

Introduction:

A mixed-use development that is anticipated to include 88 single-family residential units, 80 multi-family residential units and 42,000 SF commercial/retail land uses are proposed for construction on the southeast quadrant of William Burgess Boulevard and Harvester Street in Nassau County, Florida. The proposed development is anticipated to be developed in two phases. Phase 01 development is anticipated to include the 88 proposed single-family residential units and Phase 02 development is anticipated to include 80 multi-family residential units and 42,000 SF commercial/retail land uses.

Access to the proposed development will be provided via William Burgess Boulevard and Harvester Street. This traffic study was performed to determine the need eastbound right turn lanes and westbound left turn lanes on William Burgess Boulevard at the proposed project drive and at Harvester Street intersections (study intersections).

Attachment A includes a copy of the conceptual site plan (Source: Adkinson Engineering, Inc.) of the proposed residential development and a copy of the methodology document. **Figure 1** shows the location of the proposed development and the study intersections.

Existing Conditions:

William Burgess Boulevard is a two lane roadway with a posted speed limit of 35 miles per hour (mph) connects SR 200/A1A and Harts Road and US 17. **Figure 02** shows the existing lane configurations on William Burgess Boulevard at Harvester Street and the proposed Eastern Project Entrance.

Trip Generation:

The trip generation, internal capture and pass-by trips for the proposed single-family, multi-family and commercial/retail development was calculated based on rates and equations for land use codes 210, 220 and 820 respectively included in the Trip Generation Manual, 10th Edition, published by the Institute of Transportation Engineers (ITE). **Tables 01** and **02** summarizes the Daily, AM and PM peak hour trip generation for the proposed mixed-use development.

No internal capture and pass-by trip rates were applied to the proposed 88 single-family residential units under Phase 01 development conditions. Phase 01 development is anticipated to generate 924 daily trips that include 67 AM peak and 90 PM peak trips.

Phase 02 (Cumulative) development is anticipated to generate 1,956 daily trips that include 145 AM peak trips (includes 29 internal capture and 12 pass-by trips) and 424 PM peak trips (includes 85 internal capture and 28 pass-by trips). The internal capture percentage was limited to a maximum of 20% and the pass-by trips were limited to a maximum of 10% of the adjacent street background traffic volumes.

Existing Traffic:

AM peak (7:00 AM to 9:00 AM) and PM peak (4:00 PM to 6:00 PM) turning movement counts on William Burgess Boulevard at Harvester Street were obtained on 05/08/2018. These traffic counts were further adjusted with a season factor of 0.92 to account for seasonal variations. The

season factor was obtained from the Florida Department of Transportation (FDOT) online counts web-portal. A copy the traffic counts data and the season factors are included as **Attachment B**. Existing year 2018 AM peak and PM peak period turning movements at the study intersections on William Burgess Boulevard are shown in **Figure 03**.

Year 2023 and Year 2028 Background Traffic Projections:

The proposed Phase 01 development is anticipated to be built-out by the year 2023 and Phase 02 development is anticipated to be built-out by the year 2028. Hence, the year 2023 and year 2028 traffic volumes were estimated by applying a growth factors of 1.2 (3.7% per year for 5 years) and 1.44 (3.7% per year for 10 years) respectively to year 2018 traffic volumes at the study intersections on William Burgess Boulevard. The year 2023 and year 2028 background conditions traffic volumes at the study intersections are shown in **Figures 04** and **05** respectively.

This growth rate of 3.7% per year was estimated by performing trends analysis of the historical AADT on William Burgess Boulevard. The historical AADT on William Burgess Boulevard obtained from FDOT traffic counts online portal. A copy of the historical AADT and the trends analysis plot are included as **Attachment C**.

Project Traffic Distribution and Assignment:

The interim year 2025 model set of the Northeast Regional Planning Model Activity Based Model (NERPM_ABv3) travel demand forecasting model, provided by the North Florida Transportation Planning Organization (NFTPO), which was prepared as part of the TPO's 2040 Long Range Transportation Plan update, was used to develop project traffic distribution for the proposed development.

