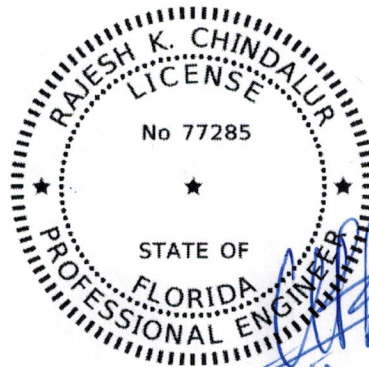


PROFESSIONAL ENGINEER CERTIFICATE

I, Rajesh Ramn K. Chindalur, PE #77285, certify that I currently hold an active license in the state of Florida and am competent through education or experience to provide engineering services in the civil discipline contained in this plan, print, specification, or report.

PROJECT:	Nassau Crossing – Traffic Impact Study
LOCATION:	Nassau County, Florida
CLIENT:	W. H. Howell Company

I further certify that this plan, print, specification, or report was prepared by me or under my responsible charge as defined in Chapter 61G15-18.001 F.A.C. Moreover, if offered by a corporation, partnership, or through a fictitious name, I certify that the company offering the engineering services, Chindalur Traffic Solutions, Inc., 8515 Baymeadows Road, Suite 401, Jacksonville, Florida 32256, holds an active certificate of authorization #30806 to provide engineering service.



Signature:

Name:

P.E. No.:

Date:

Rajesh Ramn K. Chindalur, P.E., PTOE

77285

Revised 11/30/2017

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Introduction:

A mixed-use development that is anticipated to include 800 residential units (350 single family detached and 450 multi-family), 150,000 SF Office and 150,000 SF Commercial land uses are proposed for construction in Nassau County, Florida. The proposed development is anticipated to be built in two (2) phases. Phase 1 will include the 350 single family residential units anticipated to be built-out by the year 2022. Phase 2 will include the 450 multi-family residential units, 150,000 SF Office and 150,000 SF Commercial land uses anticipated to be built-out by the year 2027. **Figure 01** shows the location of the proposed single family and the mixed-use development.

The single family detached residential development will be distributed between three (3) separate land parcels located on the eastside of Harts Road between SR 200/A1A and William Burgess Boulevard. The northern parcel is anticipated to include 220 single family residential units. The middle and the southern parcels are anticipated to include 65 single family residential units each. Access to these three parcels will be provided via three separate driveways on Harts Road. The mixed-use parcel that will include the remaining 450 multi-family residential units, 150,000 SF office and 150,000 SF of Commercial land uses will be located on the northeast quadrant of William Burgess Boulevard and Harts Road. Access to the mixed-use development (multi-family, office and commercial development) will be provided via three (3) driveways on William Burgess Boulevard and one (1) driveway on Harts Road.

A copy of the preliminary site plans for the proposed development (Provided by the residential developer and Nassau County Department of Planning & Economic Opportunity) are included as **Attachment A**. The proposed single family development is anticipated to be built-out by the end of year 2022 (5 year build-out) and the remaining residential and non-residential development is anticipated to be built-out by the end of year 2027 (10 year build-out).

Existing Conditions:

William Burgess Boulevard is a two-lane undivided east-west roadway with a posted speed of 35 miles per hour (mph) connects SR 200/A1A and US 17. Harts Road is a two-lane undivided north-south roadway with a posted speed of 35 mph connects SR 200/A1A and William Burgess Boulevard. **Figures 02A** and **02B** show the existing conditions on William Burgess Boulevard and Harts Road.

Roadway Improvements:

The development along William Burgess Boulevard between Harts Road and US 17 is proposed to be a transit oriented development complimentary to the proposed transit center on William Burgess Boulevard between the rail-road and US 17 to promote and emphasize all modes of transportation (multi-modal). Upon development of this mixed-use parcel, the existing two-lane William Burgess Boulevard between Harts Road and US 17 is anticipated to be widened to a three-lane section to include turn lanes at the access driveways, pedestrian sidewalks, on-street parking, bicycle lanes and auto travel lanes (Street type: Boulevard). A two lane roadway connecting the eastern project driveway on William Burgess Boulevard and the project driveway on Harts Road is also proposed for construction. This roadway is anticipated to include pedestrian sidewalks, pedestrian crosswalks, on-street parking and two travel lanes (Street type: Commercial). Additionally, a roundabout is also proposed at the intersection of William Burgess

Boulevard and Harts Road intersection. A roundabout or appropriate improvements at the intersection of US 17 and William Burgess Boulevard is also anticipated to be constructed by FDOT. The site plan (William Burgess Small Area Plan) included in previously stated **Attachment A** provides concept level details of these roadways.

This traffic study was performed to determine the single family residential development project access intersections lane configuration on Harts Road and to determine if the proposed William Burgess Boulevard multi-modal improvements and the roundabout at William Burgess Boulevard/Harts Road intersection would be adequate under the build-out conditions of the proposed mixed-use development. Additionally, traffic analysis was performed to determine appropriate intersection improvements (roundabout or traffic signal) at the intersection of US 17 and William Burgess Boulevard. Florida Department of Transportation (FDOT) is currently undertaking a PD&E study for US 17 from Johnson Road north to SR 200/A1A. It is anticipated that this intersection improvement would be part of the FDOT improvement of US 17 from Johnson Lane north to SR 200/A1A.

Analysis Time Periods and Study Intersections:

The AM and PM peak traffic analysis was performed under the following conditions:

- Existing (Year 2017) Conditions
- Phase 1 (Year 2022) No-build/Background Conditions,
- Phase 1 (Year 2022) Build-Out Conditions
- Phase 2 (Year 2027) No-build/Background Conditions
- Phase 2 (Year 2027) Build-Out Conditions

The following intersections are included in this traffic study:

- Harts Road at Three (3) Single Family Residential Development Access Driveways
- Harts Road at Multi-Use Development Access Driveway
- William Burgess Boulevard at Harts Road
- William Burgess Boulevard at Three (3) Multi-use Development Access Driveways
- William Burgess Boulevard at US 17

Data Collection:

AM peak and PM peak period turning movement counts at the above stated intersections from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM were obtained on Aug 17th, 2017 at the following intersections:

- William Burgess Boulevard at Harts Road
- William Burgess Boulevard at US 17

Very minimal traffic was observed entering and exiting Robin Road on Harts Road. Hence, a total of 20 trips (5 trips each of eastbound left and right on Robin Road and 5 trips each for southbound right and northbound left on Harts Road) were assumed to be entering and exiting Robin Road on Harts Road. These traffic counts were further adjusted by applying a season factor to account for seasonal variations. **Figure 03** provides a summary of the AM peak and PM hour turning

movement counts at the above listed study intersections. A copy of the intersection turning movement counts and season factors are included as **Attachment B**.

Trip Generation:

Trip generation for the proposed development Phase 1 (Year 2022) and Phase 2 (Year 2027) build-out conditions were performed using the rates and equations included in the Trip Generation Manual, 9th Edition published by the Institute of Transportation Engineers (ITE). **Tables 01** and **02** summarize the Daily, AM peak and PM peak hour trips anticipated to be generated by the proposed development under Phase 1 and Phase 2 development conditions. As shown in these tables, the following is the anticipated trip generation:

- 3,583 net external daily trips that include 274 AM peak and 356 PM peak trips under year 2022 Phase 1 build-out conditions.
- 12,236 net external daily trips that include 795 AM peak and 1,169 PM peak under the year 2027 build-out conditions.
 - 2,615 net external daily trips that include 248 AM peak and 266 PM peak trips from the single family residential parcels on Harts Road
 - 9,621 net external daily trips that include 547 AM peak and 903 PM peak trips from the mixed-use parcels on William Burgess Boulevard

Internal capture trips for the single-family and mixed-use parcel were estimated using the rates included in the Trip Generation Manual, 9th Edition published by the ITE. These internal capture calculations are included as **Attachment C**.

- 968 daily trips that include 26 AM peak and 90 PM peak trips were estimated as interzonal trips between the single family residential parcels and the mixed-use parcels
- 3,042 daily trips that include 86 AM peak and 300 PM peak trips were estimates as internal capture trips between the multi-family and non-residential land uses within the mixed-use parcel on William Burgess Boulevard

Pass-by trips for the non-residential land uses were estimated using the rates and equations included in the Trip Generation Manual, 9th Edition published by the ITE. However, the maximum pass-by trips were limited to 10% of the adjacent street traffic volumes. As shown in previously state **Table 02**, a maximum of 56 AM peak and 94 PM peak trips were considered as pass-by trips.

Trip Distribution and Assignment:

The interim year 2025 model set of the Northeast Regional Planning Model Activity Based (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 the 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 development to the travel demand model. The subject parcel (s)

were updated/assigned with TAZ 25 (350 households for the proposed single family residential development), TAZ 26 (450 households for the proposed multi-family development, 375 commercial/retail related employees and 359 office related employees) were also added to the interim year 2025 model to determine the project traffic distribution for the proposed development.

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 was considered as background traffic. 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

Attachment D 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.

Figures 04, 05 and 06 show the project traffic distribution under the Phase 1 (Year 2022) build-out and Phase 2 (Year 2027) project build-out conditions respectively. **Attachments E and F** include the model plots showing project traffic distribution for the single family residential development and the mixed-use developments.

Trip generation estimates (as shown in **Tables 01 and 02**) were multiplied by these project traffic distribution percentages to determine project traffic assignment at the study intersections under Phase 1 (Year 2022) and Phase 2 (Year 2027) build-out conditions. **Figures 07, 08 and 09** show AM peak and PM peak project traffic assignment under the Phase 1 (Year 2022) and Phase 2 (Year 2027) project build conditions respectively.

Background and Build-out Traffic Projections:

As stated earlier, Phase 1 development (350 single family dwelling units) is anticipated to be built-out by year 2022 and Phase 2 development (450 Multi Family dwelling units, 150,000 SF General Office space and 150,000 SF Retail Space) is anticipated to be built-out by the year 2027. The future year 2022 and year 2027 background traffic volumes were estimated by applying a growth factor to the existing year 2017 traffic volumes on Harts Road and William Burgess Boulevard. A hybrid methodology which includes a combination of trends analysis of historical AADT and travel demand model volumes were used to determine this growth factor.

The growth factor for traffic volumes on Harts Road was estimated by performing trends analysis of historical AADT on Harts Road and US 17. **Table 03** shows the year 2022 and 2027 growth factor calculations. As shown in this table a growth factor of 1.135 and 1.287 were estimated and applied to the year 2017 traffic volumes to estimate the year 2022 and year 2027 conditions background traffic volumes respectively. Historical AADT on the above stated roadway segments were obtained from the FDOT traffic counts online portal. **Attachment G** includes a copy of the historical AADT and the trends analysis plots.

The year 2017 traffic volumes on William Burgess Boulevard does not include the traffic from the recently approved ENCPA's PDPs. In order to account for traffic from these recently approved projects the future traffic on William Burgess Boulevard was obtained from the travel demand model run performed to determine the project traffic distribution percentages. As a result, a growth factor of 1.99 and 2.99 was estimated for projecting year 2022 and year 2027 background traffic volumes. **Figures 10** and **11** show the year 2022 and 2027 background conditions AM and PM peak traffic volumes at the study intersections.

Pass-by Traffic Volumes and Interzonal Trips:

As shown in previously stated Table 01, a portion of the trips entering and exiting the proposed Phase 2 mixed-use development (non-residential land uses) are anticipated to be pass-by trips from the traffic on William Burgess Boulevard and Harts Road. These pass-by trips were assigned to the project entrance driveways on William Burgess Boulevard and Harts Road as shown in **Figure 12**. This figure also shows the interzonal trips between the single family residential and the mixed-use parcels.

Total Traffic Volumes:

The year 2022 build conditions traffic volumes include the year 2022 background traffic volumes and the year 2022 (Phase 1 development) project traffic assignment at the study intersections. The year 2027 build conditions traffic volumes include the year 2027 background traffic volumes and the year 2027 (all development phases) project traffic assignment, pass-by traffic assignment and interzonal trips at the study intersections. **Figures 13** and **14** show the AM peak and PM peak periods traffic volumes under the year 2022 and year 2027 project build conditions.

Phase 1 (Year 2022) Build-Out Conditions Turn Lane Evaluation:

An evaluation to determine the need for northbound right turn lanes and southbound left turn lanes on Harts Road at the entrance driveways to the proposed single residential development was performed using the FDOT approved Harmelink Curve turn lane warrants criteria. **Attachment H** includes a copy of the Harmelink turn lane warrants criteria. **Figures 15** and **16** show the right turn lane and left turn lane analysis plots. **Table 04** summarizes the results of the turn lane evaluation on Harts Road under the Phase 1 (Year 2022) project build-out conditions. As shown in these figures and table, a northbound right turn lane on Harts Road at the Northern Residential Driveway is warranted under the Phase 1 (Year 2022) project build-out conditions. A northbound right turn lane is not anticipated to be warranted on Harts Road at the Middle and

Southern Residential Driveways under the Phase 1 (Year 2022) project build-out conditions. A southbound left turn lane on Harts Road is not anticipated to be warranted at the Residential Driveways under the Phase 1 (Year 2022) project build-out conditions.

Phase 2 (Year 2027) Build-Out Conditions Turn Lane Evaluation:

An evaluation to determine the need for right turn lanes left turn lanes on Harts Road and William Burgess Boulevard at each of the proposed project entrance driveways under the Phase 2 (Year 2027) build-out conditions was performed using the FDOT approved Harmelink Curve turn lane warrants criteria.

Figures 17 and 18 show the evaluation to determine the need for right turn lanes and left turn lanes on Harts Road at the entrance driveways to the proposed development. **Figures 19 and 20** show the evaluation to determine the need for right turn lanes and left turn lanes on William Burgess Boulevard at the entrance driveways to the proposed development. **Tables 05 and 06** summarize the results of these turn lane evaluations. As show in these tables, following is a summary of the turn lane evaluation:

- A northbound right turn lane on Harts Road at the Northern Residential Driveway
- A westbound right turn lane on William Burgess Boulevard at both Eastern and Western Project Entrance Driveways
- *A westbound right turn lane on William Burgess Boulevard at the Middle Project Entrance Driveway (Under signalized conditions only)*
- An eastbound left turn lane on William Burgess Boulevard with 150 feet storage distance at the Western Project Driveway
- *An eastbound left turn lane on William Burgess Boulevard with 175 feet storage distance at the Middle Project Driveway (Under signalized conditions only)*
- An eastbound left turn lane on William Burgess Boulevard with 150 feet storage distance at the Eastern Project Driveway

In addition to the above stated storage distance, appropriate deceleration and taper distance as recommended in the FDOT Design Standards Index 301 would be required to be provided for each of the eastbound left turn lanes on William Burgess Boulevard.

Intersection Capacity Analysis:

These intersection capacity analysis was performed using Synchro 9 software which uses HCM2010/HCM 2000 methodologies and procedures in evaluating signalized intersection, un-signalized intersections and roundabouts. The AM peak and PM peak intersection capacity analysis of the study intersections was performed at the following intersections:

- Harts Road at Northern Residential Driveway (Year 2022 and Year 2027 Build-Out Conditions)
- Harts Road at Middle Residential Driveway (Year 2022 and Year 2027 Build-Out Conditions)
- Harts Road at Southern Residential Driveway (Year 2022 and Year 2027 Build-Out Conditions)

- Harts Road at Mixed-Use Development Driveway (Year 2027 Build-Out Conditions)
- William Burgess Boulevard at Harts Road (Existing, Year 2022 and Year 2027 Conditions)
- William Burgess Boulevard at Western Project Entrance (Year 2027 Conditions)
- William Burgess Boulevard at Middle Project Entrance (Year 2027 Conditions)
- William Burgess Boulevard at Eastern Project Entrance (Year 2027 Conditions)
- US 17 at William Burgess Boulevard (Existing, Year 2022 and Year 2027 Conditions)

The intersection of William Burgess Boulevard at Harts Road was analyzed as an unsignalized intersection and as a roundabout under the year 2027 build-out conditions. The intersection of US 17 and William Burgess Boulevard was analyzed as a signalized intersection and a roundabout under the year 2027 build-out conditions.

Existing Year 2017 Conditions:

Table 07 summarizes the year 2017 existing conditions AM and PM peak delay and LOS at the above stated study intersections. As summarized in this table, all the approaches at each of the study intersections are currently operating at a LOS E or better with the exception of the eastbound left turns on William Burgess Boulevard at US 17 during the PM peak period. The eastbound left turns are currently operating and LOS F during the PM peak period. **Attachment I** includes copies of year 2017 existing conditions AM peak and PM peak periods HCM Worksheets.

Year 2022 Background Conditions:

Previously stated **Table 07** summarizes the year 2022 background conditions AM and PM peak delay and LOS at the above stated study intersections. As summarized in this table, all the approaches at each of the study intersections are anticipated to continue to operate at a LOS E or better with the exception of the eastbound left turns on William Burgess Boulevard at US 17 during the AM peak and PM peak period. The eastbound left turns are anticipated to continue to operate at LOS F during the AM peak and PM peak period. The 95th percentile queue is anticipated to be about 6 vehicles (150 feet) during AM peak period and about 10 vehicles (250 feet) during PM peak period. **Attachment J** includes copies of year 2022 background conditions AM peak and PM peak periods HCM Worksheets. A preliminary review of the peak hour traffic volumes at the US 17 and William Burgess intersection indicate that a southbound right turn lane on US 17 and a traffic signal or a two-lane roundabout would be required to be installed for the eastbound approach to operate at an acceptable LOS.

Year 2027 Background Conditions:

Previously stated **Table 07** summarizes the year 2027 background conditions AM and PM peak delay and LOS at the above stated study intersections. As summarized in this table, all the approaches at each of the study intersections are anticipated to continue to operate at a LOS E or better with the exception of the following:

- Southbound approach on Harts Road at William Burgess Boulevard during AM peak period

- Eastbound left turns on William Burgess Boulevard at US 17 during the AM peak and PM peak period

The southbound approach on Harts Road at William Burgess Boulevard and the eastbound left turns on William Burgess Boulevard at US 17 are anticipated to operate at LOS F during the AM peak and PM peak period. **Attachment K** includes copies of year 2027 background conditions AM peak and PM peak periods HCM Worksheets. A preliminary review of the peak hour traffic volumes at these intersections indicate that the following improvements would be required for the study intersections to operate at an acceptable LOS:

- A southbound left turn lane on Harts Road at William Burgess Boulevard or a **roundabout**
- A southbound right turn lane on US 17 at William Burgess Boulevard and
- A traffic signal or a roundabout at the intersection of US 17 and William Burgess Boulevard

Phase 1 (Year 2022) Build-Out Conditions:

The following improvements were included in the Phase 1 (Year 2022) build-out conditions intersection capacity analysis:

- A northbound right turn lane on Harts Road at the Northern Residential (as identified in the “Phase 1 (Year 2022) Build-Out Conditions Turn Lane Evaluation” section of this report)
- A southbound right turn lane on US 17 at William Burgess Boulevard and a roundabout at this intersection (as identified in the year 2022 background conditions analysis section of this report)

Table 08 summarizes the Phase 1 (Year 2022) build-out conditions AM and PM peak delay and LOS at the study intersection and the project access intersections on Harts Road. As summarized in this table, all the approaches at the study intersections are anticipated to operate at LOS E or better under the Phase 1 (Year 2022) build-out conditions. **Attachment L** includes copies of year 2022 build-out conditions AM peak and PM peak periods HCM Worksheets.

Phase 2 (Year 2027) Build-Out Conditions:

The following improvements were included in the Phase 2 (Year 2027) build-out conditions intersection capacity analysis:

- A northbound right turn lane on Harts Road at the Northern Residential Driveway (as identified in the “Phase 2 (Year 2027) Build-Out Conditions Turn Lane Evaluation” section of this report)
- A westbound right turn lane on William Burgess Boulevard at both the Eastern and Western Project Entrance Driveways
- A westbound right turn lane on William Burgess Boulevard at the Middle Project Entrance Driveway (Under signalized conditions only)

- An eastbound left turn lane on William Burgess Boulevard with 150 feet storage distance at the Western Project Driveway
- An eastbound left turn lane on William Burgess Boulevard with 175 feet storage distance at the Middle Project Driveway (Under signalized conditions only)
- An eastbound left turn lane on William Burgess Boulevard with 150 feet storage distance at the Eastern Project Driveway
- A southbound right turn lane on US 17 at William Burgess Boulevard and a roundabout at this intersection (as identified in the year 2027 background conditions analysis section of this report)

Table 09 summarizes the Phase 1 (Year 2022) build-out conditions AM and PM peak delay and LOS at the study intersection and the project access intersections on Harts Road. As summarized in this table, all the approaches at the study intersections are anticipated to operate at LOS E or better under the Phase 1 (Year 2022) build-out conditions. **Attachment M** includes copies of year 2027 build-out conditions AM peak and PM peak periods HCM Worksheets. **Figures 21A, 21B and 21C** show the intersection lane configuration at each of the study intersections on Harts Road and William Burgess Boulevard.

