          |      |                |
|  | WBT      | N/A                    | D                    | 35.2     | 0.88 | 300            |   |          |      |                |
|  | NBL      | 120                    | B                    | 14.6     | 0.21 | 50             |   |          |      |                |
|  | NBT      | N/A                    | C                    | 21.1     | 0.25 | 100            |   |          |      |                |
|  | SBL      | 128                    | B                    | 16.7     | 0.35 | 100            |   |          |      |                |
|  | SBT      | N/A                    | B                    | 19.1     | 0.53 | 175            |   |          |      |                |
| Total  |          | C                      | 24.8                 |          |      |                |   |          |      |                |
| Non-signalized Intersections   |          |                        |                      |          |      |                |   |          |      |                |
| NE 15th Street and North Access  | EBT      | N/A                    | B                    | 12.9     | 0.23 | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 8.1      | 0.09 | 25             |   |          |      |                |
|  | Total    |                        |                      | 3.7      |      |                |   |          |      |                |
| NE 15th Street and South Access  | EBT      | N/A                    | B                    | 12.8     | 0.08 | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 8.0      | 0.03 | 25             |   |          |      |                |
|  | Total    |                        |                      | 1.2      |      |                |   |          |      |                |
| NE 15th Street and NE 31st Avenue  | EBT      | N/A                    | A                    | 9.2      | 0.1  | 25             | A   | 7.8      | 0.1  | 25             |
|  | WBT      | N/A                    | A                    | 9.2      | 0.2  | 25             | A   | 7.8      | 0.1  | 25             |
|  | NBL      | N/A                    | A                    | 9.9      | 0.3  | 50             | A   | 8.3      | 0.2  | 25             |
|  | SBL      | N/A                    | B                    | 11.3     | 0.4  | 75             | A   | 8.8      | 0.2  | 25             |
|  | Total    |                        | B                    | 10.3     |      |                | A   | 8.4      |      |                |
| NE 12th Street and NE 31st Avenue  | EBL      | N/A                    | A                    | 7.5      | 0.1  | 25             | A   | 9.1      | 0.2  | 25             |
|  | WBL      | N/A                    | A                    | 7.5      | 0.1  | 25             | A   | 8.1      | 0.1  | 25             |
|  | NBL      | N/A                    | A                    | 7.2      | 0.0  | 25             | A   | 8.5      | 0.1  | 25             |
|  | SBL      | N/A                    | A                    | 7.2      | 0.1  | 25             | A   | 9.0      | 0.3  | 50             |
|  | Total    |                        | A                    | 7.4      |      |                | A   | 8.8      |      |                |
| NE 12th Street and NE 39th Avenue  | WBL      | 168                    | A                    | 9.2      | 0.03 | 25             | A   | 9        | 0.01 | 0              |
|  | NBT      | N/A                    | B                    | 13.7     | 0.11 | 25             | C   | 21.1     | 0.45 | 75             |
|  | Total    |                        |                      | 0.6      |      |                |   | 2.7      |      |                |
| NE 15th Street and Head Start Pre-K Driveway                                 | EBT      | N/A                    | B                    | 12.1     | 0.16 | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 8.0      | 0.07 | 25             |   |          |      |                |
|  | Total    |                        |                      | 3.1      |      |                |   |          |      |                |
| Yellow highlight = deficiency occurring without project traffic              |          |                        |                      |          |      |                |   |          |      |                |
| Red highlight = deficiency occurs due to added project trips                 |          |                        |                      |          |      |                |   |          |      |                |