The Land Use Parcel Edition Tool ("Generate or Edit Parcel File" application of the Cube Catalog) was use to add the proposed Nassau Station development to the travel demand model. The subject parcel (s) were updated/assigned with TAZ 32 (88 single-family + 80 multi-family = 168 households for the proposed residential development) and TAZ 33 (105 commercial/retail related employees) were also added to the interim year 2025 model to determine the project traffic distribution for the proposed development.

The proposed Nassau Crossing development was also added to the interim year 2025 travel demand model (TAZs 25 and 26). Recently approved East Nassau Community Planning Area's (ENCPA) Preliminary Development Plan Projects (Chester Road, Market Street and Wildlight Commerce PDPs) were also added to the interim year 2025 travel demand model (TAZs 28, 29 and 31). The traffic from the ENCPA's PDPs and Nassau Crossing developments were considered to be part of the background traffic growth. A review of the year 2025 travel demand model network was performed and the following model refinements that were made for the purpose of determining project traffic distribution:

- Activate William Burgess Boulevard between SR 200/A1A and US 17
- Activate Harts Road between SR 200/A1A and William Burgess Boulevard and extend it to the south

Two separate model runs were performed to determine the residential and non-residential project traffic distribution for the proposed development.

A copy of these model plots are included as **Attachment D**. This attachment also includes details of the socio-economic data related to the recently approved ENCPA projects and the proposed residential and mixed-use developments that were included into the travel demand model.

As shown in the model plots, 40% of the residential project traffic is anticipated to orient to and from the west and 60% of the residential project traffic is anticipated to orient to and from the east on William Burgess Boulevard. These plots also show that 32% of commercial/retail project traffic is anticipated to orient to and from the west and 68% of the commercial/retail project traffic is anticipated to orient to and from the east on William Burgess Boulevard.

The above stated project traffic distribution percentages were applied to the peak hour trips as shown in previously stated Tables 01 and 02 to obtain peak hour project traffic assignment on William Burgess Boulevard. **Figures 06, 07 and 08** summarize the project traffic distribution percentages and the project traffic assignment at the study intersections on William Burgess Boulevard.

Commercial/Retail related pass-by traffic assignment under Phase 02 development conditions are shown in **Figure 09**.

Build-Out Traffic Volumes:

The year 2023 build-out traffic volumes at the study intersections on William Burgess Boulevard include the year 2023 background traffic and the Phase 01 project traffic assignment. **Figure 10** shows the year 2023 build-out traffic volumes at the study intersections on William Burgess Boulevard.

The year 2028 (Cumulative) build-out traffic volumes at the study intersection on William Burgess Boulevard include the year 2028 background traffic volumes, Phase 02 (Cumulative) residential project traffic assignment, Phase 02 commercial/retail project traffic assignment and commercial/retail related pass-by traffic assignment. **Figure 11** shows the year 2028 (Cumulative) build-out traffic volumes at the study intersections on William Burgess Boulevard. **Attachment E** shows the calculations of the year 2023 Phase 01 development and year 2028 Phase 02 development build-out conditions traffic volumes on William Burgess Boulevard at the study intersections.

Turn Lanes:

The need for auxiliary turn lanes on William Burgess Boulevard at the study intersections was evaluated using AM peak and PM peak traffic volumes under year 2023 Phase 01 build-out conditions and Year 2028 Phase 02 (Cumulative) build-out conditions of the proposed development.

Right Turn Lane Evaluation: The need for eastbound auxiliary right turn lanes on William Burgess Boulevard at the study intersections was evaluated based on the guidance and criteria included

in the “Driveway Information Guide” published by FDOT. This criteria is based on the research published in NCHRP 420 entitled Impacts of Access Management Techniques. For a two-lane roadway with traffic volumes greater than 600 per lane and with a posted speed limit of 45 mph or lower, 80 right turns per hour are required to warrant an exclusive right turn lane. A copy of this criteria and guidance is included as **Attachment F**.