William Burgess Boulevard at Middle Project Driveway:

A review of the Phase 2 (Year 2027) build-out conditions intersection capacity analysis of this intersections shows that the proposed Middle Project Driveway (un-signalized) is anticipated to operate at LOS F during PM peak periods. A preliminary review of the traffic volumes at this intersection show that a roundabout or a traffic signal is anticipated to be warranted under the Phase 2 (Year 2027) build-out conditions of the proposed mixed-use development. Hence, it is recommended that the traffic volumes at this intersection be monitored periodically and install a roundabout or a traffic signal when warranted. A roundabout and a signalized intersection capacity analysis of this intersection under the Phase 2 (Year 2027) build-out conditions show that all approaches at this intersection are anticipated to operate at an acceptable LOS with a roundabout or a traffic signal. Previously stated **Table 09** summarizes the AM peak and PM peak Delay and LOS at this intersection under the Phase 2 (Year 2027) build-out conditions. **Attachment N** includes a copy of the roundabout and the signalized intersection capacity analysis HCM worksheets.

US 17 at William Burgess Boulevard:

A review of the Phase 2 (Year 2027) build-out conditions intersection capacity analysis of this intersections shows that all the approaches (roundabout) are anticipated to operate at LOS E during PM peak periods. A review of the year 2027 build-out conditions traffic volumes on US 17 and William Burgess Boulevard reveal a VC ratio (volume to capacity ratio) of 1.0 or greater. For this reason, the approaches to this roundabout are anticipated to operate at LOS E with longer than acceptable queue lengths on US 17 northbound and southbound. Hence, it is recommended that a roundabout justification study be performed at the intersection of US 17 and William Burgess Boulevard to determine if a roundabout is suitable at this intersection. Further review

of year 2027 build-out conditions traffic volumes reveal that installation of a traffic signal may result in better operations at this intersection. A signalized intersection capacity analysis of this intersection under the Phase 2 (Year 2027) build-out conditions show that all approaches at this intersection is anticipated to operate at LOS E or better. Previously stated **Table 09** summarizes the AM peak and PM peak Delay and LOS at this intersection under the Phase 2 (Year 2027) build-out conditions. Previously stated **Attachment N** includes a copy of the signalized intersection capacity analysis HCM worksheets. Florida Department of Transportation (FDOT) is currently undertaking a PD&E study for US 17 from Johnson Road north to SR 200/A1A. It is anticipated that this intersection improvement would be part of the FDOT improvement of US 17 from Johnson Lane north to SR 200/A1A.

Summary and Conclusions:

A mixed-use development that is anticipated to include 800 residential units (320 single family detached and 480 multi-family), 150,000 SF Office and 150,000 SF Commercial land uses are proposed for construction in Nassau County, Florida. The proposed development is anticipated to be built in two (2) phases. Phase 1 will include the 320 single family residential units anticipated to be built-out by the year 2022. Phase 2 will include the 480 multi-family residential units, 150,000 SF Office and 150,000 SF Commercial land uses anticipated to be built-out by the year 2027.

The single family detached residential development will be distributed between three (3) separate land parcels located on the eastside of Harts Road between SR 200/A1A and William Burgess Boulevard. Access to these three parcels will be provided via three separate driveways on Harts Road. Access to the mixed-use development (multi-family, office and commercial development) will be provided via three (3) driveways on William Burgess Boulevard and one (1) driveway on Harts Road.

The development along William Burgess Boulevard between Harts Road and US 17 is proposed to be a transit oriented development complimentary to the proposed transit center on William Burgess Boulevard between the rail-road and US 17 to promote and emphasize all modes of transportation (multi-modal). Upon development of this mixed-use parcel, the existing two-lane William Burgess Boulevard between Harts Road and US 17 is anticipated to be widened to a three-lane section to include turn lanes at the access driveways, pedestrian sidewalks, on-street parking, bicycle lanes and auto travel lanes (Street type: Boulevard). A two lane roadway connecting the eastern project driveway on William Burgess Boulevard and the project driveway on Harts Road is also proposed for construction. This roadway is anticipated to include pedestrian sidewalks, pedestrian crosswalks, on-street parking and two travel lanes (Street type: Commercial). Additionally, a roundabout is also proposed at the intersection of William Burgess Boulevard and Harts Road intersection.

Trip generation for the proposed development Phase 1 (Year 2022) and Phase 2 (Year 2027) build-out conditions were performed using the rates and equations included in the Trip

Generation Manual, 9th Edition published by the Institute of Transportation Engineers (ITE). Internal capture and pass-by trips were also calculated using rates and equations included in the Trip Generation Manual, 9th Edition.

The interim year 2025 model set of the Northeast Regional Planning Model Activity Based (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 the project traffic distribution for the proposed development.

All the approaches at each of the study intersections are currently operating at a LOS E or better with the exception of the eastbound left turns on William Burgess Boulevard at US 17 during the PM peak period. The eastbound left turns are currently operating and LOS F during the PM peak period.

The eastbound left turns on William Burgess Boulevard at US 17 are anticipated to continue to operate at LOS F during the AM peak and PM peak period under the year 2022 background conditions.

Background Conditions Improvements: The southbound approach on Harts Road at William Burgess Boulevard and the eastbound left turns on William Burgess Boulevard at US 17 are anticipated to operate at LOS F during the AM peak and PM peak period under the year 2027 background conditions. A preliminary review of the peak hour traffic volumes at these intersections indicate that the following improvements would be required for the study intersections to operate at an acceptable LOS:

- A southbound left turn lane on Harts Road at William Burgess Boulevard or a **roundabout**
- A southbound right turn lane on US 17 at William Burgess Boulevard and
- A traffic signal or a roundabout at the intersection of US 17 and William Burgess Boulevard

Project Access Improvements: The following turn lanes are anticipated to be warranted under the project build-out conditions.

- A northbound right turn lane on Harts Road at the Northern Residential Driveway (Phase 1)
- A westbound right turn lane on William Burgess Boulevard at both the Eastern and Western Project Entrance Driveways – Phase 2
- *A westbound right turn lane on William Burgess Boulevard at the Middle Project Entrance Driveway – Phase 2 (Under signalized conditions only)*
- An eastbound left turn lane on William Burgess Boulevard with 150 feet storage distance at the Western Project Driveway – Phase 2
- *An eastbound left turn lane on William Burgess Boulevard with 175 feet storage distance at the Middle Project Driveway – Phase 2 (Under signalized conditions only)*

- An eastbound left turn lane on William Burgess Boulevard with 150 feet storage distance at the Eastern Project Driveway – Phase 2

In addition to the above stated storage distance, appropriate deceleration and taper distance as recommended in the FDOT Design Standards Index 301 would be required to be provided for each of the eastbound left turn lanes on William Burgess Boulevard.

Roundabout at William Burgess Boulevard and Harts Road Intersection: A roundabout at this intersection is anticipated to operate a LOS E or better under the Phase 1 (Year 2022) and Phase 2 (Year 2027) background and build-out conditions

William Burgess Boulevard at Middle Project Driveway: A review of the Phase 2 (Year 2027) build-out conditions intersection capacity analysis of this intersections shows that the proposed Middle Project Driveway (un-signalized) is anticipated to operate at LOS F during PM peak periods. A preliminary review of the traffic volumes at this intersection show that a roundabout or a traffic signal is anticipated to be warranted under the Phase 2 (Year 2027) build-out conditions of the proposed mixed-use development. Hence, it is recommended that the traffic volumes at this intersection be monitored periodically and install a roundabout or a traffic signal when warranted.

Roundabout at US 17 and William Burgess Boulevard Intersection: A review of the Phase 2 (Year 2027) build-out conditions intersection capacity analysis of this intersections shows that all the approaches (roundabout) are anticipated to operate at LOS E during PM peak periods. A review of the year 2027 build-out conditions traffic volumes on US 17 and William Burgess Boulevard reveal a VC ratio (volume to capacity ratio) of 1.0 or greater. For this reason, the approaches to this roundabout are anticipated to operate at LOS E with longer than acceptable queue lengths on US 17 northbound and southbound. Hence, it is recommended that a roundabout justification study be performed at the intersection of US 17 and William Burgess Boulevard to determine if a roundabout is suitable at this intersection. Further review of year 2027 build-out conditions traffic volumes reveal that installation of a traffic signal may result in better operations at this intersection. A signalized intersection capacity analysis of this intersection under the Phase 2 (Year 2027) build-out conditions show that all approaches at this intersection is anticipated to operate at LOS E or better. Florida Department of Transportation (FDOT) is currently undertaking a PD&E study for US 17 from Johnson Road north to SR 200/A1A. It is anticipated that this intersection improvement would be part of the FDOT improvement of US 17 from Johnson Lane north to SR 200/A1A.

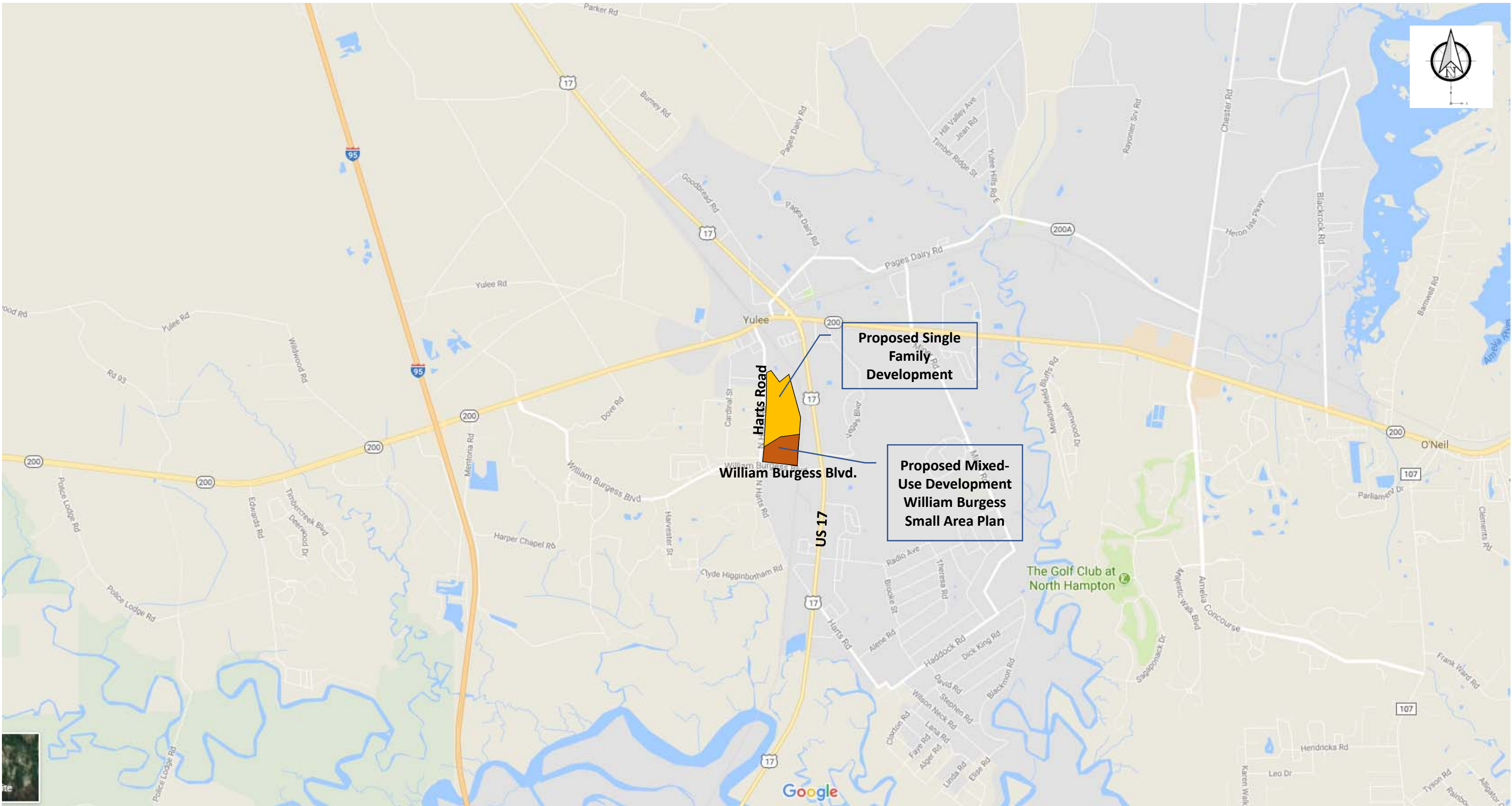
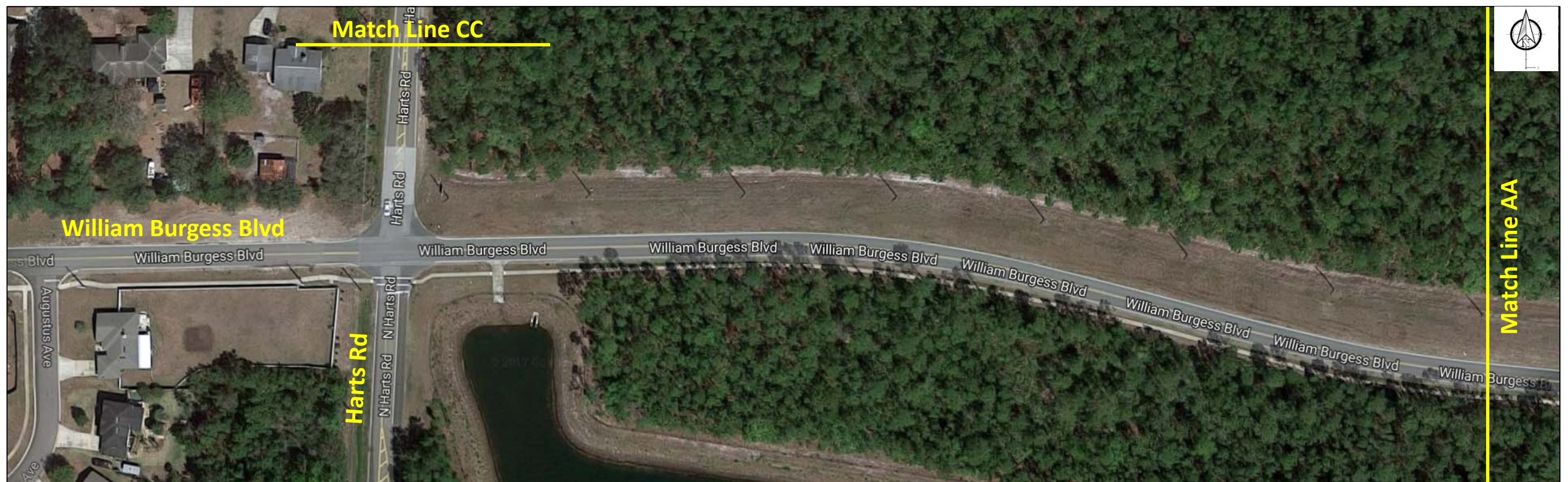


Figure 01– Location Map

Nassau Crossing – Traffic Impact Study
 Nassau County, Florida



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Figure 02 A – Existing Conditions
 Nassau Crossing – Traffic Impact Study
 Nassau County, Florida





Figure 04 – Phase 1 (Year 2022) Project Traffic Distribution
Nassau Crossing – Traffic Impact Study
Nassau County, Florida



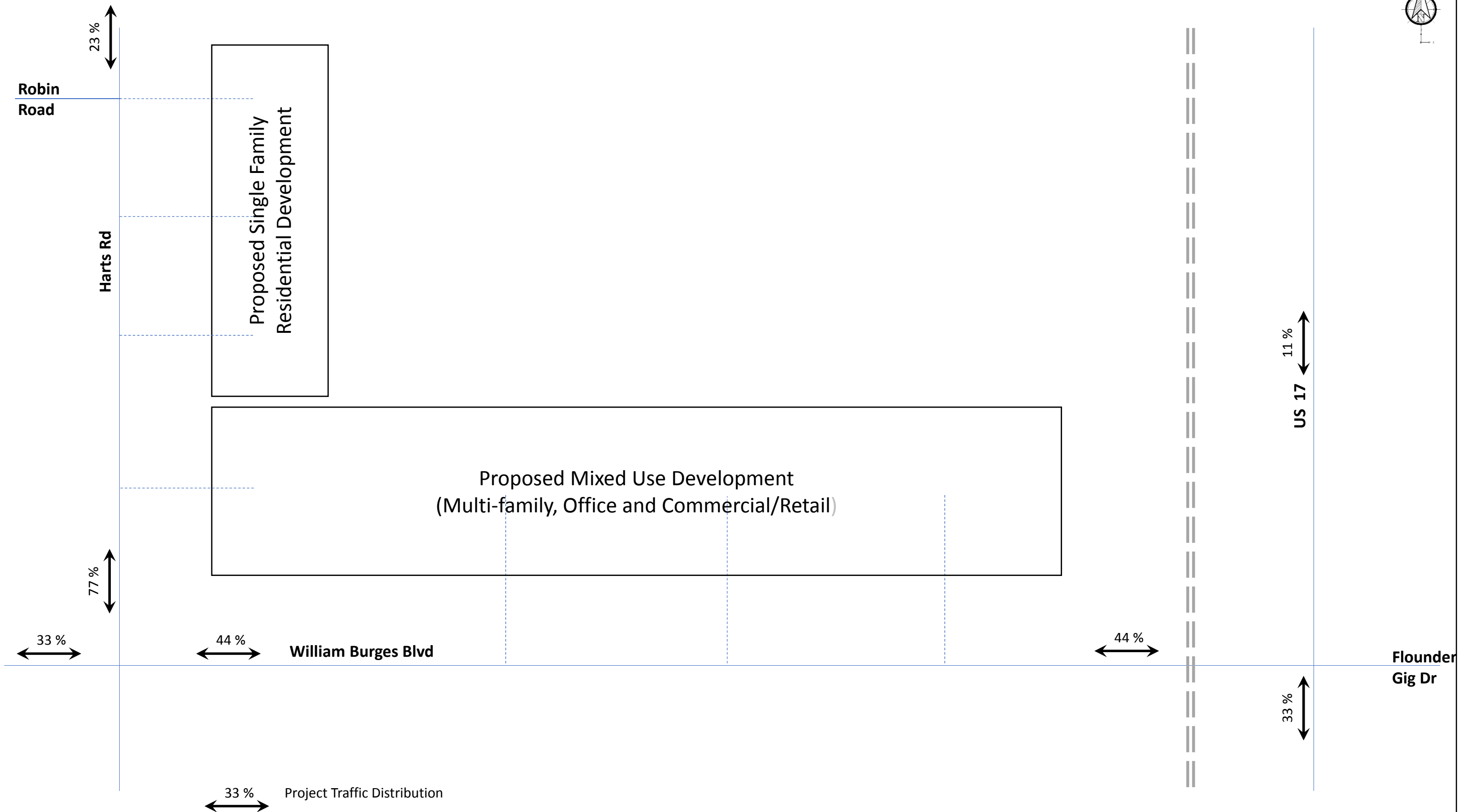
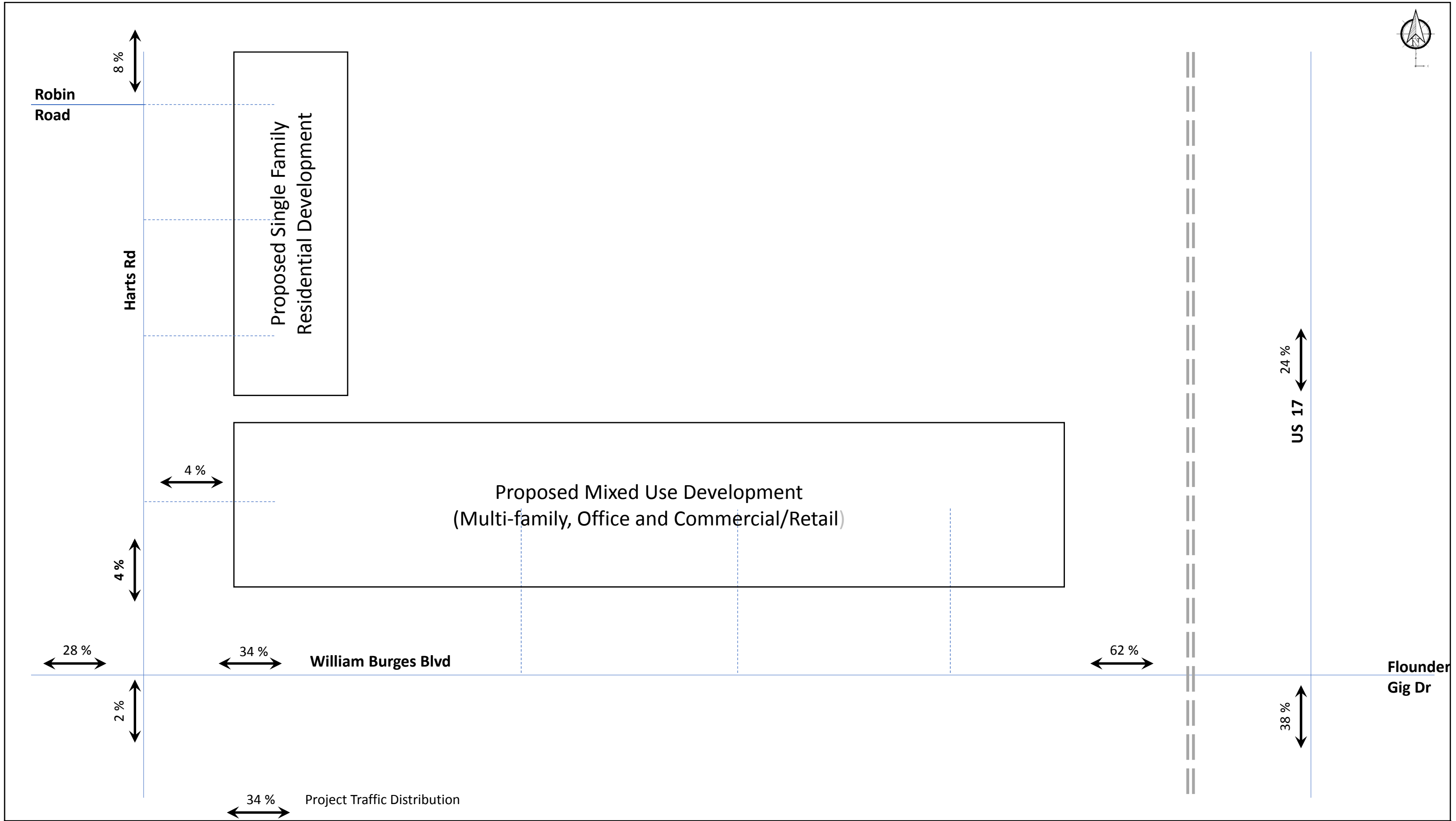