## Traffic Impact Analysis

Marjorie K. Rawlings Transition School

| Table 4 - PM Intersection LOS Analysis Summary - Westwood to Rawlings Transition |          |                        |                      |          |      |                |  |          |      |                |
|--|----------|------------------------|----------------------|----------|------|----------------|--|----------|------|----------------|
| Intersection   | Movement | Available Storage (ft) | 2021/2022 - No-build |          |      |                | 2021/2022 Howard Bishop at Marjorie K. Rawlings - With Project |          |      |                |
|  |          |                        | LOS                  | Delay(s) | v/c  | 95% Queue (ft) | LOS  | Delay(s) | v/c  | 95% Queue (ft) |
| Signalized Intersections   |          |                        |                      |          |      |                |  |          |      |                |
| NE 15th Street at NE 39th Avenue   | EBL      | 143                    | B                    | 15.2     | 0.31 | 50             |  |          |      |                |
|  | EBT      | N/A                    | B                    | 17.8     | 0.56 | 200            |  |          |      |                |
|  | WBL      | 135                    | B                    | 12.2     | 0.07 | 25             |  |          |      |                |
|  | WBT      | N/A                    | C                    | 25.4     | 0.69 | 175            |  |          |      |                |
|  | NBL      | 120                    | B                    | 15.2     | 0.27 | 75             |  |          |      |                |
|  | NBT      | N/A                    | B                    | 20       | 0.19 | 75             |  |          |      |                |
|  | SBL      | 128                    | B                    | 14.5     | 0.23 | 75             |  |          |      |                |
|  | SBT      | N/A                    | B                    | 16.4     | 0.35 | 100            |  |          |      |                |
| Total  |          |                        | B                    | 19.7     |      |                |  |          |      |                |
| Non-signalized Intersections   |          |                        |                      |          |      |                |  |          |      |                |
| NE 15th Street and North Access  | EBT      | N/A                    | B                    | 12.0     | 0.16 | 25             |  |          |      |                |
|  | NBL      | N/A                    | A                    | 7.9      | 0.04 | 25             |  |          |      |                |
|  | Total    |                        |                      | 2.8      |      |                |  |          |      |                |
| NE 15th Street and South Access  | EBT      | N/A                    | B                    | 10.9     | 0.03 | 25             |  |          |      |                |
|  | NBL      | N/A                    | A                    | 8.1      | 0.01 | 0              |  |          |      |                |
|  | Total    |                        |                      | 0.5      |      |                |  |          |      |                |
| NE 15th Street and NE 31st Avenue  | EBT      | N/A                    | A                    | 9.1      | 0.1  | 25             | A  | 8.4      | 0.1  | 25             |
|  | WBT      | N/A                    | A                    | 9.5      | 0.2  | 25             | A  | 9.0      | 0.2  | 25             |
|  | NBL      | N/A                    | A                    | 9.7      | 0.3  | 25             | A  | 9.7      | 0.3  | 50             |
|  | SBL      | N/A                    | B                    | 12.4     | 0.5  | 75             | A  | 10.0     | 0.3  | 50             |
|  | Total    |                        | B                    | 10.9     |      |                | A  | 9.5      |      |                |
| NE 12th Street and NE 31st Avenue  | EBL      | N/A                    | A                    | 7.4      | 0.1  | 25             | B  | 10.1     | 0.3  | 25             |
|  | WBL      | N/A                    | A                    | 7.6      | 0.1  | 25             | A  | 8.9      | 0.1  | 25             |
|  | NBL      | N/A                    | A                    | 7.4      | 0.0  | 25             | A  | 9.1      | 0.2  | 25             |
|  | SBL      | N/A                    | A                    | 7.5      | 0.0  | 25             | B  | 11.2     | 0.4  | 75             |
|  | Total    |                        | A                    | 7.5      |      |                | B  | 10.3     |      |                |
| NE 12th Street and NE 39th Avenue  | WBL      | 168                    | A                    | 9.2      | 0.02 | 25             | A  | 9.8      | 0.02 | 25             |
|  | NBT      | N/A                    | C                    | 15.3     | 0.07 | 25             | E  | 45.9     | 0.78 | 175            |
|  | Total    |                        |                      | 0.4      |      |                |  | 6.5      |      |                |
| NE 15th Street and Head Start Pre-K Driveway                                     | EBT      | N/A                    | B                    | 11.0     | 0.07 | 25             |  |          |      |                |
|  | NBL      | N/A                    | A                    | 7.9      | 0.01 | 0              |  |          |      |                |
|  | Total    |                        |                      | 1.0      |      |                |  |          |      |                |
| Yellow highlight = deficiency occurring without project traffic                  |          |                        |                      |          |      |                |  |          |      |                |
| Red highlight = deficiency occurs due to added project trips                     |          |                        |                      |          |      |                |  |          |      |                |

Tables 3 and 4 indicate that all intersections operate without deficiencies during the AM and PM peak school times under the No-build and Buildout scenarios.