Table 03 summarizes the eastbound right turns on William Burgess Boulevard at Harvester Street and Proposed Eastern Project Entrance under the year 2023 build-out conditions of Phase 01 development and under the year 2028 build-out conditions of Phase 02 development. As shown in this table, 3 AM peak/9 PM peak eastbound right turns and 5 AM peak/18 PM peak eastbound right turns on William Burgess Boulevard at Harvester Street and Proposed Eastern Project Entrance are anticipated under the year 2023 build-out conditions of the Phase 01 development. Hence, an eastbound right turn lane is not anticipated to be warranted on William Burgess Boulevard at Harvester Street and Proposed Eastern Project Entrance under year 2023 build-out conditions of the Phase 01 development.

As shown in previously stated **Table 03**, 6 AM peak/16 PM peak eastbound right turns and 12 AM peak/53 PM peak eastbound right turns on William Burgess Boulevard at Harvester Street and Proposed Eastern Project Entrance are anticipated under the year 2028 build-out conditions of the Phase 02 development. Hence, an eastbound right turn lane is not anticipated to be warranted on William Burgess Boulevard at Harvester Street and Proposed Eastern Project Entrance under year 2028 build-out conditions of the Phase 02 development.

The need for eastbound auxiliary right turn lanes on William Burgess Boulevard at the study intersections was further evaluated using the Harmelink Curve turn lane warrants criteria. **Figures G1** and **G2** shows right turn lane analysis under year 2023 build-out conditions of Phase 01 development and under year 2028 build-out conditions of Phase 02 development respectively. As shown in these figures, an eastbound right turn lane is not anticipated to be warranted on William Burgess Boulevard at Harvester Street and Proposed Eastern Project Entrance under year 2028 build-out conditions of the Phase 02 development. However, as shown these figures, a taper for eastbound right turning movements is anticipated to be warranted on William Burgess Boulevard at the proposed Eastern Project Entrance under the year 2028 build-out conditions of the Phase 02 development. A copy of this criteria and guidance is included as **Attachment G**.

Left Turn Lane Evaluation: The need for westbound left turn lane on William Burgess Boulevard at the Project Eastern Entrance and Harvester Street was evaluated using the FDOT approved Harmelink Curve turn lane warrants. **Attachment H** includes a copy of the Harmelink turn lane warrants criteria and the left turn lane evaluations (**Figures H1** and **H2**).

As shown in these figures, a westbound left turn lane is not anticipated to be warranted on William Burgess Boulevard at Harvester Street under year 2023 build-out conditions of Phase 01 development and under year 2028 build-out conditions of Phase 02 development. A westbound left turn lane is not anticipated to be warranted on William Burgess Boulevard at the proposed Eastern Project Entrance under year 2023 build-out conditions of Phase 01 development and under year 2028 build-out conditions of Phase 02 development.

However, due to high percentage (44.88% of westbound advancing volume) westbound left turns during the PM peak period, a westbound left turn lane (with 100 feet storage distance) on William Burgess Boulevard at the proposed Eastern Project Entrance is recommended under the year 2028 build-out conditions of Phase 02 development. This left turn lane will allow for deceleration of the westbound left turning vehicles and provide for safer left turning operation on William Burgess at the proposed Eastern Project Entrance.

William Burgess Boulevard has a posted speed limit of 35 miles per hour (mph). Hence, based on FDOT Design Standards Index 301, the westbound left turn lane should include a deceleration and taper distance of 155 feet in addition to the 100 feet storage distance.

Project Driveway Evaluation (Northbound Right Turn Lane):

The need for separate left turn lane and a right turn lane on the proposed Eastern Project Entrance was evaluated based on the guidance and criteria included in the FDOT Driveway Handbook. The criteria states that a separate left-turn and right-turn lanes should be considered on driveways/roadways where expected volumes exceed 600 vehicles per day. A copy of this criteria and guidance is included as **Attachment I**.

As shown in previously stated **Tables 01** and **02**, about 739 (80% of 924 daily trips) under the year 2023 build-out conditions of Phase 01 development and about 1,280 daily trips (80% of 1,424 daily trips = 1,139 + 141 pass-by trips) under the year 2028 build-out conditions of Phase 02 development are anticipated to use the proposed Eastern Project Entrance. Hence, it is recommended that separate left turn lane and a right turn lane be provided on the proposed Eastern Project Entrance.