Figure 05 – Phase 2 (Year 2027) Project Traffic Distribution (Residential)

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Nassau County, Florida



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Figure 06 – Phase 2 (Year 2027) Project Traffic Distribution (Mixed-Use)

Nassau Crossing – Traffic Impact Study
Nassau County, Florida

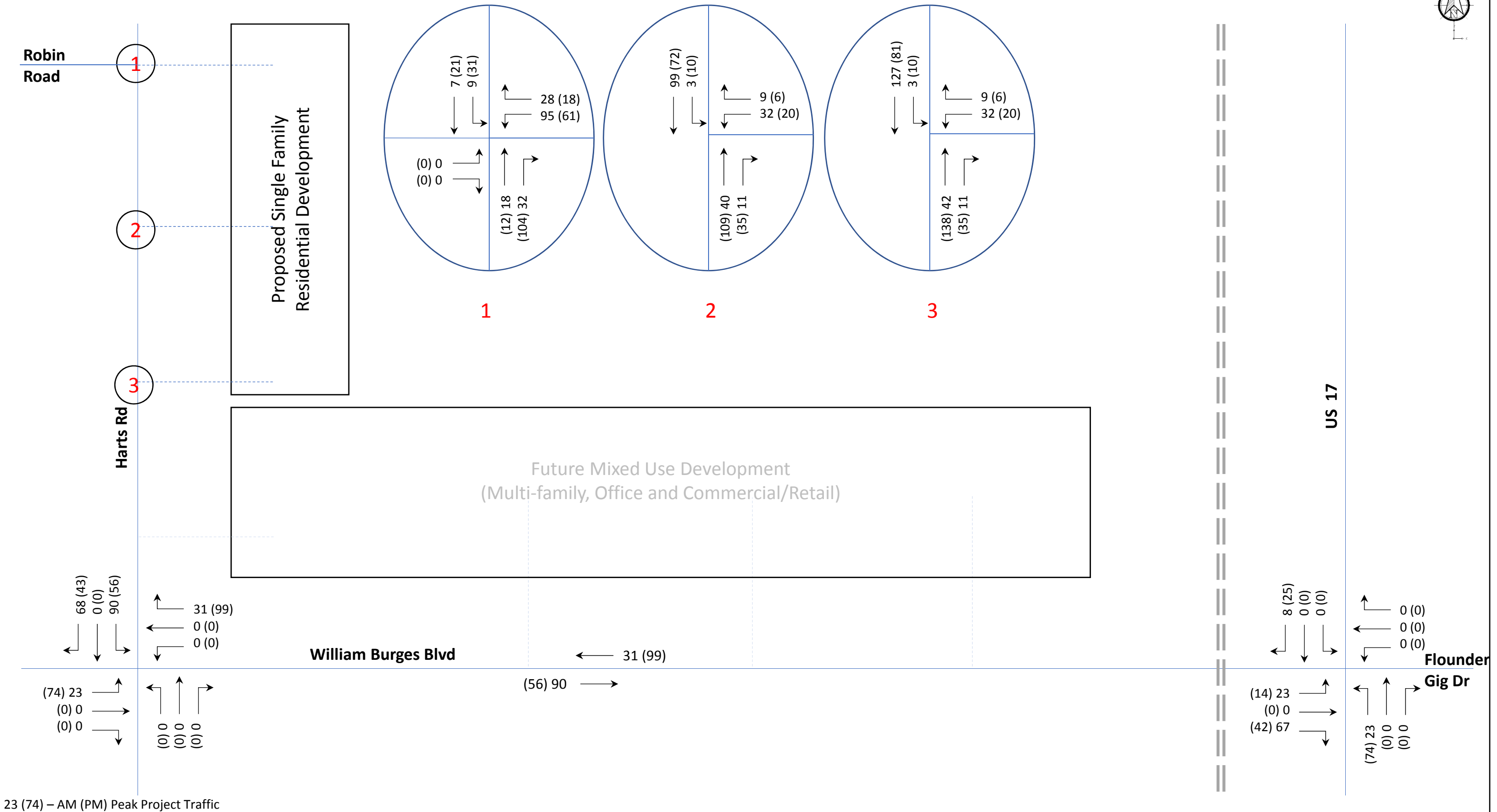


Figure 07 – Phase 1 (Year 2022) Project Traffic Assignment
Nassau Crossing – Traffic Impact Study
Nassau County, Florida

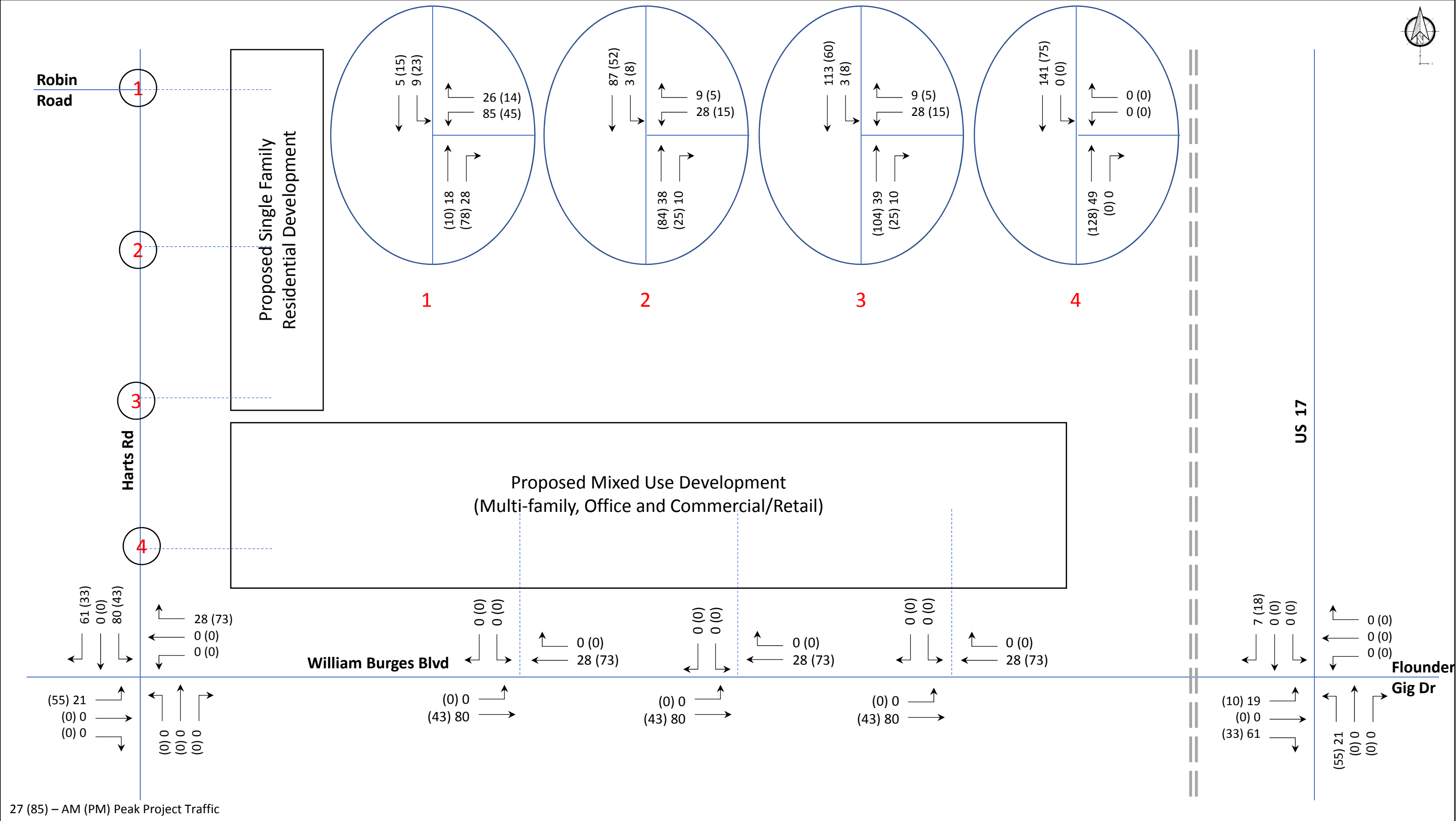


Figure 08 – Phase 2 (Year 2027) Project Traffic Assignment (Residential)

Nassau Crossing – Traffic Impact Study
Nassau County, Florida

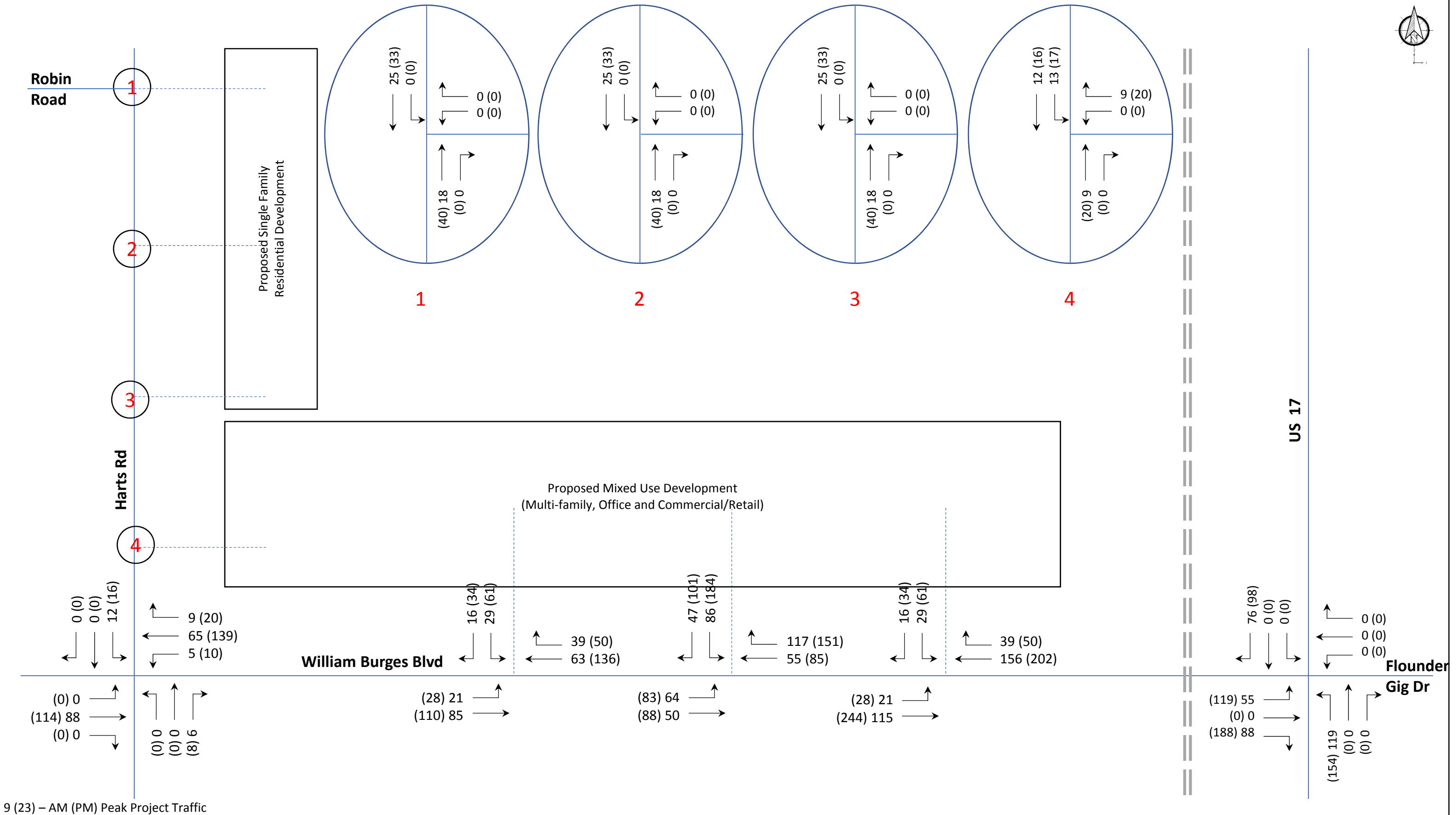
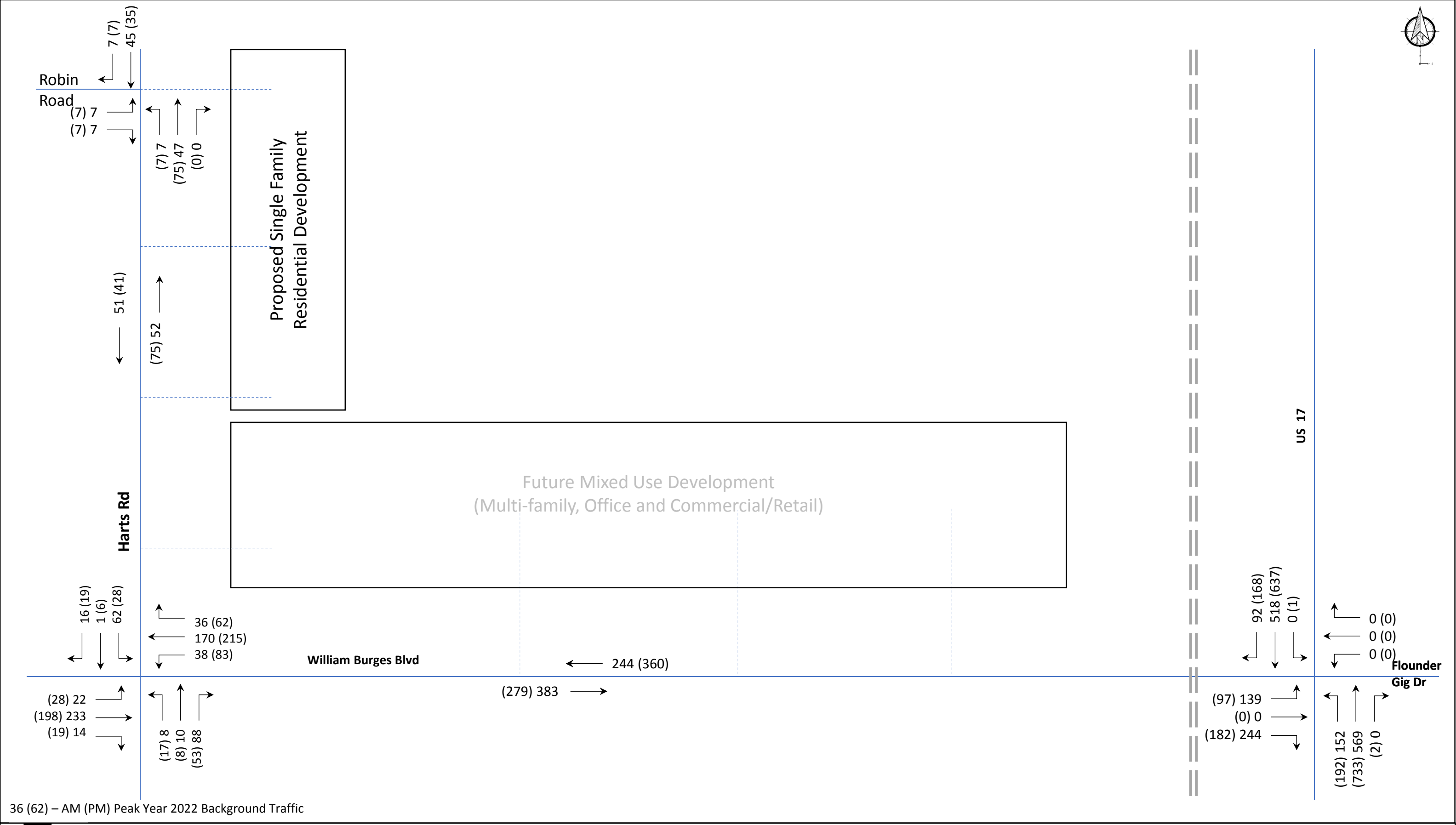


Figure 09 – Phase 2 (Year 2027) Project Traffic Assignment (Mixed Use)

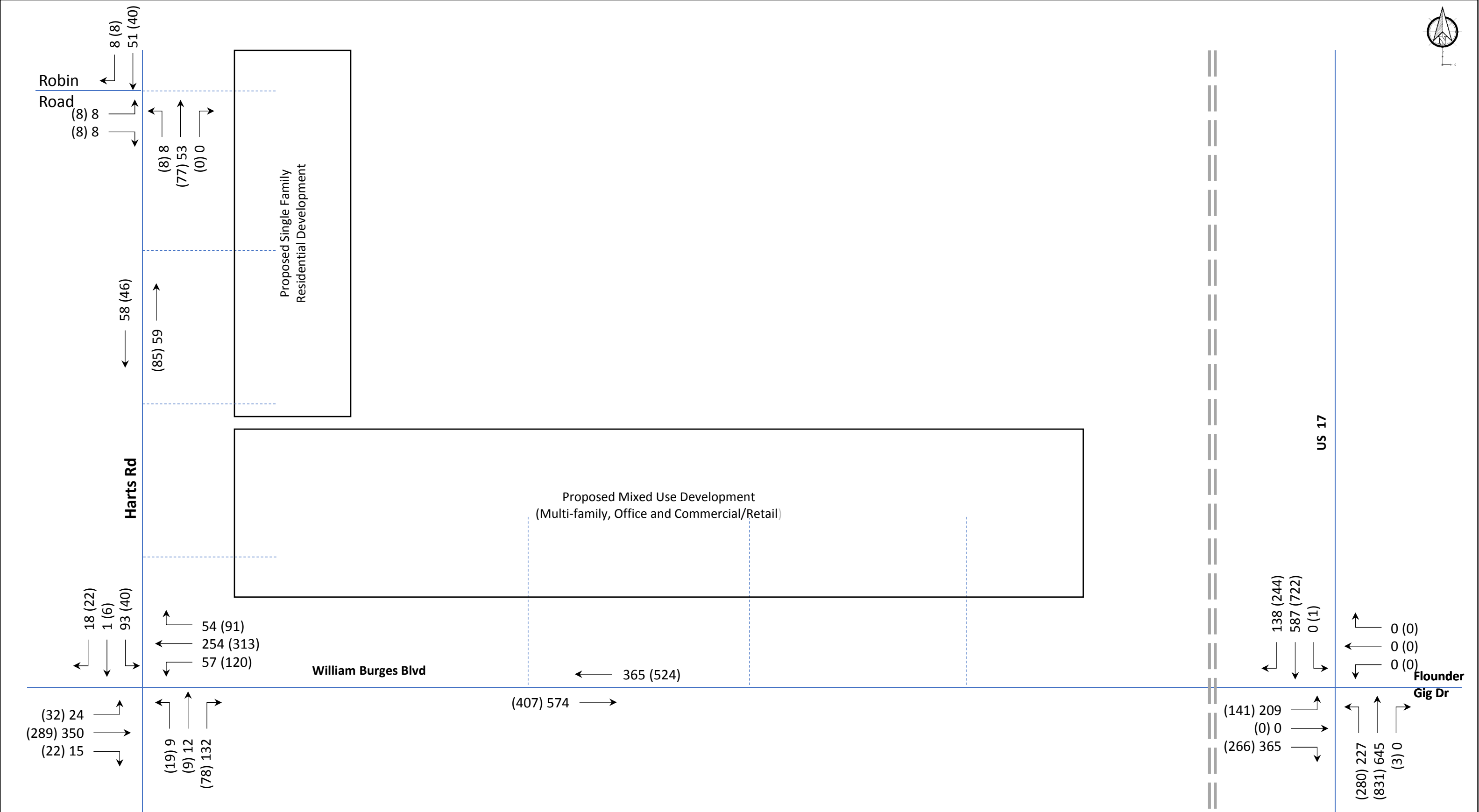
Nassau Crossing – Traffic Impact Study
Nassau County, Florida





36 (62) – AM (PM) Peak Year 2022 Background Traffic

Figure 10 – Phase 1 (Year 2022) Background Traffic
Nassau Crossing – Traffic Impact Study
Nassau County, Florida



54 (91) – AM (PM) Peak Year 2027 Background Traffic

Figure 11 – Phase 2 (Year 2027) Background Traffic
 Nassau Crossing – Traffic Impact Study
 Nassau County, Florida