## 6. LITTLEWOOD TO MARJORIE K RAWLINGS TRANSITION

The following analysis provides a comparison between a build and no-build option at the Marjorie K Rawlings transition school, during the 2022/2023 year. Littlewood would utilize the transition school during the 2022/2023 school year. The following analysis uses forecasted traffic volumes during year 2023.

### 6.1. Intersection Analysis

The study area intersections were analyzed with and without the Littlewood project trips. The no-build scenario analyzes all study area intersections during the Marjorie K Rawlings AM and PM 15-minute peaks starting at 7:30 AM and 3:00 PM. The transition school build-out scenario analyzes the study area intersections that are impacted by Littlewood project trips during the Littlewood 15-minute peaks starting at 7:30 AM and 2:00 PM. The peak 15-minute traffic volumes are multiplied by four so that they can be analyzed as hourly traffic volumes using traffic modeling software.

Based on review of the number parent/student drop off trips, the 11 buses serving the school, and the school enrollment of 790 students, there are expected to be a low volume of pedestrians that access Littlewood. The analysis uses the number of inbound and outbound vehicles at the Littlewood and SW 8<sup>th</sup> Avenue access as the Littlewood project trips that would access the Rawlings transition school. This is a conservative approach, considering that additional buses are expected to be provided for the Littlewood students. The study does not consider the additional buses and instead maintains the number of parent/student drop-off vehicles, which should forecast higher than expected traffic volumes. The calculations used to determine the number of Littlewood project vehicles accessing the Rawlings transition school site are provided in **Appendix D**.

The trip distribution is based on the location of the Littlewood school zone boundary related to the Marjorie K Rawlings transition school site. As illustrated in **Figure 6**, approximately 43.5% of the Littlewood project trips are expected to access the transition school site via NE 31<sup>st</sup> Avenue and NE 12<sup>th</sup> Street, and the remaining 13% are expected to access the site via NE 39<sup>th</sup> Avenue. **Figure 7** provides the anticipated project turning movements that would result from the trip distribution percentages. The forecasted turning movements at all study area intersections are provided in **Appendix E**.

**Tables 5 and 6** provide a comparison of the study area intersections under a no-build scenario and under a build-out scenario to demonstrate the impacts of providing the transition school at Marjorie K Rawlings during the 2022/2023 year with project trips from Littlewood.

Figure 6 | Littlewood to Marjorie K Rawlings Transition – Trip Distribution (1 of 2)