Intersection Capacity Analysis:

The AM and PM peak intersection capacity analyses of the study intersections under the year 2023 build-out conditions of Phase 01 development and year 2028 build-out conditions of Phase 02 development was performed using Synchro 9 software. Synchro 9 software uses HCM 2000/2010 procedures and methodologies. **Table 05** summarizes AM peak and PM peak hour LOS, Delay and 95th percentile queuing distance at the study intersections. A copy of the HCM worksheets are included as **Attachment J**.

As shown in this table, all the approaches at both the study intersections are anticipated to operate at LOS E or better under both Year 2023 build-out conditions of Phase 01 development and year 2028 build-out conditions of Phase 02 development. Also as shown in this table, following is a summary of the anticipated 95th percentile queue lengths on the critical movements/approaches of the study intersections:

- 25 feet (1 vehicle) on the westbound left at William Burgess Boulevard and the proposed Eastern Project Entrance intersection
- 25 feet (1 vehicle) on the northbound left and right turning movements on the proposed Eastern Project Entrance
- 25 feet (1 vehicle) on the northbound approach on Harvester Street

Hence, the northbound right turn on the proposed Eastern Project Entrance should provide for at-least 50 feet of storage distance along with 50 feet of taper. The 255 feet westbound left turn lane on William Burgess Boulevard at the proposed Eastern Project Entrance is anticipated to be adequate under the year 2028 build-out conditions of the Phase 02 development.

Figure 12 shows the intersection lane configuration under the year 2028 build-out conditions of Phase 02 development.

Conclusions and Recommendations:

A mixed-use development that is anticipated to include 88 single-family residential units, 80 multi-family residential units and 42,000 SF commercial/retail land uses are proposed for construction on the southeast quadrant of William Burgess Boulevard and Harvester Street in Nassau County, Florida.

The proposed development is anticipated to be developed in two phases. Phase 01 development is anticipated to include the 88 proposed single-family residential units and Phase 02 development is anticipated to include 80 multi-family residential units and 42,000 SF commercial/retail land uses.

Access to the proposed development will be provided via William Burgess Boulevard and Harvester Street. This traffic study is being performed to determine the need eastbound right turn lanes and westbound left turn lanes on William Burgess Boulevard at the proposed project drive and at Harvester Street intersections (study intersections).

This traffic study was performed to determine the need eastbound right turn lanes and westbound left turn lanes on William Burgess Boulevard at the proposed project drive and at Harvester Street intersections

Phase 01 development is anticipated to generate 924 daily trips that include 67 AM peak and 90 PM peak trips. Phase 02 (Cumulative) development is anticipated to generate 1,956 daily trips that include 145 AM peak trips (includes 29 internal capture and 12 pass-by trips) and 424 PM peak trips (includes 85 internal capture and 28 pass-by trips). The internal capture percentage was limited to a maximum of 20% and the pass-by trips were limited to a maximum of 10% of the adjacent street background traffic volumes.

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The year 2023 build-out traffic volumes at the study intersections on William Burgess Boulevard include the year 2023 background traffic and the Phase 01 project traffic assignment. The year 2028 (Cumulative) build-out traffic volumes at the study intersection on William Burgess Boulevard include the year 2028 background traffic volumes, Phase 02 (Cumulative) residential project traffic assignment, Phase 02 commercial/retail project traffic assignment and commercial/retail related pass-by traffic assignment.

An eastbound right turn lane is not anticipated to be warranted on William Burgess Boulevard at Harvester Street and the proposed Eastern Project Entrance under year 2023 build-out condition of Phase 01 development and year 2028 build-out conditions of the Phase 02 development. However, a taper for eastbound right turning movements is anticipated to be warranted on William Burgess Boulevard at the proposed Eastern Project Entrance under the year 2028 build-out conditions of the Phase 02 development.

A westbound left turn lane is not anticipated to be warranted on William Burgess Boulevard at the proposed Eastern Project Entrance under year 2023 build-out conditions of Phase 01 development and under year 2028 build-out conditions of Phase 02 development.

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