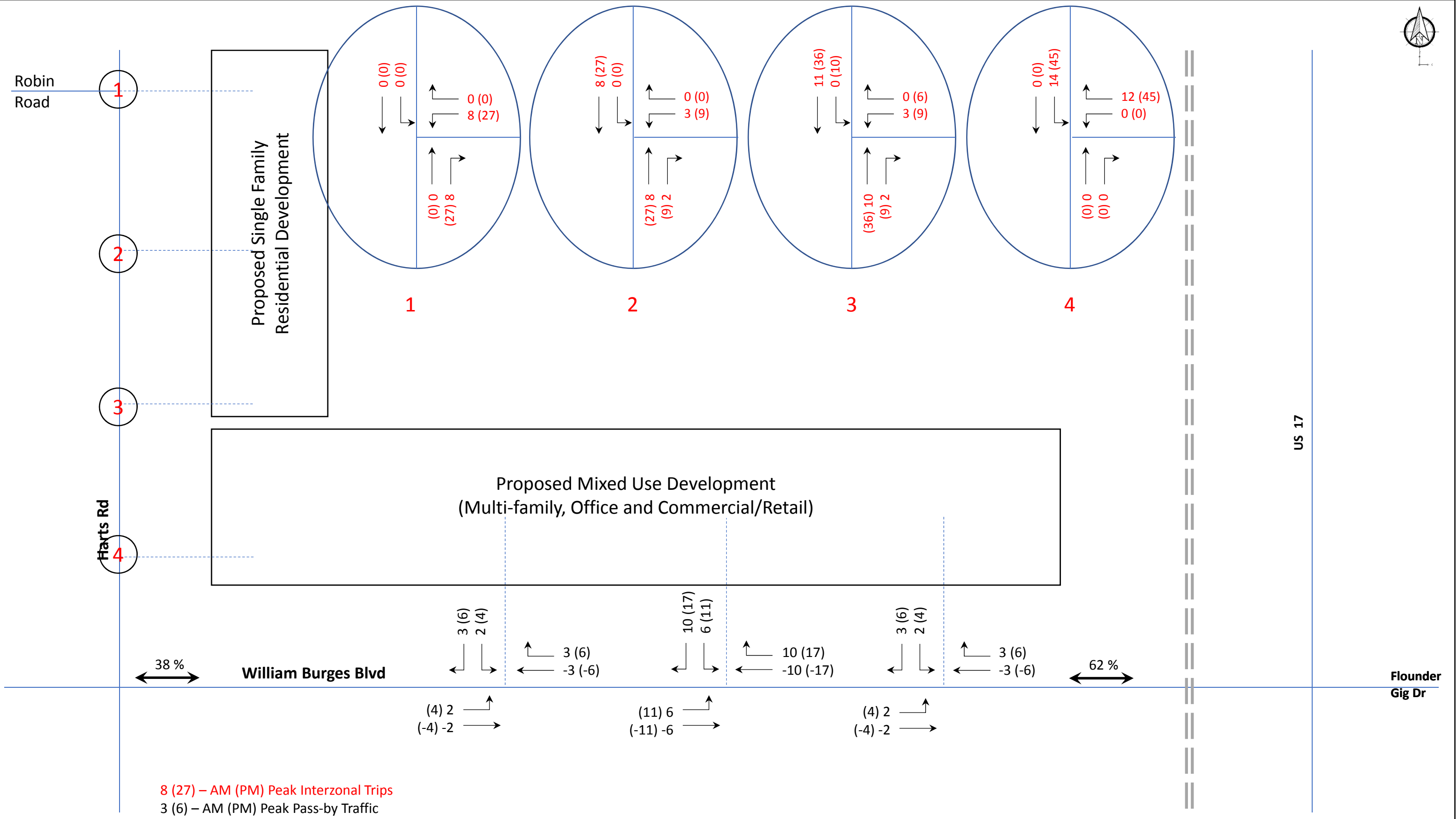


Figure 12 – Phase 2 (Year 2027) Pass-by Traffic Assignment (Mixed-Use) and Interzonal Trips (Single Family Residential and Mixed-Use Parcels)

Nassau Crossing – Traffic Impact Study
Nassau County, Florida



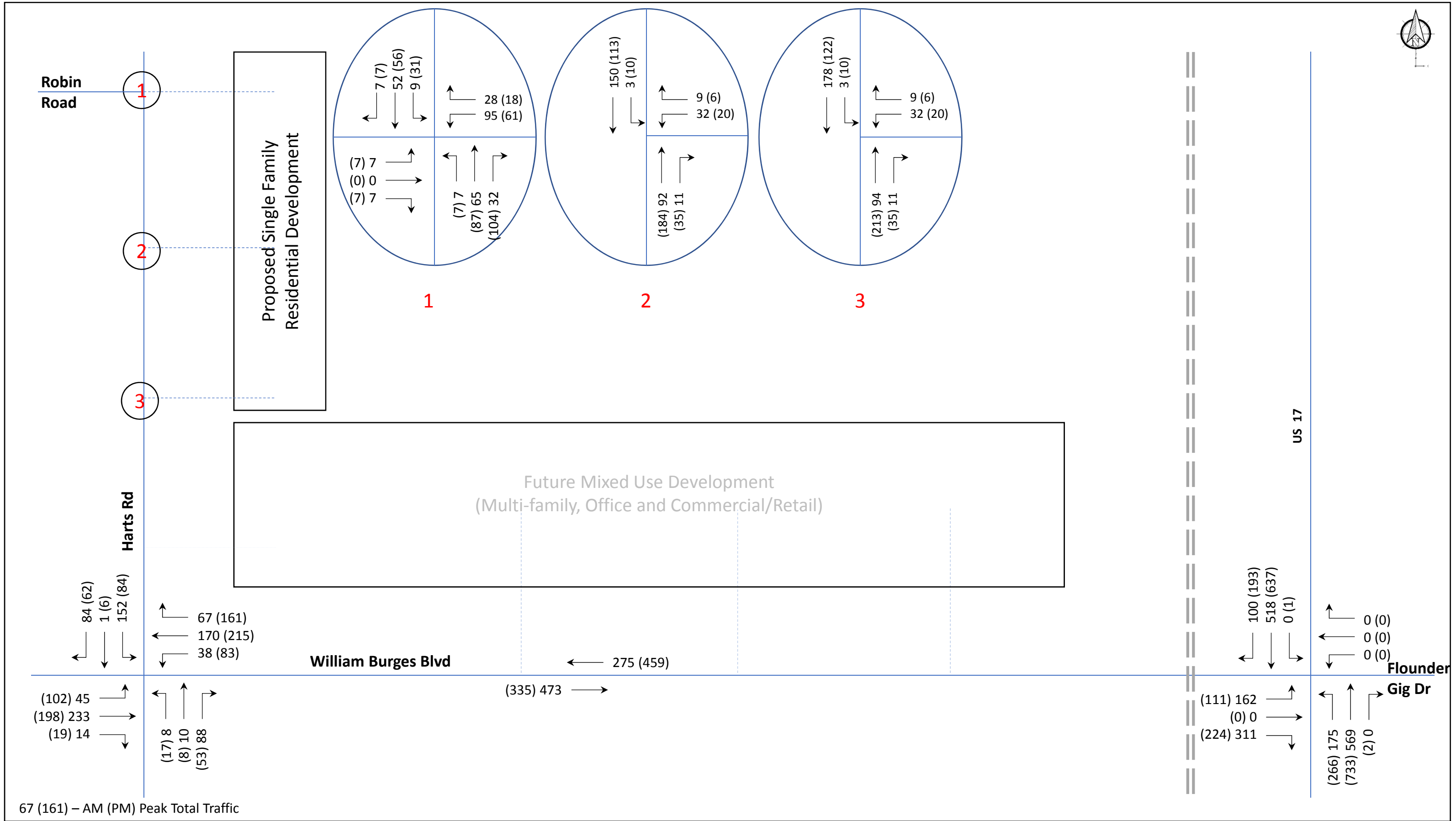
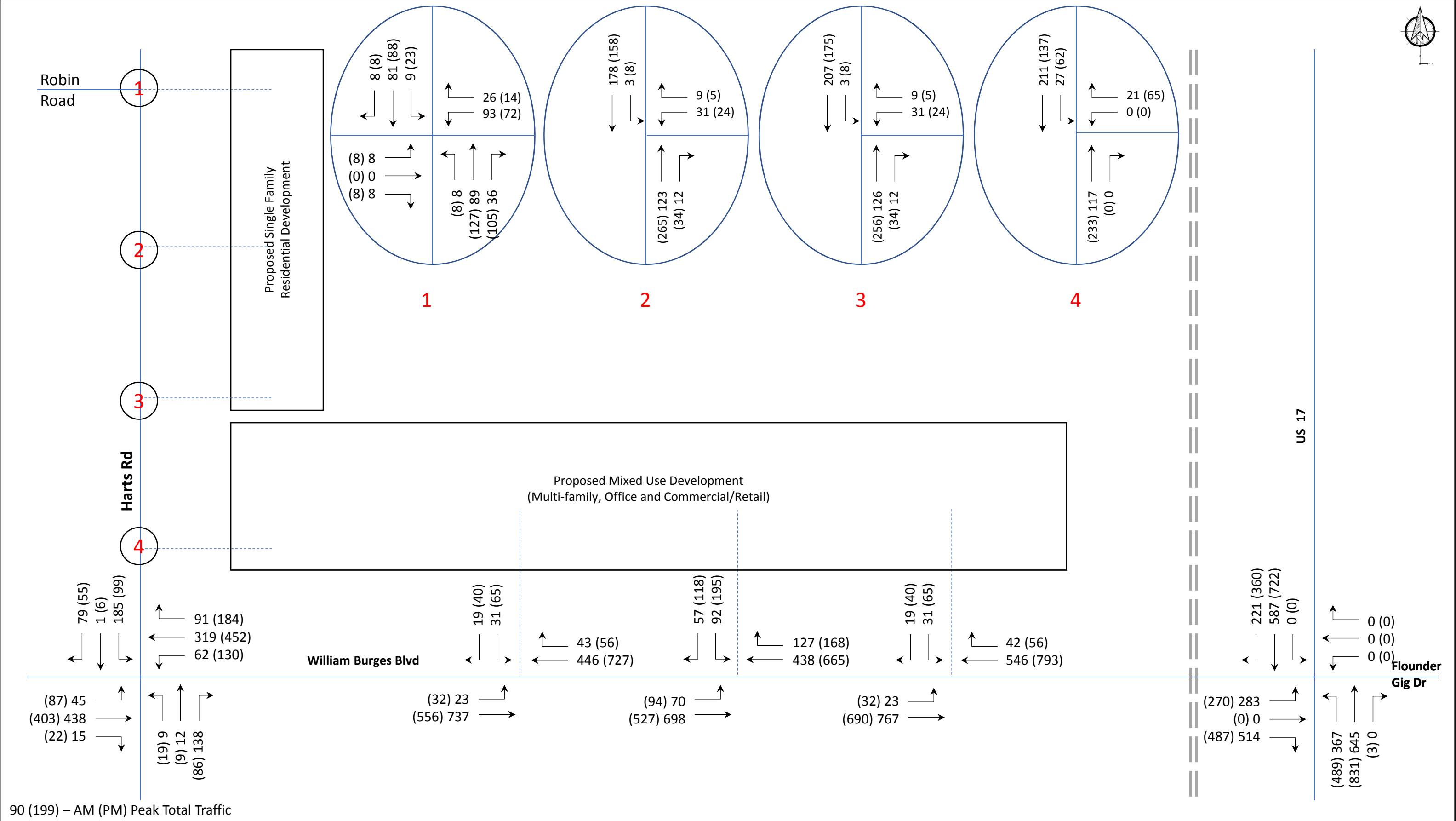


Figure 13 – Phase 1 (Year 2022) Build-Out Traffic Volumes
 Nassau Crossing – Traffic Impact Study
 Nassau County, Florida



Nassau Crossing – Traffic Impact Study
Nassau County, Florida

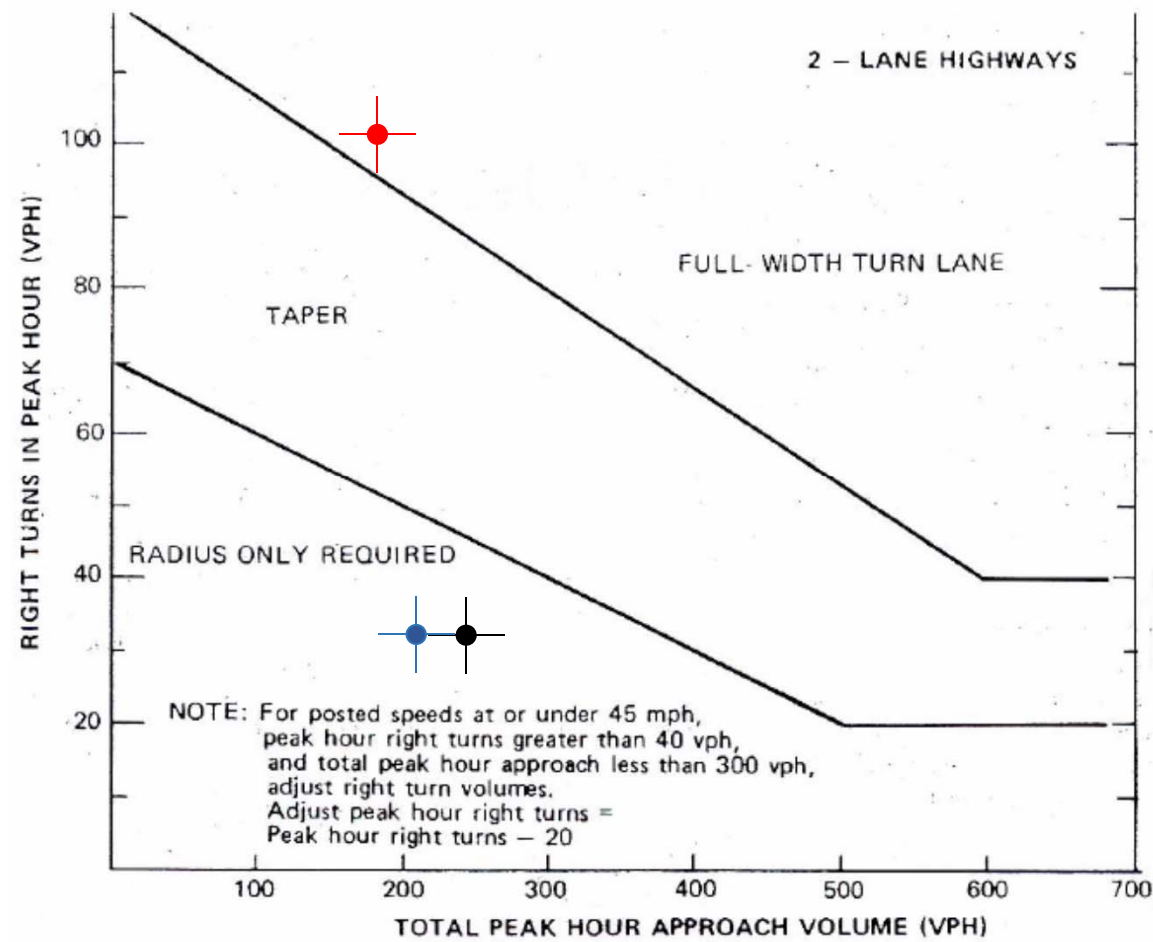


Figure 7: Cottrell's Two Lane Right Turn Treatment

Right Turn Lane Evaluation

Inteserction	Direction	Right Turns	Advancing Volume	% Turns in Advancing Volumes
AM Peak				
Harts Road at Northern Residential Driveway	Northbound	32	97	32.99%
Harts Road at Middle Residential Driveway	Northbound	11	103	10.68%
Harts Road at Southern Residential Driveway	Northbound	11	105	10.48%
PM Peak				
Harts Road at Northern Residential Driveway	Northbound	104	191	54.45%
Harts Road at Middle Residential Driveway	Northbound	35	219	15.98%
Harts Road at Southern Residential Driveway	Northbound	35	248	14.11%

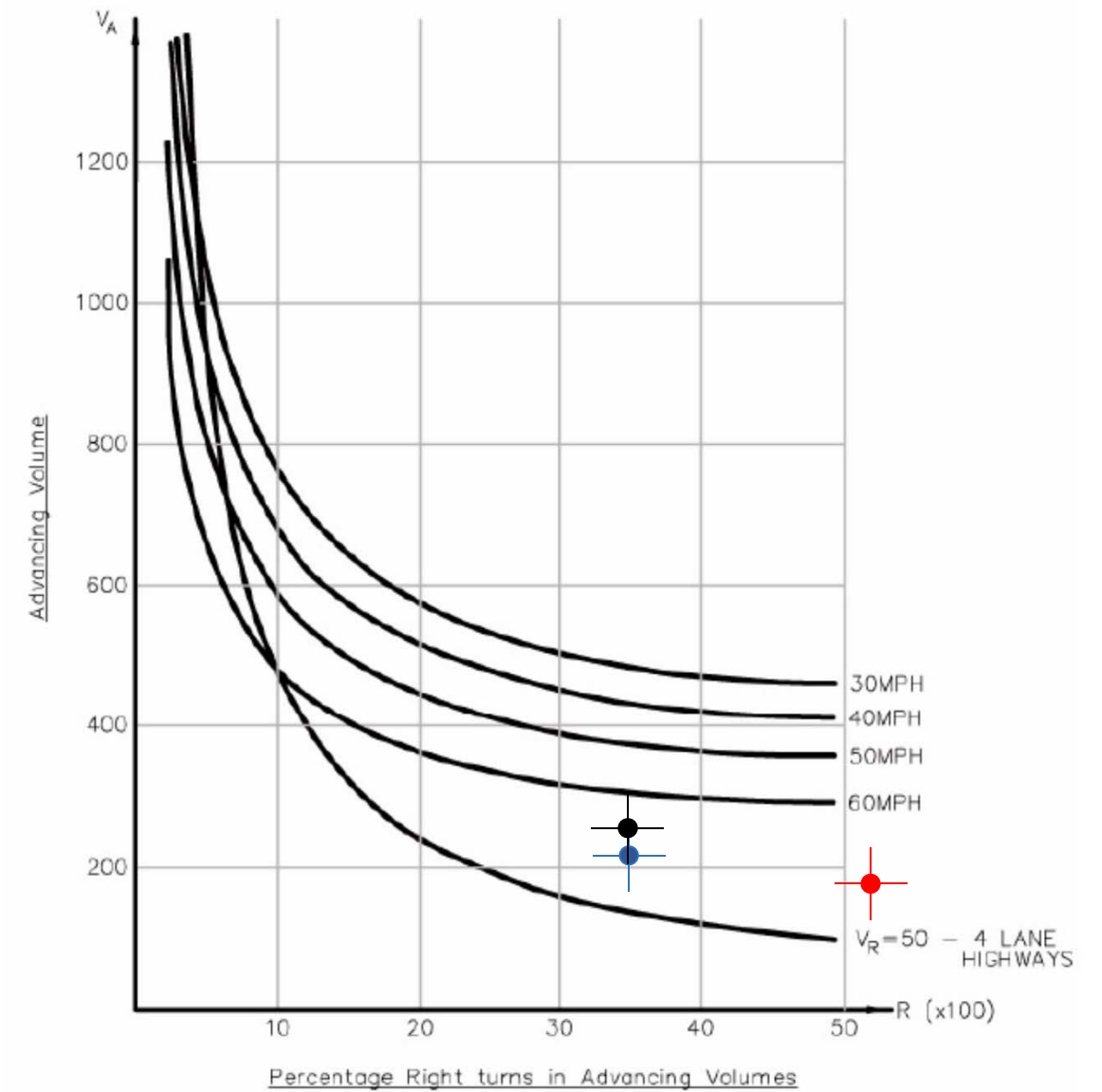


Figure 4: Right Turn Auxiliary Lanes Traffic Volumes Warrants

- + Northern Residential Driveway
- + Middle Residential Driveway
- + Southern Residential Driveway

Figure 15 – Phase 1 (Year 2022) Right Turn Lane Evaluation (Harts Road)

Nassau Crossing – Traffic Impact Study
Nassau County, Florida

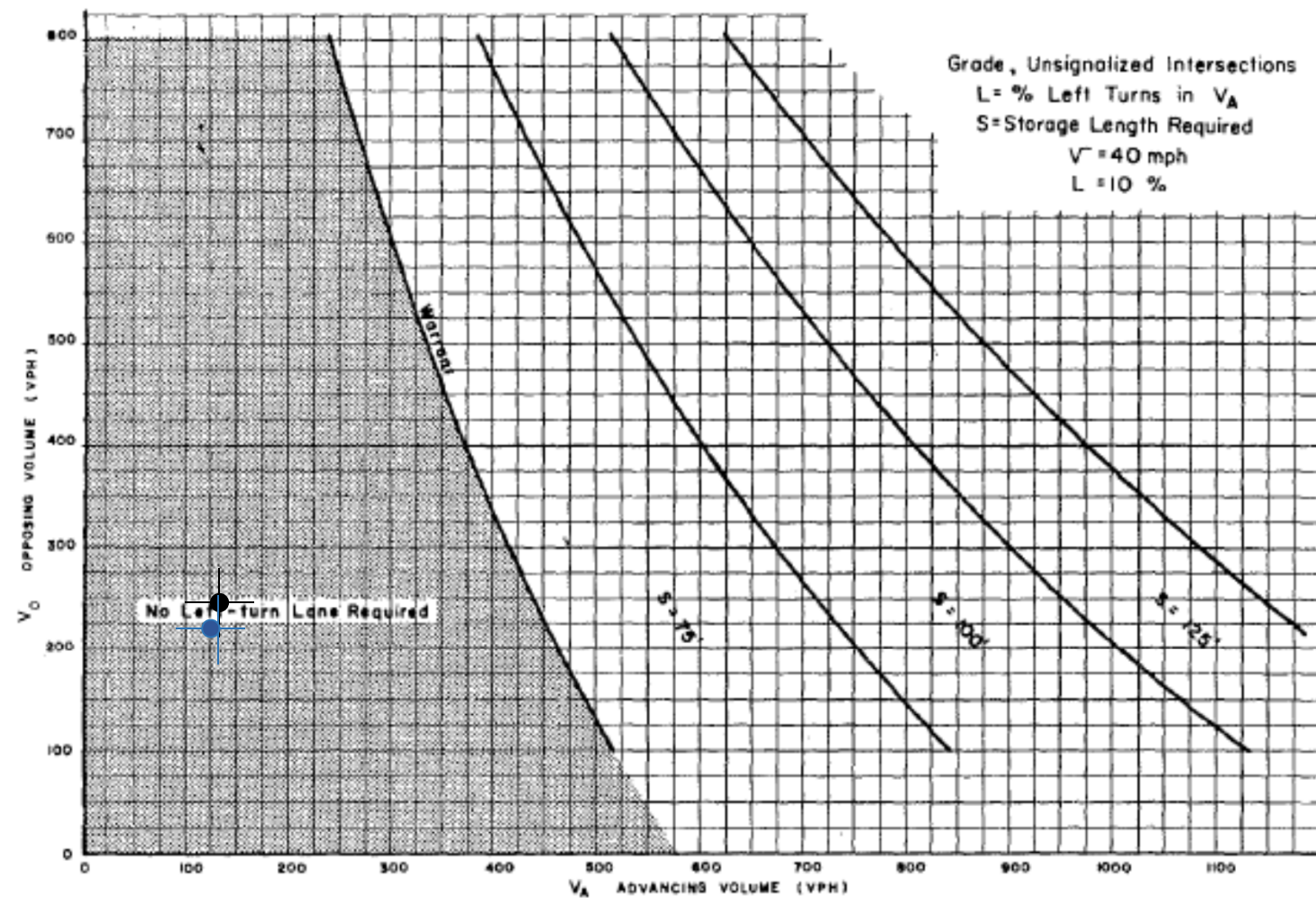


Figure 3. Warrant for left-turn storage lanes on two-lane highways.