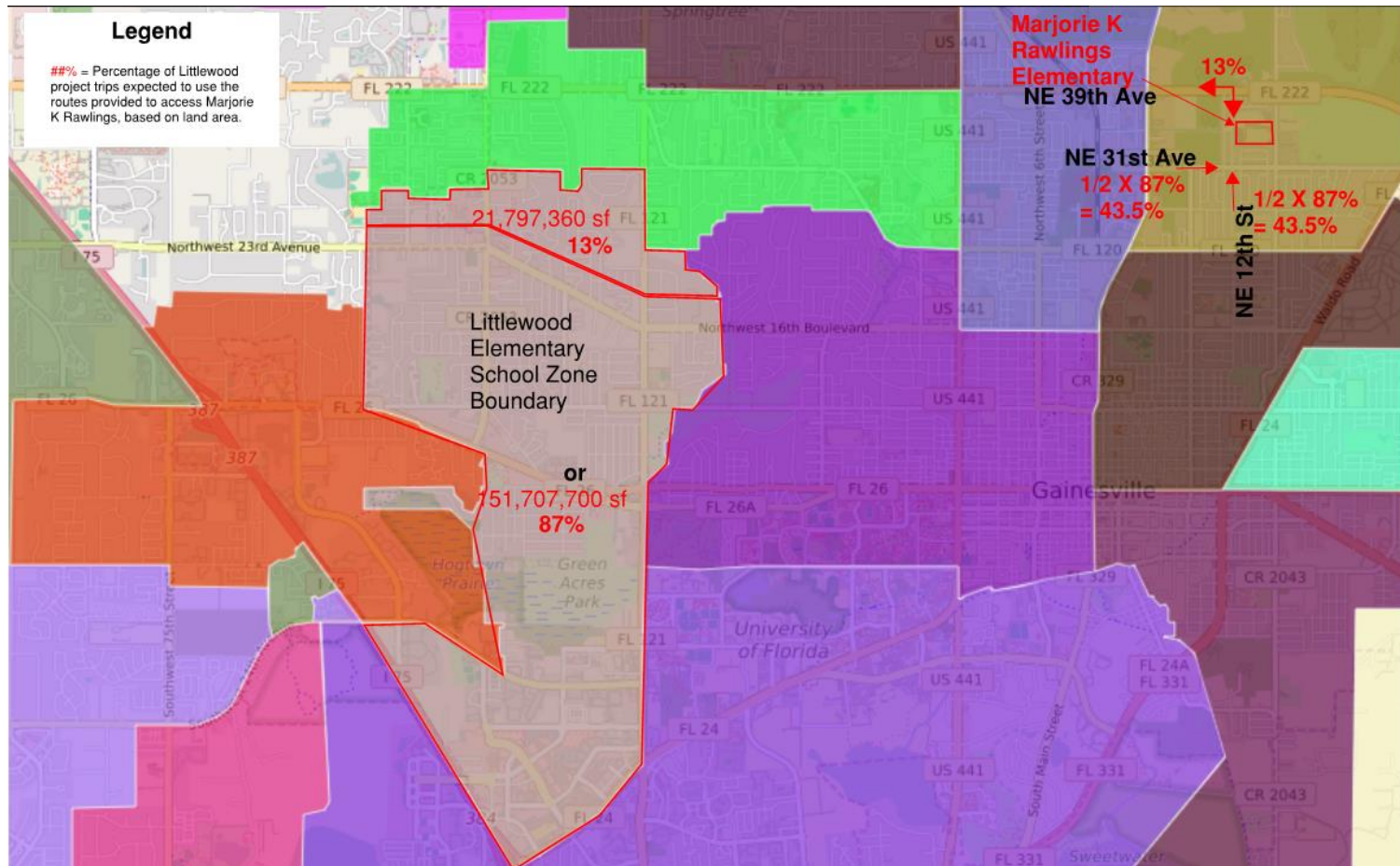




Figure 7 | Littlewood to Marjorie K Rawlings Transition – Trip Distribution (2 of 2)