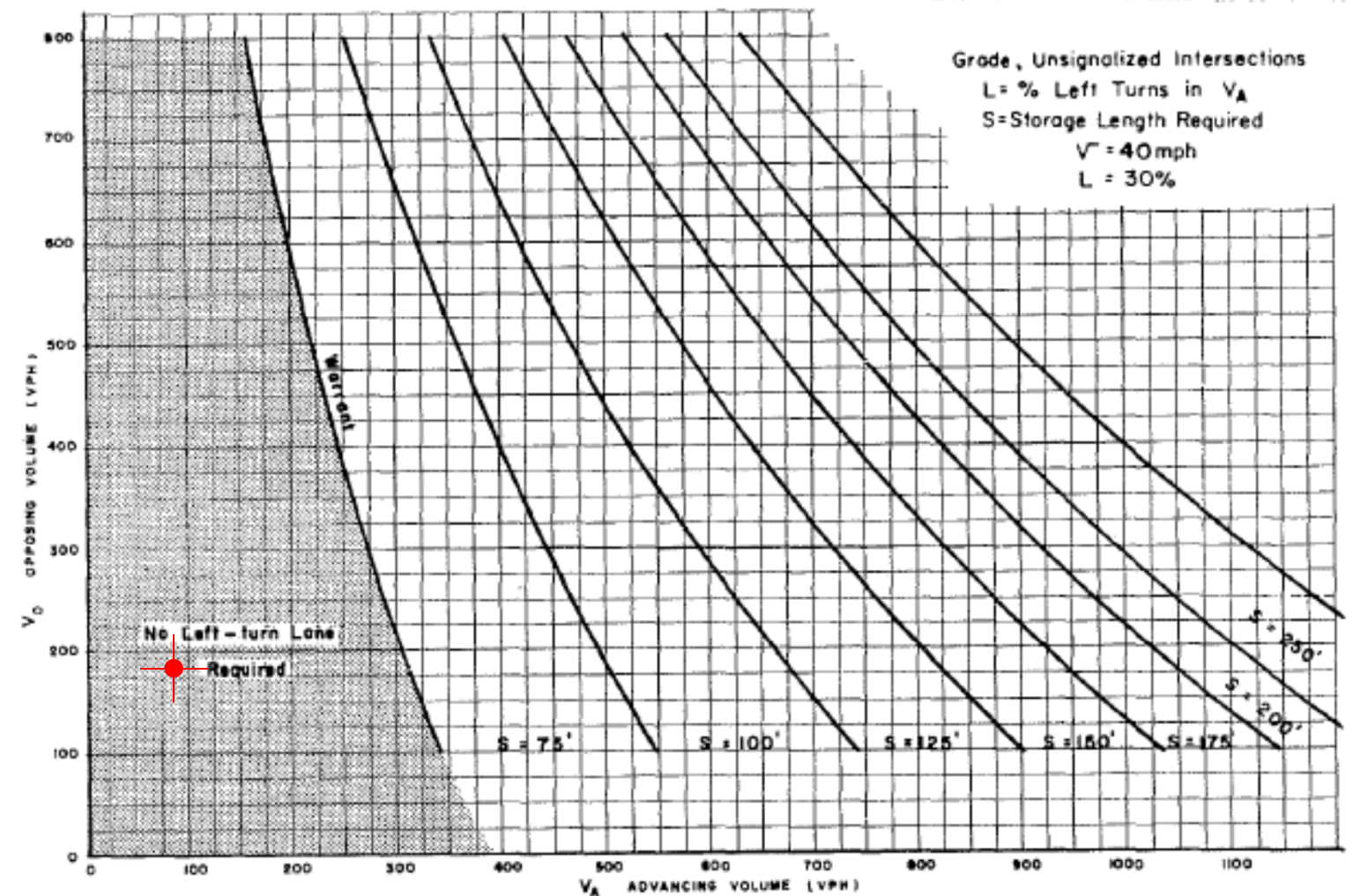


Figure 6. Warrant for left-turn storage lanes on two-lane highways.

Left Turn Lane Evaluation

Inteserction	Direction	Left Turns	Opposing Volume	Advancing Volume	% Turns in Advancing Volumes
AM Peak					
Harts Road at Northern Residential Driveway	Southbound	9	97	61	14.75%
Harts Road at Middle Residential Driveway	Southbound	3	103	153	1.96%
Harts Road at Southern Residential Driveway	Southbound	3	105	181	1.66%
PM Peak					
Harts Road at Northern Residential Driveway	Southbound	31	191	87	35.63%
Harts Road at Middle Residential Driveway	Southbound	10	219	123	8.13%
Harts Road at Southern Residential Driveway	Southbound	10	248	132	7.58%

- + Northern Residential Driveway
- + Middle Residential Driveway
- + Southern Residential Driveway

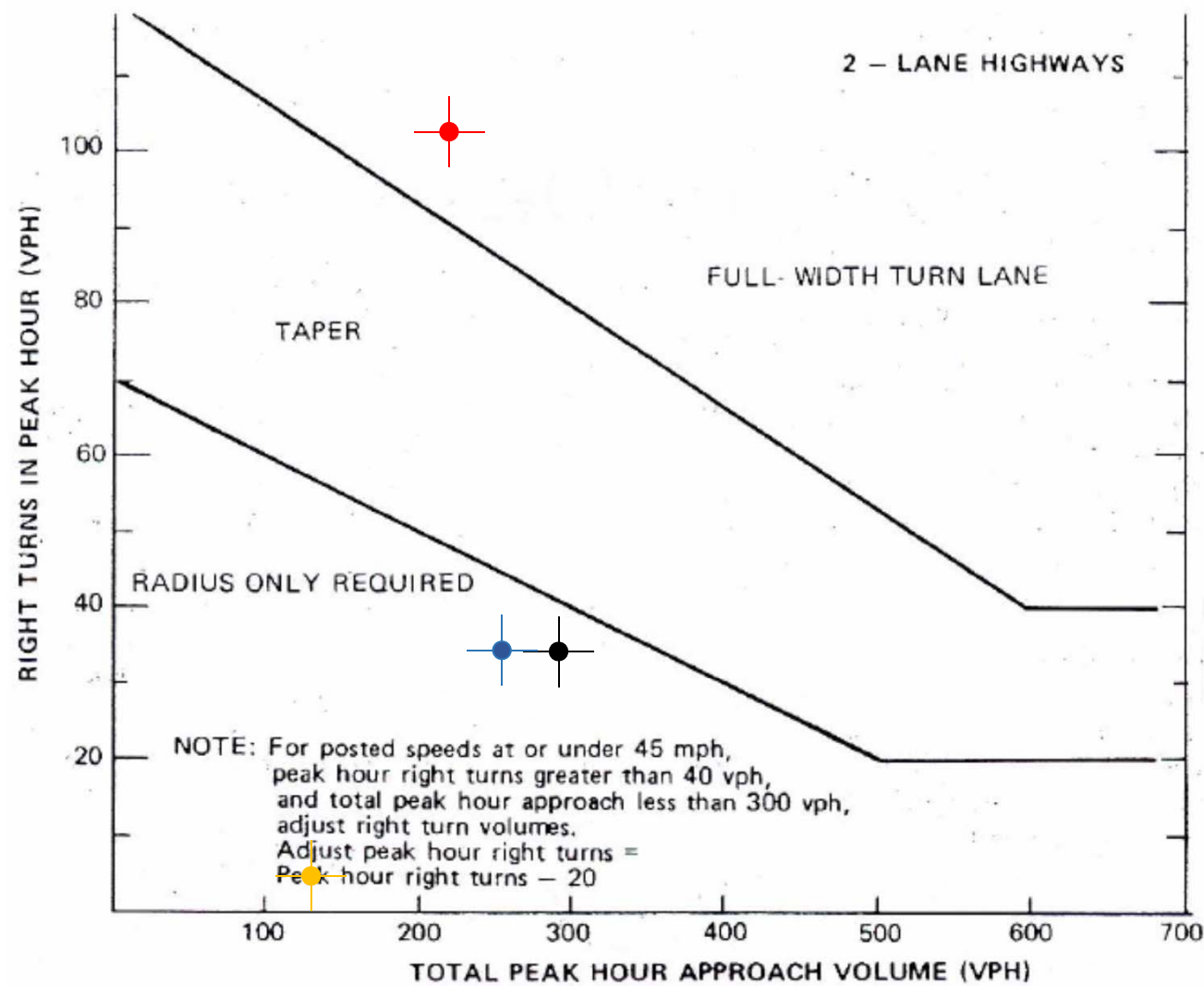


Figure 7: Cottrell's Two Lane Right Turn Treatment

Right Turn Lane Evaluation

Inteserction	Direction	Right Turns	Advancing Volume	% Turns in Advancing Volume
AM Peak				
Harts Road at Northern Residential Driveway	Northbound	36	125	28.80%
Harts Road at Middle Residential Driveway	Northbound	12	135	8.89%
Harts Road at Southern Residential Driveway	Northbound	12	138	8.70%
Harts Road at Mixed-Use Driveway	Northbound	5	117	4.27%
PM Peak				
Harts Road at Northern Residential Driveway	Northbound	105	232	45.26%
Harts Road at Middle Residential Driveway	Northbound	34	270	12.59%
Harts Road at Southern Residential Driveway	Northbound	34	299	11.37%
Harts Road at Mixed-Use Driveway	Northbound	5	233	2.15%

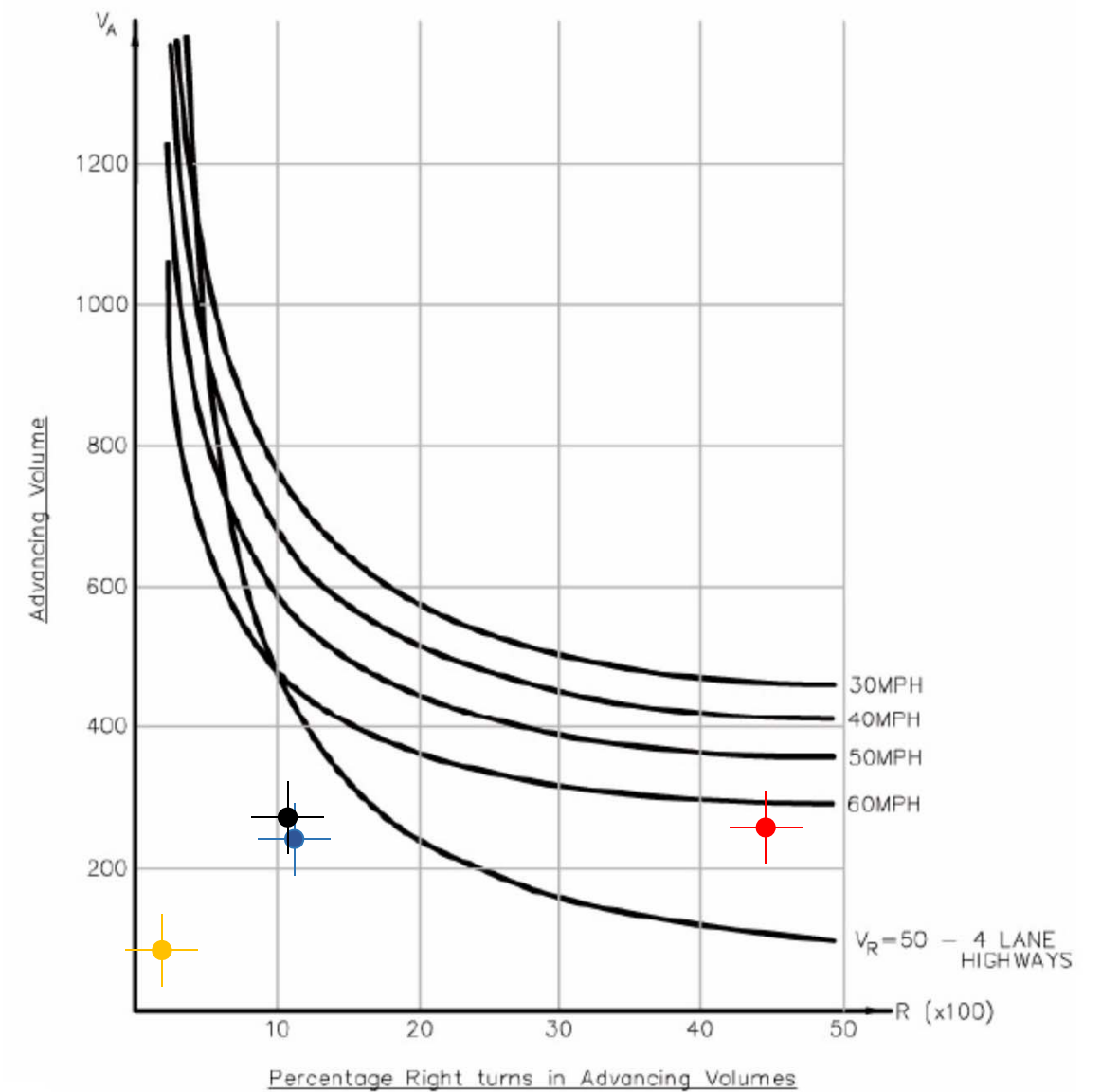


Figure 4: Right Turn Auxiliary Lanes Traffic Volumes Warrants

- + Northern Residential Driveway
- + Middle Residential Driveway
- + Southern Residential Driveway
- + Mixed-Use Development Driveway

Figure 17 – Phase 2 (Year 2027) Right Turn Lane Evaluation (Harts Road)

Nassau Crossing – Traffic Impact Study
Nassau County, Florida

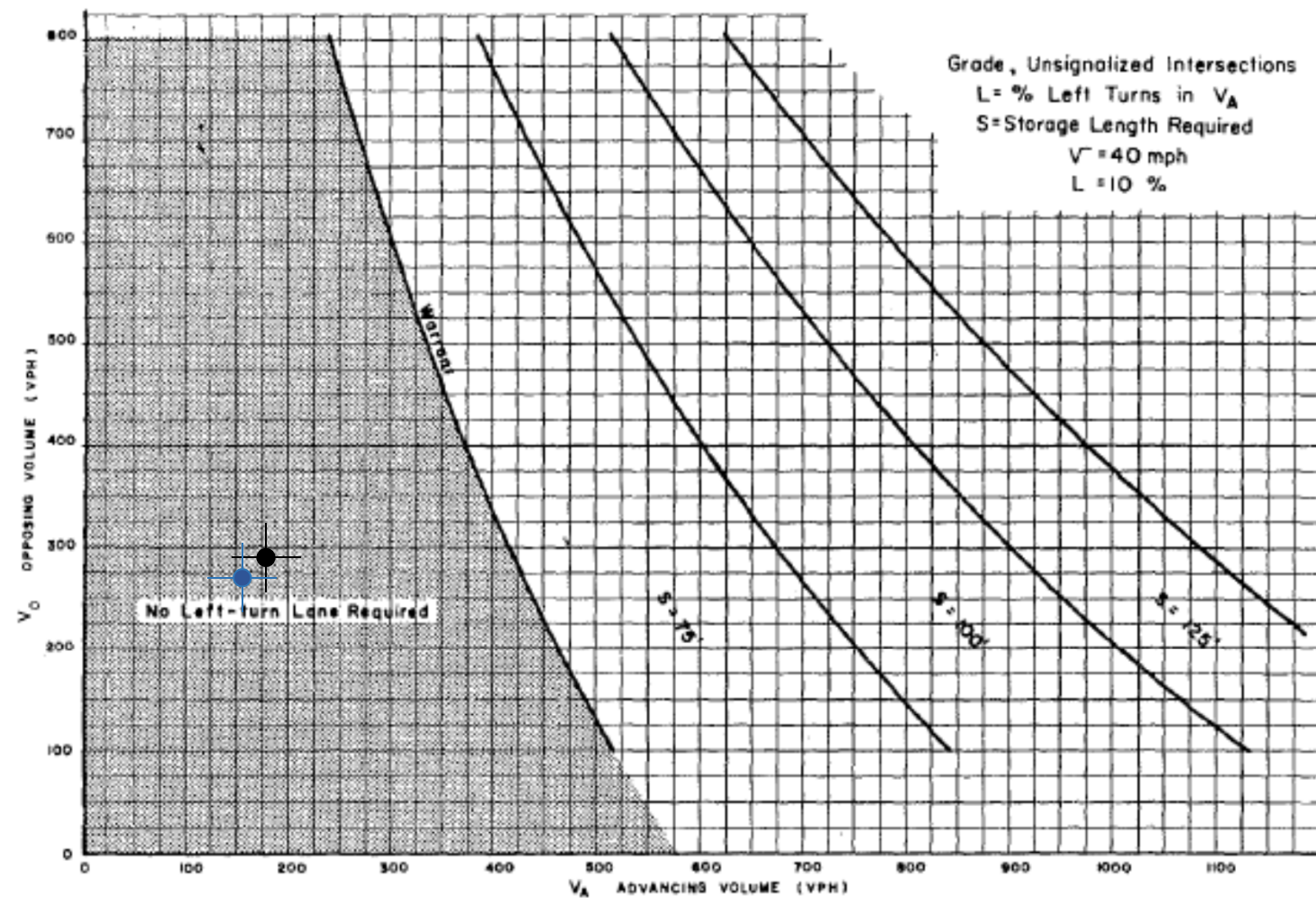


Figure 3. Warrant for left-turn storage lanes on two-lane highways.

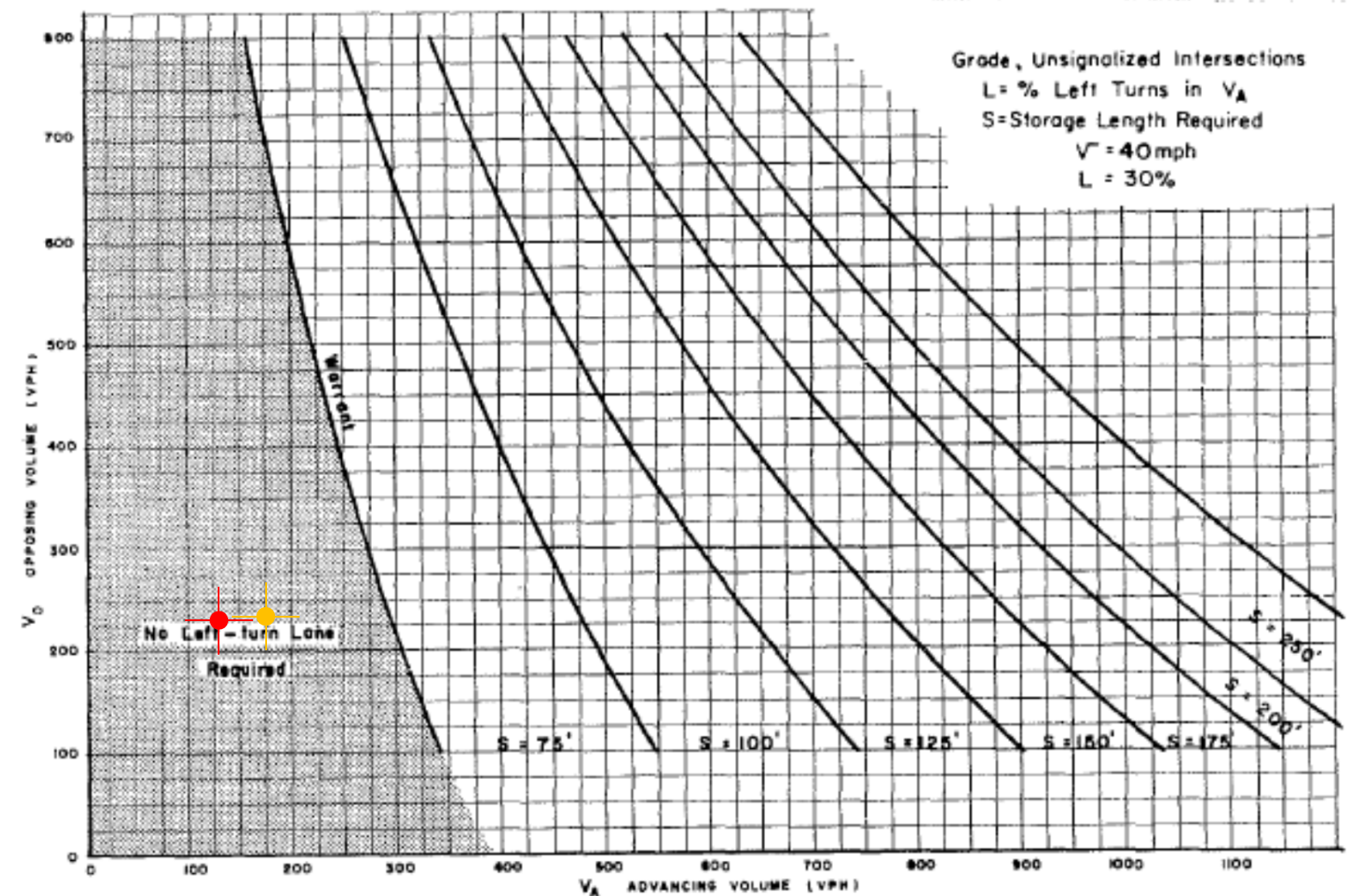


Figure 6. Warrant for left-turn storage lanes on two-lane highways.

Left Turn Lane Evaluation

Inteserction	Direction	Left Turns	Opposing Volume	Advancing Volume	% Turns in Advancing Volume
AM Peak					
Harts Road at Northern Residential Driveway	Southbound	9	125	90	10.00%
Harts Road at Middle Residential Driveway	Southbound	3	135	181	1.66%
Harts Road at Southern Residential Driveway	Southbound	3	138	210	1.43%
Harts Road at Mixed-Use Driveway	Southbound	27	117	238	11.34%
PM Peak					
Harts Road at Northern Residential Driveway	Southbound	23	232	111	20.72%
Harts Road at Middle Residential Driveway	Southbound	8	270	166	4.82%
Harts Road at Southern Residential Driveway	Southbound	8	299	183	4.37%
Harts Road at Mixed-Use Driveway	Southbound	62	233	199	31.16%

- + Northern Residential Driveway
- + Middle Residential Driveway
- + Southern Residential Driveway
- + Mixed-Use Development Driveway

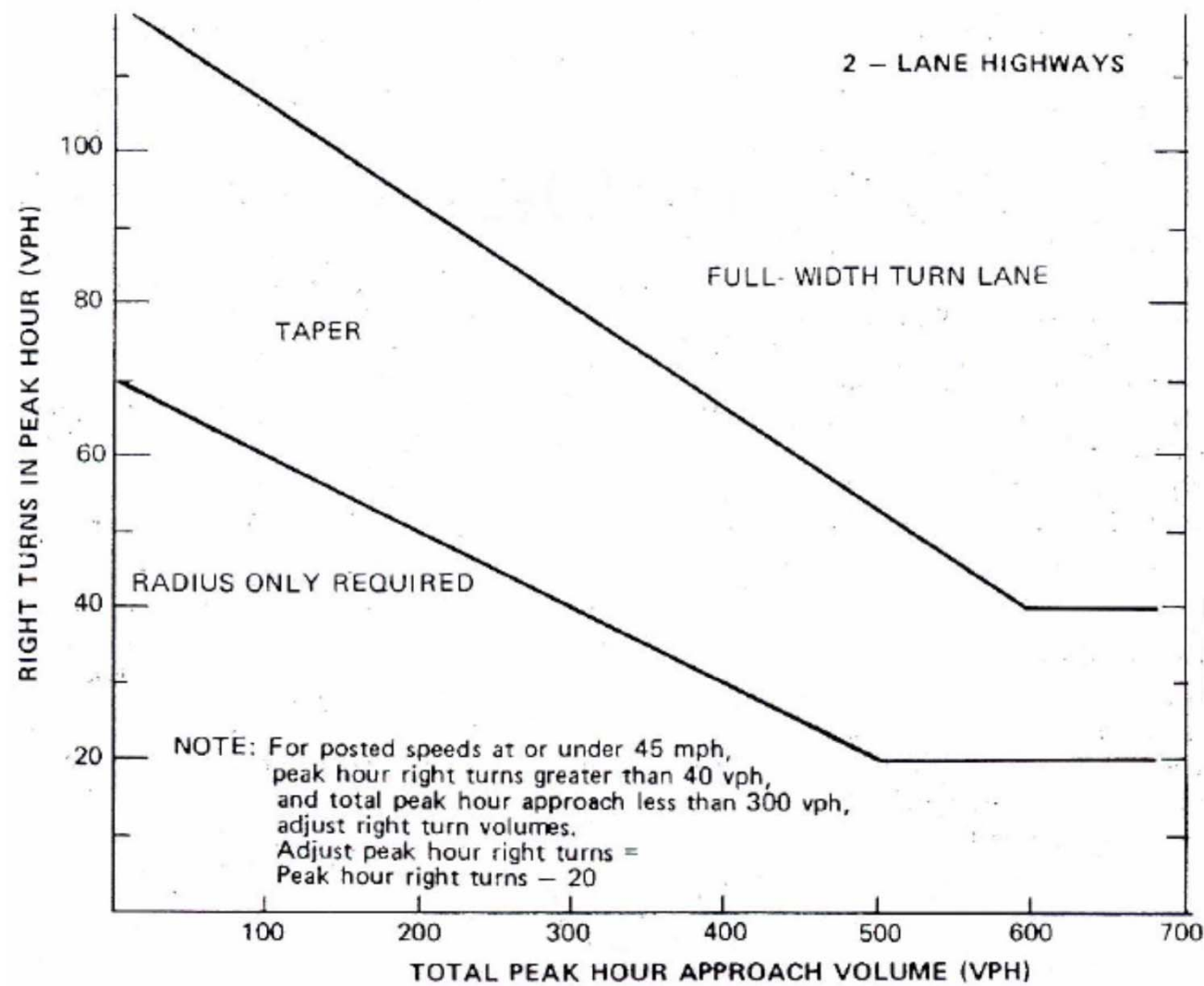


Figure 7: Cottrell's Two Lane Right Turn Treatment

Right Turn Lane Evaluation

Inteserction	Direction	Right Turns	Advancing Volume	% Turns in Advancing Volume
AM Peak				
William Burgess Boulevard at Western Project Driveway	Westbound	42	495	8.48%
William Burgess Boulevard at Middle Project Driveway	Westbound	127	565	22.48%
William Burgess Boulevard at Eastern Project Driveway	Westbound	42	588	7.14%
PM Peak				
William Burgess Boulevard at Western Project Driveway	Westbound	56	783	7.15%
William Burgess Boulevard at Middle Project Driveway	Westbound	168	833	20.17%
William Burgess Boulevard at Eastern Project Driveway	Westbound	56	849	6.60%

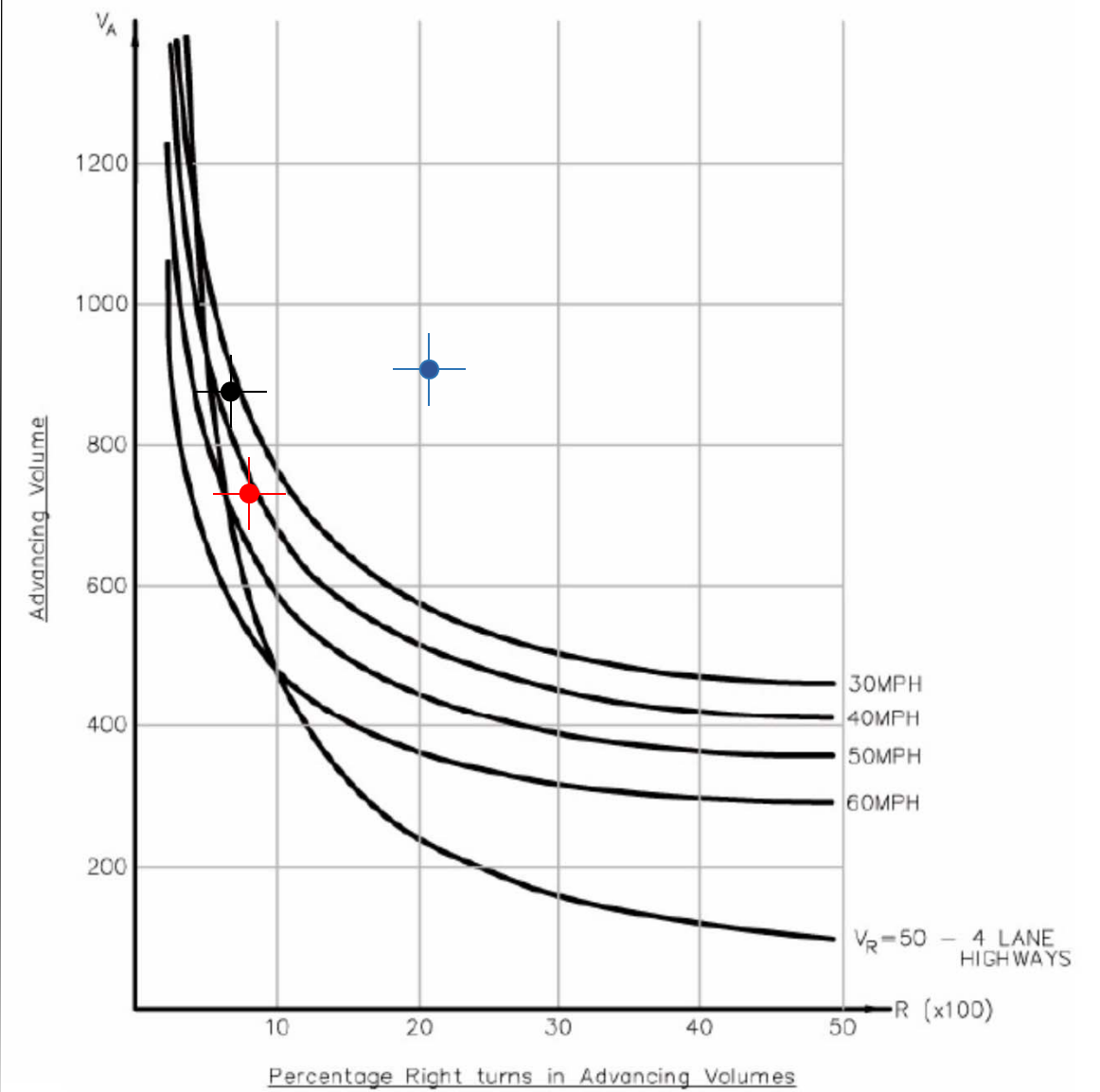


Figure 4: Right Turn Auxiliary Lanes Traffic Volumes Warrants

- Western Driveway
- Middle Driveway (Under signalized conditions only)
- Eastern Driveway

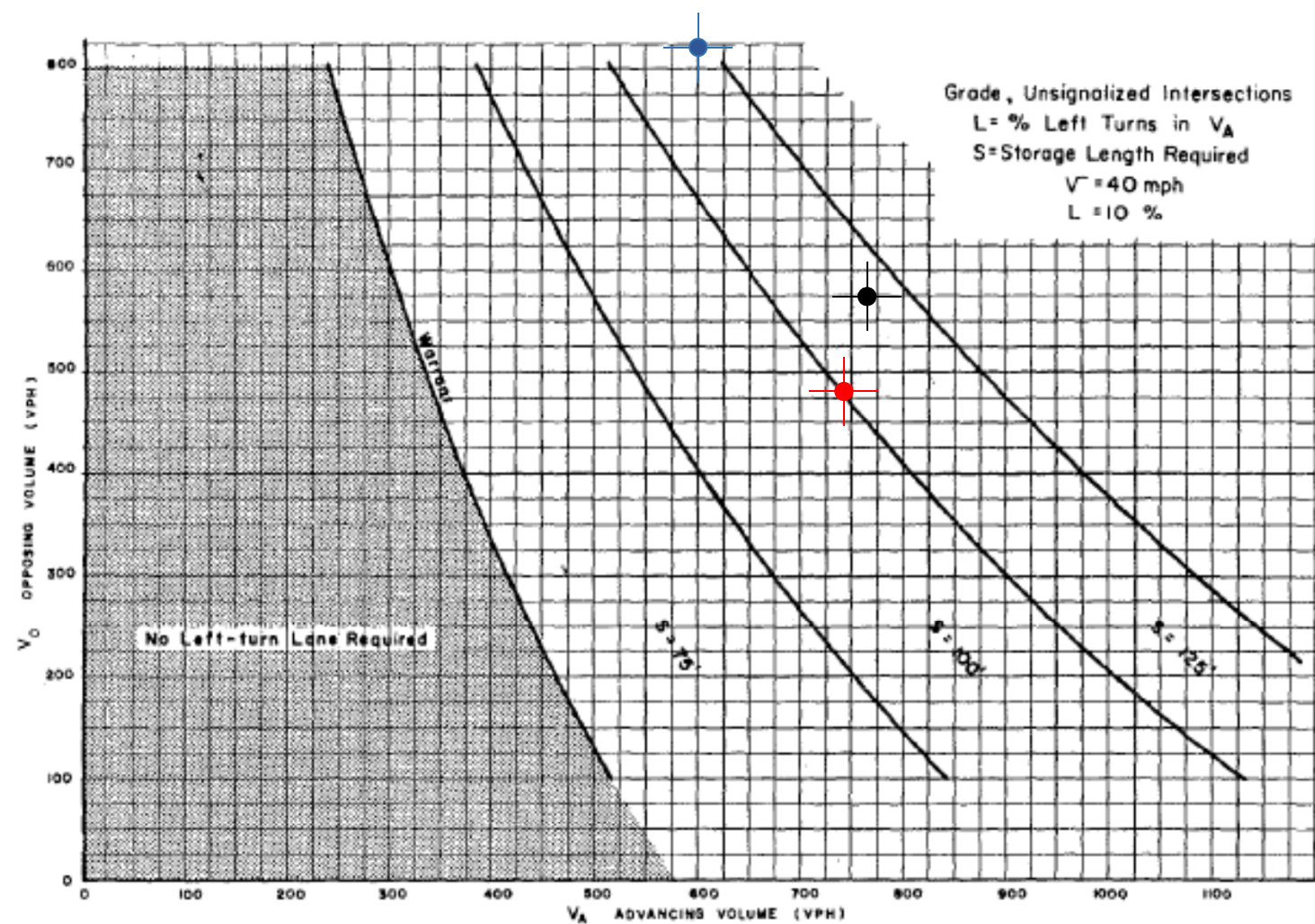


Figure 3. Warrant for left-turn storage lanes on two-lane highways.

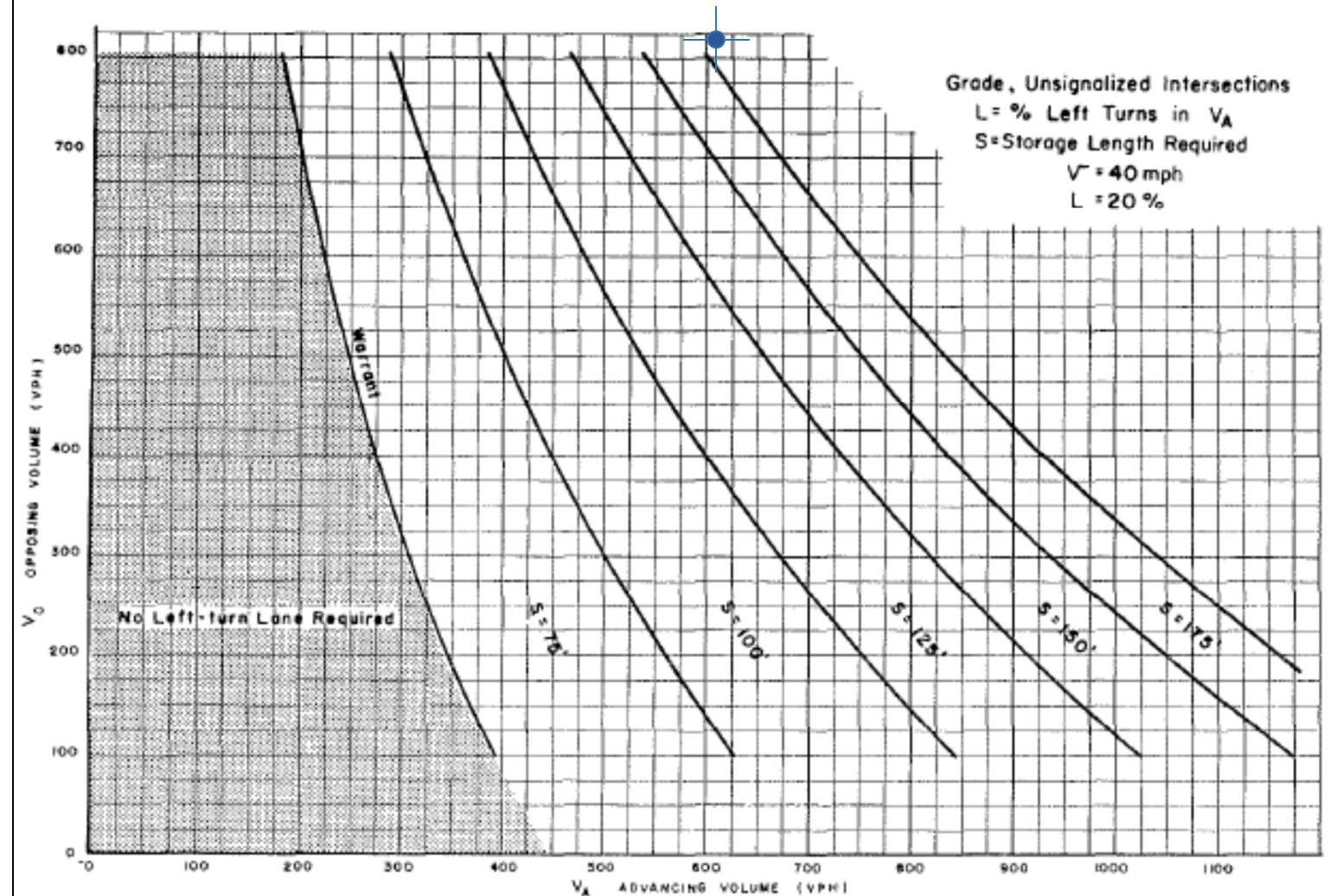


Figure 5. Warrant for left-turn storage lanes on two-lane highways.