## Traffic Impact Analysis

Marjorie K. Rawlings Transition School

| Table 5 - AM Intersection Analysis Summary - Littlewood to Rawlings Transition |          |                        |                      |          |      |                |   |          |      |                |
|--|----------|------------------------|----------------------|----------|------|----------------|---|----------|------|----------------|
| Intersection   | Movement | Available Storage (ft) | 2022/2023 - No-build |          |      |                | 2022/2023 Littlewood at Marjorie K. Rawlings - With Project |          |      |                |
|  |          |                        | LOS                  | Delay(s) | v/c  | 95% Queue (ft) | LOS   | Delay(s) | v/c  | 95% Queue (ft) |
| Signalized Intersections   |          |                        |                      |          |      |                |   |          |      |                |
| NE 15th Street at NE 39th Avenue   | EBL      | 143                    | C                    | 20.0     | 0.48 | 75             |   |          |      |                |
|  | EBT      | N/A                    | B                    | 18.7     | 0.49 | 175            |   |          |      |                |
|  | WBL      | 135                    | B                    | 12.4     | 0.09 | 25             |   |          |      |                |
|  | WBT      | N/A                    | D                    | 35.8     | 0.88 | 300            |   |          |      |                |
|  | NBL      | 120                    | B                    | 14.7     | 0.22 | 50             |   |          |      |                |
|  | NBT      | N/A                    | C                    | 21.2     | 0.26 | 100            |   |          |      |                |
|  | SBL      | 128                    | B                    | 16.9     | 0.37 | 100            |   |          |      |                |
|  | SBT      | N/A                    | B                    | 19.6     | 0.31 | 175            |   |          |      |                |
| Total  |          |                        | C                    | 25.1     |      |                |   |          |      |                |
| Non-signalized Intersections   |          |                        |                      |          |      |                |   |          |      |                |
| NE 15th Street and North Access  | EBT      | N/A                    | B                    | 13.0     | 0.23 | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 8.1      | 0.09 | 25             |   |          |      |                |
|  | Total    |                        |                      | 3.7      |      |                |   |          |      |                |
| NE 15th Street and South Access  | EBT      | N/A                    | B                    | 13.0     | 0.09 | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 8.0      | 0.03 | 25             |   |          |      |                |
|  | Total    |                        |                      | 1.2      |      |                |   |          |      |                |
| NE 15th Street and NE 31st Avenue  | EBT      | N/A                    | A                    | 9.3      | 0.1  | 25             |   |          |      |                |
|  | WBT      | N/A                    | A                    | 9.3      | 0.2  | 25             |   |          |      |                |
|  | NBL      | N/A                    | B                    | 10.1     | 0.3  | 50             |   |          |      |                |
|  | SBL      | N/A                    | B                    | 11.6     | 0.4  | 75             |   |          |      |                |
|  | Total    |                        | B                    | 10.5     |      |                |   |          |      |                |
| NE 12th Street and NE 31st Avenue  | EBL      | N/A                    | A                    | 7.5      | 0.1  | 25             | B   | 12       | 0.4  | 50             |
|  | WBL      | N/A                    | A                    | 7.5      | 0.1  | 25             | A   | 9.8      | 0.1  | 25             |
|  | NBL      | N/A                    | A                    | 7.3      | 0.0  | 25             | B   | 10.6     | 0.3  | 50             |
|  | SBL      | N/A                    | A                    | 7.3      | 0.1  | 25             | B   | 13.8     | 0.6  | 100            |
|  | Total    |                        | A                    | 7.4      |      |                | B   | 12.3     |      |                |
| NE 12th Street and NE 39th Avenue  | WBL      | 168                    | A                    | 9.2      | 0.03 | 25             | A   | 9.4      | 0.03 | 25             |
|  | NBT      | N/A                    | B                    | 13.7     | 0.11 | 25             | C   | 19.0     | 0.29 | 50             |
|  | Total    |                        |                      | 0.6      |      |                |   | 1.3      |      |                |
| NE 15th Street and Head Start Pre-K Driveway                                   | EBT      | N/A                    | B                    | 12.2     | 0.16 | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 8.0      | 0.07 | 25             |   |          |      |                |
|  | Total    |                        |                      | 3.1      |      |                |   |          |      |                |