Left Turn Lane Evaluation

Inteserction	Direction	Left Turns	Opposing Volume	Advancing Volume	% Turns in Advancing Volume
AM Peak					
William Burgess Boulevard at Western Project Driveway	Eastbound	23	495	760	3.03%
William Burgess Boulevard at Middle Project Driveway	Eastbound	70	565	768	9.11%
William Burgess Boulevard at Eastern Project Driveway	Eastbound	23	588	790	2.91%
PM Peak					
William Burgess Boulevard at Western Project Driveway	Eastbound	32	783	588	5.44%
William Burgess Boulevard at Middle Project Driveway	Eastbound	94	833	621	15.14%
William Burgess Boulevard at Eastern Project Driveway	Eastbound	32	849	722	4.43%

- + Western Project Driveway
- + Middle Project Driveway
- + Eastern Project Driveway



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Figure 21A – Project Access Improvements on Harts Road
Nassau Crossing – Traffic Impact Study
Nassau County, Florida



Figure 21B – Project Access Improvements on William Burgess Boulevard
Nassau Crossing – Traffic Impact Study
Nassau County, Florida





Roundabout
Anticipated to operate at LOS E or worse

Traffic Signal
Anticipated to operate at LOS E or netter



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Figure 21C – Improvements at US 17 and William Burgess Boulevard
Nassau Crossing – Traffic Impact Study
Nassau County, Florida

Table 01
Trip Generation (Phase 1)
Nassau Crossing, Nassau County, FL

210	Single Family Home	220	100%
210	Single Family Home	65	
210	Single Family Home	65	

ITE Land Use Code	Description	Quantity	Units	Rate or Equation	Gross Trips		
					Total	Entering	Exiting
Daily							
210	Single Family Home	220	DUs	$\text{Ln(T)} = 0.92 \text{ Ln(X)} + 2.72$	2,169	1,085	1,084
210	Single Family Home	65	DUs	$\text{Ln(T)} = 0.92 \text{ Ln(X)} + 2.72$	707	354	353
210	Single Family Home	65	DUs	$\text{Ln(T)} = 0.92 \text{ Ln(X)} + 2.72$	707	354	353
					3,583	1,793	1,790
AM Peak							
210	Single Family Home	220	DUs	$(T) = 0.70 (X) + 9.74$	164	41	123
210	Single Family Home	65	DUs	$(T) = 0.70 (X) + 9.74$	55	14	41
210	Single Family Home	65	DUs	$(T) = 0.70 (X) + 9.74$	55	14	41
					274	69	205
PM Peak							
210	Single Family Home	220	DUs	$\text{Ln(T)} = 0.90 \text{ Ln(X)} + 0.51$	214	135	79
210	Single Family Home	65	DUs	$\text{Ln(T)} = 0.90 \text{ Ln(X)} + 0.51$	71	45	26
210	Single Family Home	65	DUs	$\text{Ln(T)} = 0.90 \text{ Ln(X)} + 0.51$	71	45	26
					356	225	131

Source: Trip Generation Manual, 9th Edition, ITE

Table 02
Trip Generation
Nassau Crossing, Nassau County, FL

210	Single Family Residential	220	100%
210	Single Family Residential	65	
210	Single Family Residential	65	
220	Apartments	450	
710	General Office	150,000	
820	Commercial (Retail)	150,000	

ITE Land Use Code	Description	Quantity	Units	Rate or Equation	Gross Trips			Internal Capture		Pass-by		Maximim	Net External Trips		
					Total	Entering	Exiting	Percentage	Trips	Percentage	Trips		Pass-by	Total	Entering
Phase 1 - Daily															
210	Single Family Residential	220	DUs	Ln(T) = 0.92 Ln(X) + 2.72	2,169	1,085	1,084	27.01%	586	0.00%	-		1,583	792	791
210	Single Family Residential	65	DUs	Ln(T) = 0.92 Ln(X) + 2.72	707	354	353	27.01%	191	0.00%	-		516	258	258
210	Single Family Residential	65	DUs	Ln(T) = 0.92 Ln(X) + 2.72	707	354	353	27.01%	191	0.00%	-		516	258	258
					3,583	1,793	1,790	27.02%	968	0.00%	-		2,615	1,308	1,307
Phase 2 - Daily															
220	Apartments	450	DUs	(T) = 6.06 (X) + 123.56	2,851	1,426	1,425	27.01%	770	0.00%	-		2,081	1,041	1,040
710	General Office	150,000	SF	Ln(T) = 0.76 Ln(X) + 3.68	1,787	894	893	23.17%	414	0.00%	-		1,373	687	686
820	Commercial (Retail)	150,000	SF	Ln(T) = 0.65 Ln(X) + 5.83	8,839	4,420	4,419	21.02%	1,858	34.71%	2,423	814	6,167	3,083	3,084
					13,477	6,740	6,737	22.57%	3,042	23.22%	2,423	814	9,621	4,811	4,810
Phase 2 Total Net Ext Residential													2,081	1,041	1,040
Phase 2 Total Net Ext Non-Residential													7,540	3,770	3,770
Phase 1 + Phase 2 Total Net External													12,236	6,119	6,117

Phase 1 - AM Peak															
210	Single Family Residential	220	DUs	$(T) = 0.70 (X) + 9.74$	164	41	123	9.64%	16	0.00%	-		148	37	111
210	Single Family Residential	65	DUs	$(T) = 0.70 (X) + 9.74$	55	14	41	9.64%	5	0.00%	-		50	13	37
210	Single Family Residential	65	DUs	$(T) = 0.70 (X) + 9.74$	55	14	41	9.64%	5	0.00%	-		50	13	37
					274	69	205	9.49%	26	0.00%	-		248	63	185
Phase 2 - AM Peak															
220	Apartments	450	DUs	$(T) = 0.49 (X) + 3.73$	224	45	179	9.64%	22	0.00%	-	-	202	40	162
710	General Office	150,000	SF	$\text{Ln}(T) = 0.80 \text{Ln}(X) + 1.57$	265	233	32	9.06%	24	0.00%	-	-	241	212	29
820	Commercial (Retail)	150,000	SF	$\text{Ln}(T) = 0.61 \text{Ln}(X) + 2.24$	200	124	76	20.00%	40	34.71%	56	56	104	64	40
					689	402	287	12.48%	86	9.29%	56	56	547	316	231
Phase 2 Total Net Ext Residential													202	40	162
Phase 2 Total Net Ext Non-Residential													345	276	69
Phase 1 + Phase 2 Total Net External													795	379	416

Phase 1 - PM Peak															
210	Single Family Residential	220	DUs	$\text{Ln}(T) = 0.90 \text{Ln}(X) + 0.51$	214	135	79	25.28%	54	0.00%	-		160	101	59
210	Single Family Residential	65	DUs	$\text{Ln}(T) = 0.90 \text{Ln}(X) + 0.51$	71	45	26	25.28%	18	0.00%	-		53	33	20
210	Single Family Residential	65	DUs	$\text{Ln}(T) = 0.90 \text{Ln}(X) + 0.51$	71	45	26	25.28%	18	0.00%	-		53	33	20
					356	225	131	25.28%	90	0.00%	-		266	167	99
Phase 2 - PM Peak															
220	Apartments	450	DUs	$(T) = 0.55 (X) + 17.65$	265	172	93	25.28%	67	0.00%	-	-	198	129	69
710	General Office	150,000	SF	$(T) = 1.12 (X) + 78.45$	246	42	204	20.73%	51	0.00%	-	-	195	33	162
820	Commercial (Retail)	150,000	SF	$\text{Ln}(T) = 0.67 \text{Ln}(X) + 3.31$	786	377	409	23.16%	182	34.71%	210	94	510	245	265
					1,297	591	706	23.13%	300	21.06%	210	94	903	407	496
Phase 2 Total Net Ext Residential													198	129	69
Phase 2 Total Net Ext Non-Residential													705	278	427
Phase 1 + Phase 2 Total Net External													1,169	574	595

Year 2027 Daily Background Traffic on William Burgess Boulevard (Travel Demand Model Projections) = 8143
Year 2027 Peak Hour Background Traffic on William Burgess Boulevard = 939
10% of Adjacent Street Traffic = 94

Table 03
Growth Factor Calculations
Nassau Crossing Traffic Analysis - Nassau County, FL

Roadway	Section	2016 AADT	Growth Rate
US 17	SR 200/A1A to Willam Burgess Boulevard	12,500	2.74%
Harts Road	SR 200/A1A to Willam Burgess Boulevard	1,600	1.14%
Weighted Average Growth Rate			2.56%
Growth Factor 2022			1.135
Growth Factor 2027			1.287

Source: Attachment G

Table 04**Harts Road Turn Lane Evaluation - Phase 1 (Year 2022) Build-Out Conditions****Nassau Crossing Traffic Analysis - Nassau County, FL****Right Turn Lane Evaluation**

Inteserction	Direction	Right Turns	Advancing Volume	% Turns in Advancing Volumes	Right Turn Lane Warranted ?
AM Peak					
Harts Road at Northern Residential Driveway	Northbound	32	97	32.99%	Yes
Harts Road at Middle Residential Driveway	Northbound	11	103	10.68%	No
Harts Road at Southern Residential Driveway	Northbound	11	105	10.48%	No
PM Peak					
Harts Road at Northern Residential Driveway	Northbound	104	191	54.45%	Yes
Harts Road at Middle Residential Driveway	Northbound	35	219	15.98%	No
Harts Road at Southern Residential Driveway	Northbound	35	248	14.11%	No

Left Turn Lane Evaluation

Inteserction	Direction	Left Turns	Opposing Volume	Advancing Volume	% Turns in Advancing Volumes	Left Turn Lane Warranted ?
AM Peak						
Harts Road at Northern Residential Driveway	Southbound	9	97	61	14.75%	No
Harts Road at Middle Residential Driveway	Southbound	3	103	153	1.96%	No
Harts Road at Southern Residential Driveway	Southbound	3	105	181	1.66%	No
PM Peak						
Harts Road at Northern Residential Driveway	Southbound	31	191	87	35.63%	No
Harts Road at Middle Residential Driveway	Southbound	10	219	123	8.13%	No
Harts Road at Southern Residential Driveway	Southbound	10	248	132	7.58%	No

Source: Figures 15 and 16

Table 05

Harts Road Turn Lane Evaluation - Phase 2 (Year 2027) Build-Out Conditions

Nassau Crossing Traffic Analysis - Nassau County, FL

Right Turn Lane Evaluation

Inteserction	Direction	Right Turns	Advancing Volume	% Turns in Advancing Volume	Right Turn Lane Warranted ?	Required Storage Length
AM Peak						
Harts Road at Northern Residential Driveway	Northbound	36	125	28.80%	No	
Harts Road at Middle Residential Driveway	Northbound	12	135	8.89%	No	
Harts Road at Southern Residential Driveway	Northbound	12	138	8.70%	No	
Harts Road at Mixed-Use Driveway	Northbound	5	117	4.27%	No	
PM Peak						
Harts Road at Northern Residential Driveway	Northbound	105	232	45.26%	Yes	No storage length required
Harts Road at Middle Residential Driveway	Northbound	34	270	12.59%	No	
Harts Road at Southern Residential Driveway	Northbound	34	299	11.37%	No	
Harts Road at Mixed-Use Driveway	Northbound	5	233	2.15%	No	

Left Turn Lane Evaluation

Inteserction	Direction	Left Turns	Opposing Volume	Advancing Volume	% Turns in Advancing Volume	Left Turn Lane Warranted ?
AM Peak						
Harts Road at Northern Residential Driveway	Southbound	9	125	90	10.00%	No
Harts Road at Middle Residential Driveway	Southbound	3	135	181	1.66%	No
Harts Road at Southern Residential Driveway	Southbound	3	138	210	1.43%	No
Harts Road at Mixed-Use Driveway	Southbound	27	117	238	11.34%	No
PM Peak						
Harts Road at Northern Residential Driveway	Southbound	23	232	111	20.72%	No
Harts Road at Middle Residential Driveway	Southbound	8	270	166	4.82%	No
Harts Road at Southern Residential Driveway	Southbound	8	299	183	4.37%	No
Harts Road at Mixed-Use Driveway	Southbound	62	233	199	31.16%	No

Source: Figures 17 through 20

Note: Per FDOT Standards Index 301 Provide a deceleration and taper distance of 155 feet in addition to the required storage length.

Table 06

William Burgess Boulevard Turn Lane Evaluation - Phase 2 (Year 2027) Build-Out Conditions
Nassau Crossing Traffic Analysis - Nassau County, FL

Right Turn Lane Evaluation

Inteserction	Direction	Right Turns	Advancing Volume	% Turns in Advancing Volume	Right Turn Lane Warranted ?	Required Storage Length
AM Peak						
William Burgess Boulevard at Western Project Driveway	Westbound	42	495	8.48%		
William Burgess Boulevard at Middle Project Driveway	Westbound	127	565	22.48%		
William Burgess Boulevard at Eastern Project Driveway	Westbound	42	588	7.14%		
PM Peak						
William Burgess Boulevard at Western Project Driveway	Westbound	56	783	7.15%	Yes	No storage length required
William Burgess Boulevard at Middle Project Driveway	Westbound	168	833	20.17%	Yes	No storage length required
William Burgess Boulevard at Eastern Project Driveway	Westbound	56	849	6.60%	Yes	No storage length required

Left Turn Lane Evaluation

Inteserction	Direction	Left Turns	Opposing Volume	Advancing Volume	% Turns in Advancing Volume	Left Turn Lane Warranted ?	Required Storage Length
AM Peak							
William Burgess Boulevard at Western Project Driveway	Eastbound	23	495	760	3.03%		
William Burgess Boulevard at Middle Project Driveway	Eastbound	70	565	768	9.11%		
William Burgess Boulevard at Eastern Project Driveway	Eastbound	23	588	790	2.91%		
PM Peak							
William Burgess Boulevard at Western Project Driveway	Eastbound	32	783	588	5.44%	Yes	125
William Burgess Boulevard at Middle Project Driveway	Eastbound	94	833	621	15.14%	Yes	175
William Burgess Boulevard at Eastern Project Driveway	Eastbound	32	849	722	4.43%	Yes	125

Source: Figures 17 through 20

Note: Eastbound left turn lane and westbound right turn lane on William Burgess Boulevard at Middle Project Driveway required only if signalized
 Per FDOT Design Standards Index 301 Provide a deceleration and taper distance of 155 feet in addition to the required storage length.

Table 07
Intersection Capacity Analysis - HCM Delay and LOS (Existing, Year 2022 and Year 2027 Background Conditions)
Nassau Crossing - Traffic Study, Nassau County, FL

Intersection	Movement	Traffic Control	AM Peak			PM Peak			Improvements
			Delay	LOS	95th %ile Q	Delay	LOS	95th %ile Q	
Existing (Year 2017) Conditions									
Willam Burgess Boulevard at Harts Road	NBL	Stop	11.10	B		12.50	B		
	NBTR	Stop	9.70	A		9.80	A		
	EBL	Yield	7.50	A		7.60	A		
	WBL	Yield	7.60	A		7.60	A		
	SB	Stop	11.30	B		11.30	B		
US 17 at William Burgess Boulevard	NBL	Yield	8.70	A		9.40	A	75	
	EBL	Stop	30.60	D		59.90	F		
	EBR	Stop	12.80	B		14.60	B		
Year 2022 Background Conditions									
Willam Burgess Boulevard at Harts Road	NBL	Stop	14.90	B		18.20	C		
	NBTR	Stop	11.20	B		11.00	B		
	EBL	Yield	7.70	A		7.90	A		
	WBL	Yield	8.00	A		7.90	A		
	SB	Stop	18.90	C		17.00	C		
US 17 at William Burgess Boulevard	NBL	Yield	9.60	A	250	11.00	B	250	
	EBL	Stop	249.70	F		541.70	F		
	EBR	Stop	19.00	C		21.20	C		
Year 2022 Background Conditions (With Improvements)									
US 17 at William Burgess Boulevard	Intersection	Roundabout	10.40	B		14.50	B		Southbound Right Turn Lane Traffic Signal or Roundabout
	EBL	Yield	7.10	A		7.10	A		
	EBTR	Yield	9.20	A		8.90	A		
	NBL	Yield	5.10	A		5.30	A		
	NBTR	Yield	12.90	B		18.90	C		
	SBLT	Yield	11.60	B		17.20	C		
	SBR	Yield	4.40	A		5.40	A		
Year 2027 Background Conditions									
Willam Burgess Boulevard at Harts Road	NBL	Stop	21.30	C	125	29.90	D	50	
	NBTR	Stop	13.90	B		13.00	B		
	EBL	Yield	8.00	A		8.30	A		
	WBL	Yield	8.40	A		8.30	A		
	SB	Stop	61.60	F		34.30	D		
US 17 at William Burgess Boulevard	NBL	Yield	10.80	B	575	14.00	B	475	
	EBL	Stop	1269.30	F		2626.00	F		
	EBR	Stop	44.00	E		46.90	E		
Year 2027 Background Conditions (With Improvements)									
Willam Burgess Boulevard at Harts Road	NBL	Stop	21.30	C	100	29.90	D	50	Southbound Left Turn Lane
	NBTR	Stop	13.90	B		13.00	B		
	EBL	Yield	8.00	A		8.30	A		
	WBL	Yield	8.40	A		8.30	A		
	SBL	Stop	64.60	F		41.50	E		
	SBTR	Stop	10.60	B		14.00	B		
US 17 at William Burgess Boulevard	Intersection	Roundabout	13.90	B		23.00	C		Southbound Right Turn Lane Traffic Signal or Roundabout
	EBL	Yield	9.10	A		8.80	A		
	EBTR	Yield	13.90	B		12.40	B		
	NBL	Yield	6.40	A		6.60	A		
	NBTR	Yield	18.10	C		32.20	D		
	SBLT	Yield	15.90	C		30.90	D		
	SBR	Yield	5.20	A		6.80	A		

Source: Attachment I, J and K
Note: Per FDOT Standards Index 301 Provide a deceleration and taper distance of 155 feet in addition to the required storage length.

Table 08
Intersection Capacity Analysis - HCM Delay and LOS (Phase 1 Year 2022 Build-Out Conditions)
Nassau Crossing - Traffic Study, Nassau County, FL

Intersection	Movement	Traffic Control	AM Peak			PM Peak			Improvements
			Delay	LOS	95th %ile Q	Delay	LOS	95th %ile Q	
Phase 1 (Year 2022) Build-Out Conditions Improved									
Harts Road at Northern Residential Driveway	EB	Stop	9.30	A		9.60	A		Northbound right turn lane on Harts Road
	WB	Stop	10.20	B		10.50	B		
	NBL	Yield	7.40	A		7.40	A		
	SBL	Yield	7.40	A		7.50	A		
Harts Road at Middle Residential Driveway	WB	Stop	10.10	B		10.70	B		
	SBL	Yield	7.40	A		7.70	A		
Harts Road at Southern Residential Driveway	WB	Stop	10.30	B		11.00	B		
	SBL	Yield	7.40	A		7.80	A		
Willam Burgess Boulevard at Harts Road	NBL	Stop	18.40	C		28.30	D		
	NBTR	Stop	11.40	B		12.20	B		
	EBL	Yield	7.90	A		8.40	A		
	WBL	Yield	8.00	A		7.90	A		
	SB	Stop	42.60	E	175	41.20	E	100	
US 17 at William Burgess Boulevard	Intersection	Roundabout	10.80	B		15.40	C		Southbound Right Turn Lane Traffic Signal or Roundabout
	EBL	Yield	7.50	A		7.40	A		
	EBTR	Yield	10.90	B		9.90	A		
	NBL	Yield	5.50	A		6.20	A		
	NBTR	Yield	13.40	B		19.60	C		
	SBLT	Yield	12.10	B		20.50	C		
	SBR	Yield	4.60	A		6.00	A		

Source: Attachment L
Note: Per FDOT Standards Index 301 Provide a deceleration and taper distance of 155 feet in addition to the required storage length.

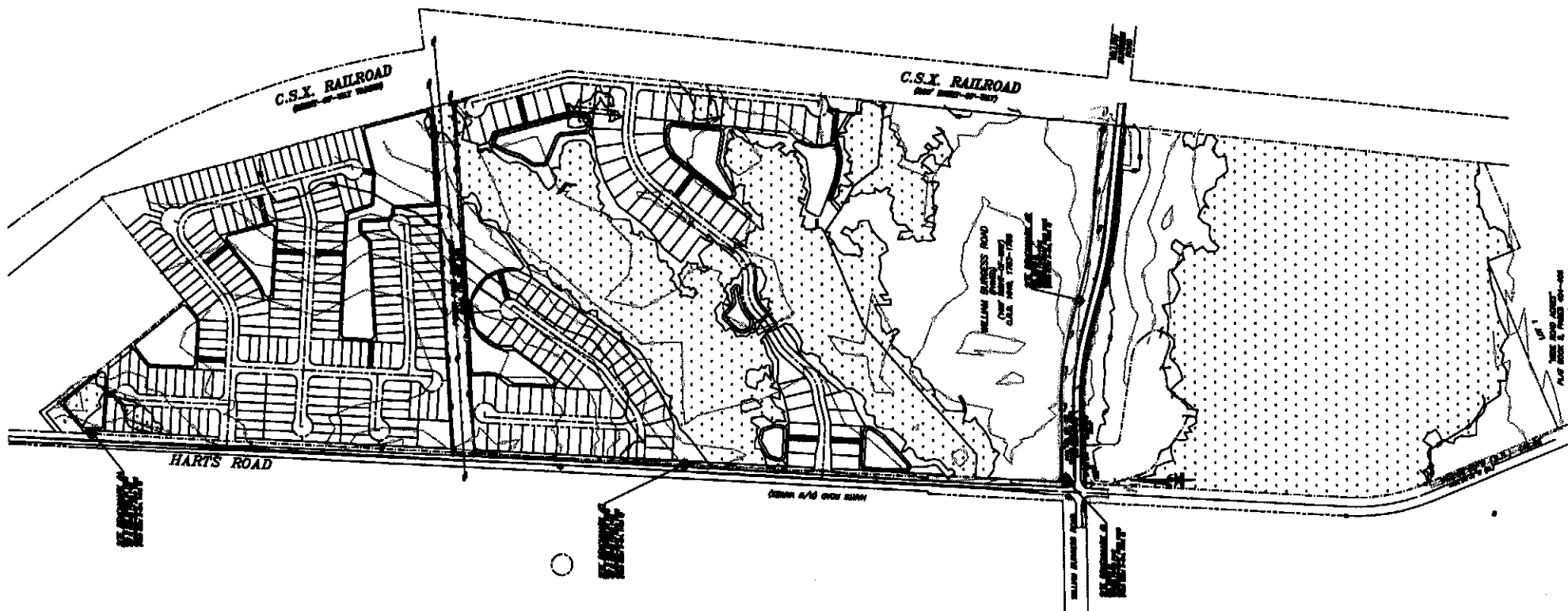
Table 09
Intersection Capacity Analysis - HCM Delay and LOS (Phase 2 Year 2027 Build-Out Conditions)
Nassau Crossing - Traffic Study, Nassau County, FL

Intersection	Movement	Traffic Control	AM Peak				PM Peak				Improvements
			Delay	LOS	95th %ile Q	95th %ile Q	Delay	LOS	95th %ile Q	95th %ile Q	
Phase 2 (Year 2027) Build-Out Conditions											
Harts Road at Northern Residential Driveway	EB	Stop	9.60	A			9.90	A			Northbound right turn lane on Harts Road
	WB	Stop	10.80	B			11.40	B			
	NBL	Yield	7.40	A			7.40	A			
	SBL	Yield	7.40	A			7.50	A			
Harts Road at Middle Residential Driveway	WB	Stop	10.50	B			11.60	B			
	SBL	Yield	7.50	A			7.90	A			
Harts Road at Southern Residential Driveway	WB	Stop	10.70	B			12.00	B			
	SBL	Yield	7.50	A			7.90	A			
Harts Road at Mixed Use Driveway	WB	Stop	9.50	A			10.40	B			
	SBL	Yield	7.50	A			7.90	A			
Willam Burgess Boulevard at Harts Road	Intersection	Roundabout	11.10	B			15.50	C			Roundabout
	NBL	Yield	5.90	A			5.50	A			
	NBTR	Yield	9.20	A			6.60	A			
	EB	Yield	14.30	B			12.30	B			
	WB	Yield	9.40	A			20.50	C	9	225	
	SB	Yield	9.30	A			7.90	A			
William Burgess Boulevard at Western Project Driveway	EBL	Yield	8.40	A			9.50	A			Eastbound left turn lane with 150 feet storage length Westbound right turn lane
	SB	Stop	16.70	C			23.30	C			
William Burgess Boulevard at Middle Project Driveway	Intersection	Roundabout	17.10	C			25.10	D			Roundabout (No auxiliary turn lanes recommedned)
	EB	Yield	22.90	C			19.10	C			If Signalized, provide the following: Eastbound left turn lane with 175 feet storage length (If signalized) Westbound left turn lane with 100 feet storage length (If signalized)
	WB	Yield	11.60	B			31.00	D	14	350	
	SB	Yield	8.10	A			21.40	C			
William Burgess Boulevard at Eastern Project Driveway	EBL	Yield	8.80	A			9.80	A			Eastbound left turn lane with 150 feet storage length
	SB	Stop	18.20	C			35.10	D			Westbound right trun lane
US 17 at William Burgess Boulevard (Roundabout and Traffic Signal)											
US 17 at William Burgess Boulevard	Intersection	Roundabout	17.90	C			37.90	E			Roundabout
	EBL	Yield	11.10	B			12.80	B			Southbound Right Turn Lane
	EBTR	Yield	23.90	C	7	175	29.50	D	8	200	Northbound and Southbound Approaches Anticipated to Fail
	NBL	Yield	9.20	A			11.80	B			
	NBTR	Yield	21.40	C	8	200	52.40	F	18	450	
	SBLT	Yield	21.70	C			66.90	F	19	475	
US 17 at William Burgess Boulevard (Alternative 2 - Traffic Signal)	SBR	Yield	7.00	A			11.00	B			Southbound Right Turn Lane Traffic Signal when Warranted
	Intersection	Signal	28.10	C			44.60	D			
	EB	Signal	32.50	C			48.00	D			
	WB	Signal	0.00	A			0.00	A			
	NB	Signal	23.40	C			38.60	D			
	SB	Signal	29.70	C			49.40	D			

Source: Attachments M and N
Note: Per FDOT Standards Index 301 Provide a deceleration and taper distance of 155 feet in addition to the required storage length.