Yellow highlight = deficiency occurring without project traffic

Red highlight = deficiency occurs due to added project trips

## Traffic Impact Analysis

Marjorie K. Rawlings Transition School

| Table 6 - PM Intersection Analysis Summary - Littlewood to Rawlings Transition |          |                        |                      |          |      |                |   |          |      |                |
|--|----------|------------------------|----------------------|----------|------|----------------|---|----------|------|----------------|
| Intersection   | Movement | Available Storage (ft) | 2022/2023 - No-build |          |      |                | 2022/2023 Litt at Marjorie K. Rawlings - With Project |          |      |                |
|  |          |                        | LOS                  | Delay(s) | v/c  | 95% Queue (ft) | LOS   | Delay(s) | v/c  | 95% Queue (ft) |
| Signalized Intersections   |          |                        |                      |          |      |                |   |          |      |                |
| NE 15th Street at NE 39th Avenue   | EBL      | 143                    | B                    | 15.4     | 0.31 | 50             |   |          |      |                |
|  | EBT      | N/A                    | B                    | 18.1     | 0.56 | 200            |   |          |      |                |
|  | WBL      | 135                    | B                    | 12.5     | 0.07 | 25             |   |          |      |                |
|  | WBT      | N/A                    | C                    | 26.5     | 0.71 | 200            |   |          |      |                |
|  | NBL      | 120                    | B                    | 15.0     | 0.27 | 75             |   |          |      |                |
|  | NBT      | N/A                    | B                    | 19.9     | 0.19 | 75             |   |          |      |                |
|  | SBL      | 128                    | B                    | 14.5     | 0.24 | 75             |   |          |      |                |
|  | SBT      | N/A                    | B                    | 16.7     | 0.35 | 100            |   |          |      |                |
| Total  |          |                        | B                    | 20.2     |      |                |   |          |      |                |
| Non-signalized Intersections   |          |                        |                      |          |      |                |   |          |      |                |
| NE 15th Street and North Access  | EBT      | N/A                    | B                    | 12.1     | 0.16 | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 7.9      | 0.04 | 25             |   |          |      |                |
|  | Total    |                        |                      | 2.8      |      |                |   |          |      |                |
| NE 15th Street and South Access  | EBT      | N/A                    | B                    | 11.0     | 0.03 | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 8.1      | 0.01 | 0              |   |          |      |                |
|  | Total    |                        |                      | 0.5      |      |                |   |          |      |                |
| NE 15th Street and NE 31st Avenue  | EBT      | N/A                    | A                    | 9.1      | 0.1  | 25             |   |          |      |                |
|  | WBT      | N/A                    | A                    | 9.6      | 0.2  | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 9.9      | 0.3  | 50             |   |          |      |                |
|  | SBL      | N/A                    | B                    | 12.7     | 0.5  | 75             |   |          |      |                |
|  | Total    |                        | B                    | 11.1     |      |                |   |          |      |                |
| NE 12th Street and NE 31st Avenue  | EBL      | N/A                    | A                    | 7.4      | 0.1  | 25             | A   | 9.6      | 0.2  | 25             |
|  | WBL      | N/A                    | A                    | 7.6      | 0.1  | 25             | A   | 8.8      | 0.1  | 25             |
|  | NBL      | N/A                    | A                    | 7.4      | 0.1  | 25             | A   | 8.5      | 0.1  | 25             |
|  | SBL      | N/A                    | A                    | 7.5      | 0.0  | 25             | B   | 11.2     | 0.5  | 75             |
|  | Total    |                        | A                    | 7.5      |      |                | B   | 10.2     |      |                |
| NE 12th Street and NE 39th Avenue  | WBL      | 168                    | A                    | 9.3      | 0.02 | 25             | A   | 9.2      | 0.01 | 0              |
|  | NBT      | N/A                    | C                    | 15.5     | 0.08 | 25             | C   | 17.7     | 0.19 | 125            |
|  | Total    |                        |                      | 0.4      |      |                |   | .8       |      |                |
| NE 15th Street and Head Start Pre-K Driveway                                   | EBT      | N/A                    | B                    | 11.1     | 0.07 | 25             |   |          |      |                |
|  | NBL      | N/A                    | A                    | 7.9      | 0.01 | 0              |   |          |      |                |
|  | Total    |                        |                      | 1.0      |      |                |   |          |      |                |
| Yellow highlight = deficiency occurring without project traffic                |          |                        |                      |          |      |                |   |          |      |                |
| Red highlight = deficiency occurs due to added project trips                   |          |                        |                      |          |      |                |   |          |      |                |

**Tables 5 and 6** indicate that all intersections operated without deficiencies during the AM and PM peak school times under the No-build and Buildout scenarios.

## 7. PARKING UTILIZATION

The parking utilization and stacking at the three schools proposed to use the transition school were recorded during the site visits. The maximum number of parked vehicles including vehicles queued in the parent/student drop-off lanes and excluding buses, are provided in **Table 7**. Parking utilization figures are provided in **Appendix G**.

**Table 7 | Parking Utilization**

| School        | Maximum Number of Parked Vehicles |
|---------------|-----------------------------------|
| Howard Bishop | 125                               |
| Westwood      | 132                               |
| Littlewood    | 185                               |

These volumes should be considered when designing the parking for the transition school. The Howard Bishop transition to Marjorie K Rawlings should maintain a consistent peak parking demand since many of the Howard Bishop student live within walking distance to Marjorie K Rawlings. Providing 125 spaces for faculty and staff and parent/student drop-off would provide sufficient parking for the 2020/2021 Howard Bishop transition phase.

During the 2021/2022 scenario the parking demand for Westwood, with a much larger enrollment of 1,200 compared to 770 students and fewer students within walking range to school, would require additional parking. It is difficult to estimate the number of additional parent/student drop off vehicles that would be generated by Westwood when transitioning to Marjorie K Rawlings.

Based on the available count and bus data, Littlewood students access the school primarily via bus and parent/student drop-off. Since an additional 6 buses will be provided to serve the Littlewood students under a Marjorie K Rawlings transition school scenario, more students are expected to take a bus to access the school. Therefore, the number of parent/student drop-off vehicles and the parking demand for Littlewood is not expected to increase. Providing 185 spaces for faculty, staff and parent/student drop-off is expected to provide sufficient parking for the 2021/2022 Westwood transition and 2022/2023 Littlewood transition.

The peak number of buses is expected to occur when the Littlewood transitions to Marjorie K Rawlings. Alachua County Public Schools anticipates 17 buses from Littlewood to the Marjorie K Rawlings transition school. Alachua County Public Schools recommends a 15-minute earlier bell time for Littlewood at 7:30 AM. With this schedule the maximum bus stacking would be 17 buses or approximately 680 FT of stacking length. A bus stacking length of 680 FT should be provided for the Marjorie K Rawlings transition school.

### 8. NON-VEHICULAR MULTI-MODAL TRAFFIC

The turning movement counts indicate that about 104 students during the AM and 131 students during the PM walk or use some other non-vehicular mode of transportation to access Marjorie K Rawlings. The following observations were noted based on the site visits and data collection.

- The majority of the non-vehicular traffic was pedestrian traffic. The cyclists that were observed, stayed on the sidewalk alongside the pedestrians.
- During the PM peak a high volume of pedestrians were observed exiting Marjorie K Rawlings just after the final bell. During the AM peak pedestrians were more sporadic.
- Sidewalks are provided along NE 12<sup>th</sup> Street south of NE 31<sup>st</sup> Avenue, however, the sidewalk does not continue north of NE 31<sup>st</sup> Avenue. The Howard Bishop transition to Marjorie K Rawlings is expected to generate a high volume of non-vehicular traffic along NE 12<sup>th</sup> Street as the two school zones overlap. Sidewalks should be constructed along this roadway from NE 31<sup>st</sup> Avenue to NE 39<sup>th</sup> Avenue.
- The traffic signal at NE 39<sup>th</sup> Avenue and NE 15<sup>th</sup> Street provides enhancements that improve pedestrian safety, including a pedestrian only phase, where all traffic is required to stop for a pedestrian crossing any direction, and No Right Turn on Red signals which reduce the chances of pedestrian and right-turning vehicle conflicts.
- Crossing guards were available at the intersections of NE 15<sup>th</sup> Street at NE 31<sup>st</sup> Avenue, NE 15<sup>th</sup> Street at the bus loop access, and NE 15<sup>th</sup> Street at NE 39<sup>th</sup> Avenue. A crossing guard was not available at the intersection of NE 12<sup>th</sup> Street and NE 31<sup>st</sup> Avenue. Alachua County Public Schools should consider providing a crossing guard at this intersection, especially during the 2020/2021 year, when Howard Bishop is transitioning.

### 9. CONCLUSIONS AND RECOMMENDATIONS

This traffic study reviewed a proposed Marjorie K Rawlings transition school during the 2020/2021, 2021/2022, and 2022/2023 school years. The study provides an intersection analysis, parking utilization review, and a review of the non-vehicular multi-modal traffic to determine the needed improvements to support a Marjorie K Rawlings transition school.

The study indicates that a transition school, located at Marjorie K Rawlings, can be provided without any traffic operational deficiencies within the study area. Based on the finding of the study the following improvements should be provided if the transition school is located at Marjorie K Rawlings:

- Provide sidewalks along NE 12<sup>th</sup> Street from NE 31<sup>st</sup> Avenue to NE 39<sup>th</sup> Avenue.
- Provide approximately 125 parking spaces for the transition school during the 2020/2021 school year to meet the Howard Bishop parking demand.
- Provide approximately 185 parking spaces for the transition school during the 2021/2022 and 2022/2023 school years, to meet the Littlewood parking demand.
- As recommended by Alachua County Public Schools, the Littlewood starting bell time should be staggered, 15 minutes earlier than the Marjorie K Rawlings starting bell time. With this staggered start time the maximum bus stacking would be 17 buses or approximately 680 FT, which should be available for the Marjorie K Rawlings transition school.
- Alachua County Public Schools should consider providing a crossing guard at the intersection of NE 31<sup>st</sup> Avenue and NE 12<sup>th</sup> Street, especially during the 2020/2021 year, when Howard Bishop is transitioning.