Attachment A

Project Site Plan



J. LUCAS & ASSOCIATES, INC.

CONSULTING AND DESIGN ENGINEERS
 CERTIFICATE OF AUTHORIZATION NO. 3084
 1308 CEDAR STREET - JACKSONVILLE, FL 32207
 PH (904) 380-3000 FAX (904) 380-3400

NO.	REVISION	BY	DATE

VERSION: ACAD 3D
 DRAWN BY: JM
 CHECKED BY: JM
 APPROVED BY: JM
 DATE: SEPTEMBER 2012

**PRELIMINARY SITE PLAN OF
 NASSAU CROSSING
 FOR
 MATOVINA & COMPANY**

DRAWING NO. 1 OF 1
 JOB NO. 1710
 FILE NO. 1710-001
 SEAL & SIGNATURE:
JOHN E. LUCAS, P.E.



William Burgess Small Area Plan

Source: Nassau County Department of
Planning and Economic Opportunity

Attachment B

Traffic Counts Data and FDOT Season Factors



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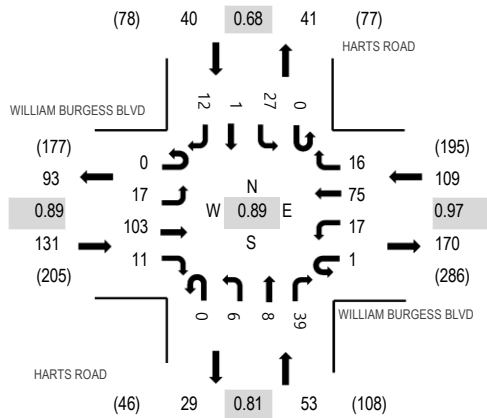
Location: 1 HARTS ROAD & WILLIAM BURGESS BLVD AM

Date and Start Time: Thursday, August 17, 2017

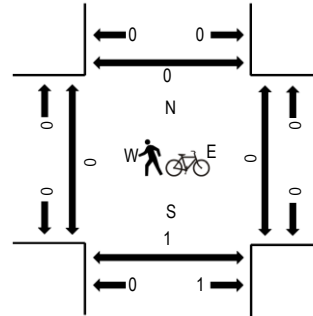
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	WILLIAM BURGESS BLVD Eastbound				WILLIAM BURGESS BLVD Westbound				HARTS ROAD Northbound				HARTS ROAD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	4	15	1	0	3	9	3	0	5	1	4	0	5	1	2	53	277	0	0	0	0
7:15 AM	0	1	22	1	0	2	15	4	0	3	0	7	0	9	1	7	72	318	0	0	0	0
7:30 AM	1	4	12	0	0	4	15	5	0	6	5	10	0	7	0	2	71	332	0	0	0	0
7:45 AM	0	7	19	3	0	5	16	2	0	4	2	15	0	6	0	2	81	333	0	0	0	0
8:00 AM	0	5	26	6	0	5	21	3	0	2	2	12	0	7	0	5	94	309	0	0	0	0
8:15 AM	0	3	32	2	1	2	21	5	0	0	2	8	0	7	1	2	86		0	0	0	0
8:30 AM	0	2	26	0	0	5	17	6	0	0	2	4	0	7	0	3	72		0	0	1	0
8:45 AM	0	0	12	1	0	3	18	5	0	0	4	10	0	3	0	1	57		0	0	0	0

Peak Rolling Hour Flow Rates

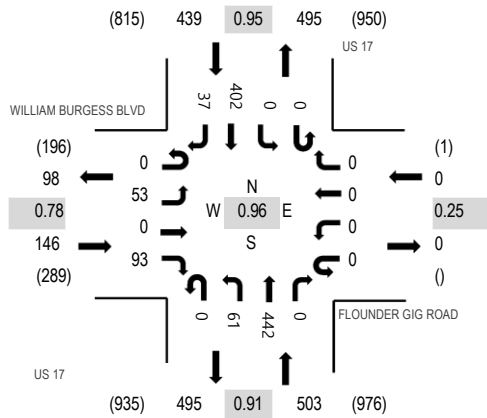
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	17	97	10	1	16	74	16	0	6	8	37	0	27	1	10	320
Mediums	0	0	6	1	0	1	1	0	0	0	0	2	0	0	0	2	13
Total	0	17	103	11	1	17	75	16	0	6	8	39	0	27	1	12	333



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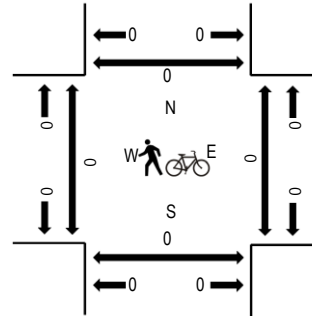
Location: 2 US 17 & FLOUNDER GIG ROAD AM
Date and Start Time: Thursday, August 17, 2017
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	WILLIAM BURGESS BLVD Eastbound				FLOUNDER GIG ROAD Westbound				US 17 Northbound				US 17 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	11	0	14	0	0	0	1	0	11	109	0	0	0	95	4	245	1,069	0	0	0	0
7:15 AM	0	11	0	25	0	0	0	0	0	19	121	0	0	0	105	2	283	1,088	0	0	0	0
7:30 AM	0	14	0	20	0	0	0	0	0	17	114	0	0	0	102	7	274	1,063	0	0	0	0
7:45 AM	0	11	0	21	0	0	0	0	0	13	107	0	0	0	105	10	267	1,057	0	0	0	0
8:00 AM	0	17	0	27	0	0	0	0	0	12	100	0	0	0	90	18	264	1,012	0	0	0	0
8:15 AM	0	17	0	38	0	0	0	0	0	15	94	0	0	0	80	14	258		0	0	0	0
8:30 AM	0	6	0	34	0	0	0	0	0	17	109	0	0	0	91	11	268		0	0	0	0
8:45 AM	0	8	0	15	0	0	0	0	0	18	100	0	0	0	73	8	222		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	4	0	0	0	8	0	12
Lights	0	53	0	90	0	0	0	0	0	60	413	0	0	0	378	37	1,031
Mediums	0	0	0	3	0	0	0	0	0	1	25	0	0	0	16	0	45
Total	0	53	0	93	0	0	0	0	0	61	442	0	0	0	402	37	1,088



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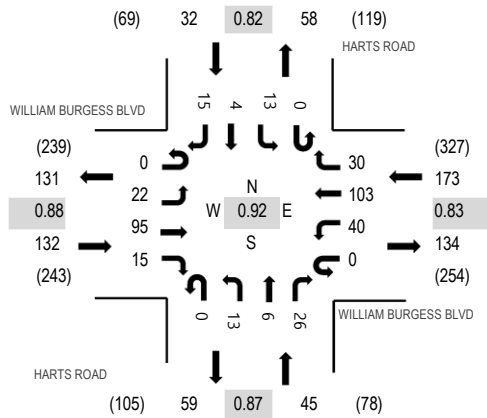
Location: 1 HARTS ROAD & WILLIAM BURGESS BLVD PM

Date and Start Time: Thursday, August 17, 2017

Peak Hour: 04:30 PM - 05:30 PM

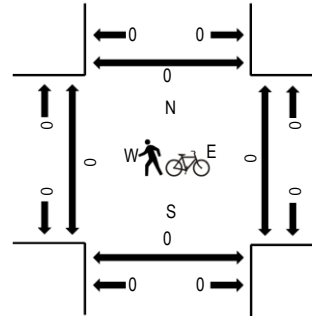
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	WILLIAM BURGESS BLVD Eastbound				WILLIAM BURGESS BLVD Westbound				HARTS ROAD Northbound				HARTS ROAD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	5	15	4	0	9	21	9	0	1	1	5	0	5	0	6	81	357	0	0	0	0
4:15 PM	0	5	13	4	0	5	25	16	0	0	0	10	0	4	2	2	86	375	0	0	0	0
4:30 PM	0	5	20	1	0	9	17	12	0	2	1	10	0	6	0	3	86	382	0	0	0	0
4:45 PM	0	5	22	6	0	15	30	9	0	4	0	5	0	3	1	4	104	382	0	0	0	0
5:00 PM	0	6	34	1	0	7	29	6	0	3	3	5	0	1	0	4	99	360	0	0	0	0
5:15 PM	0	6	19	7	0	9	27	3	0	4	2	6	0	3	3	4	93		0	0	0	0
5:30 PM	0	8	29	1	0	4	23	6	0	3	2	2	0	7	0	1	86		0	0	0	0
5:45 PM	0	1	21	5	0	11	21	4	0	0	4	5	0	4	1	5	82		0	0	0	0

Peak Rolling Hour Flow Rates

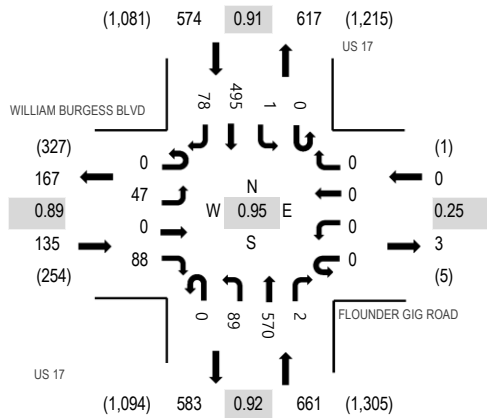
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	22	94	14	0	39	102	30	0	13	6	26	0	13	4	15	378
Mediums	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	4
Total	0	22	95	15	0	40	103	30	0	13	6	26	0	13	4	15	382



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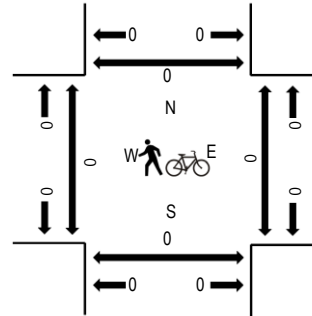
Location: 2 US 17 & FLOUNDER GIG ROAD PM
Date and Start Time: Thursday, August 17, 2017
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	WILLIAM BURGESS BLVD Eastbound				FLOUNDER GIG ROAD Westbound				US 17 Northbound				US 17 Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	10	0	12	0	0	0	0	0	28	141	0	0	0	96	11	298	1,306	0	0	0	0
4:15 PM	0	12	0	17	0	0	0	0	0	20	130	0	0	0	108	27	314	1,335	0	0	0	0
4:30 PM	0	8	0	28	0	0	0	1	0	23	140	0	0	2	123	16	341	1,349	0	0	0	0
4:45 PM	0	13	0	20	0	0	0	0	0	22	139	1	0	1	126	31	353	1,370	0	0	0	0
5:00 PM	0	10	0	28	0	0	0	0	0	26	135	0	0	0	112	16	327	1,335	0	0	0	0
5:15 PM	0	9	0	16	0	0	0	0	0	22	137	0	0	0	127	17	328		0	0	0	0
5:30 PM	0	15	0	24	0	0	0	0	0	19	159	1	0	0	130	14	362		0	0	0	0
5:45 PM	0	11	0	21	0	0	0	0	0	17	145	0	0	0	106	18	318		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4
Lights	0	47	0	88	0	0	0	0	0	89	559	2	0	1	481	77	1,344
Mediums	0	0	0	0	0	0	0	0	0	0	9	0	0	0	12	1	22
Total	0	47	0	88	0	0	0	0	0	89	570	2	0	1	495	78	1,370

2016 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
 CATEGORY: 7400 NASSAU COUNTYWIDE

WEEK	DATES	SF	MOCF: 0.94 PSCF
1	01/01/2016 - 01/02/2016	1.07	1.14
2	01/03/2016 - 01/09/2016	1.13	1.20
3	01/10/2016 - 01/16/2016	1.20	1.28
4	01/17/2016 - 01/23/2016	1.18	1.26
5	01/24/2016 - 01/30/2016	1.15	1.22
6	01/31/2016 - 02/06/2016	1.13	1.20
7	02/07/2016 - 02/13/2016	1.10	1.17
8	02/14/2016 - 02/20/2016	1.08	1.15
9	02/21/2016 - 02/27/2016	1.05	1.12
10	02/28/2016 - 03/05/2016	1.02	1.09
11	03/06/2016 - 03/12/2016	0.99	1.05
12	03/13/2016 - 03/19/2016	0.96	1.02
13	03/20/2016 - 03/26/2016	0.96	1.02
14	03/27/2016 - 04/02/2016	0.96	1.02
15	04/03/2016 - 04/09/2016	0.95	1.01
16	04/10/2016 - 04/16/2016	0.95	1.01
*17	04/17/2016 - 04/23/2016	0.94	1.00
*18	04/24/2016 - 04/30/2016	0.94	1.00
*19	05/01/2016 - 05/07/2016	0.93	0.99
*20	05/08/2016 - 05/14/2016	0.93	0.99
*21	05/15/2016 - 05/21/2016	0.92	0.98
*22	05/22/2016 - 05/28/2016	0.93	0.99
*23	05/29/2016 - 06/04/2016	0.94	1.00
*24	06/05/2016 - 06/11/2016	0.95	1.01
*25	06/12/2016 - 06/18/2016	0.96	1.02
*26	06/19/2016 - 06/25/2016	0.96	1.02
*27	06/26/2016 - 07/02/2016	0.95	1.01
*28	07/03/2016 - 07/09/2016	0.95	1.01
*29	07/10/2016 - 07/16/2016	0.94	1.00
30	07/17/2016 - 07/23/2016	0.95	1.01
31	07/24/2016 - 07/30/2016	0.97	1.03
32	07/31/2016 - 08/06/2016	0.98	1.04
33	08/07/2016 - 08/13/2016	1.00	1.06
34	08/14/2016 - 08/20/2016	1.01	1.07
35	08/21/2016 - 08/27/2016	1.01	1.07
36	08/28/2016 - 09/03/2016	1.02	1.09
37	09/04/2016 - 09/10/2016	1.02	1.09
38	09/11/2016 - 09/17/2016	1.03	1.10
39	09/18/2016 - 09/24/2016	1.02	1.09
40	09/25/2016 - 10/01/2016	1.02	1.09
41	10/02/2016 - 10/08/2016	1.01	1.07
42	10/09/2016 - 10/15/2016	1.01	1.07
43	10/16/2016 - 10/22/2016	1.01	1.07
44	10/23/2016 - 10/29/2016	1.01	1.07
45	10/30/2016 - 11/05/2016	1.02	1.09
46	11/06/2016 - 11/12/2016	1.02	1.09
47	11/13/2016 - 11/19/2016	1.02	1.09
48	11/20/2016 - 11/26/2016	1.03	1.10
49	11/27/2016 - 12/03/2016	1.04	1.11
50	12/04/2016 - 12/10/2016	1.05	1.12
51	12/11/2016 - 12/17/2016	1.07	1.14
52	12/18/2016 - 12/24/2016	1.13	1.20
53	12/25/2016 - 12/31/2016	1.20	1.28

* PEAK SEASON

21-FEB-2017 10:54:34

830UPD

2_7400_PKSEASON.TXT

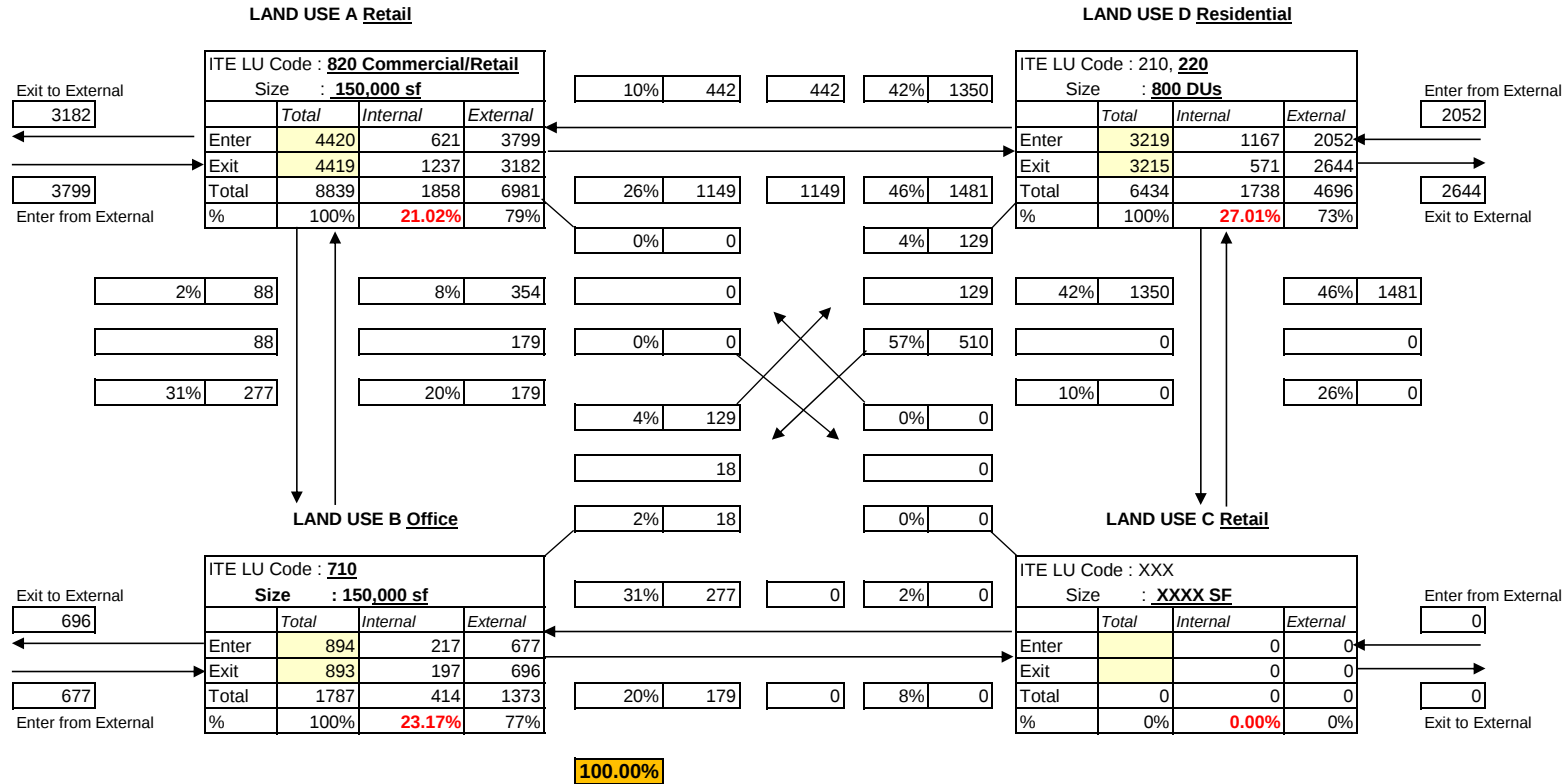
Attachment C

Internal Capture Calculations

Analyst: RKC
Date : 11/30/2017

**MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY**

Name of Dvlpt.: Nassau Crossing
Time period: Daily



Net External Trips fro Multi-Use Development					
	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	3799	677	0	2052	6528
Exit	3182	696	0	2644	6522
Total	6981	1373	0	4696	13050
Single - Use Trip Gen. Est.	8839	1787	0	6434	17060

Internal Capture
23.51%

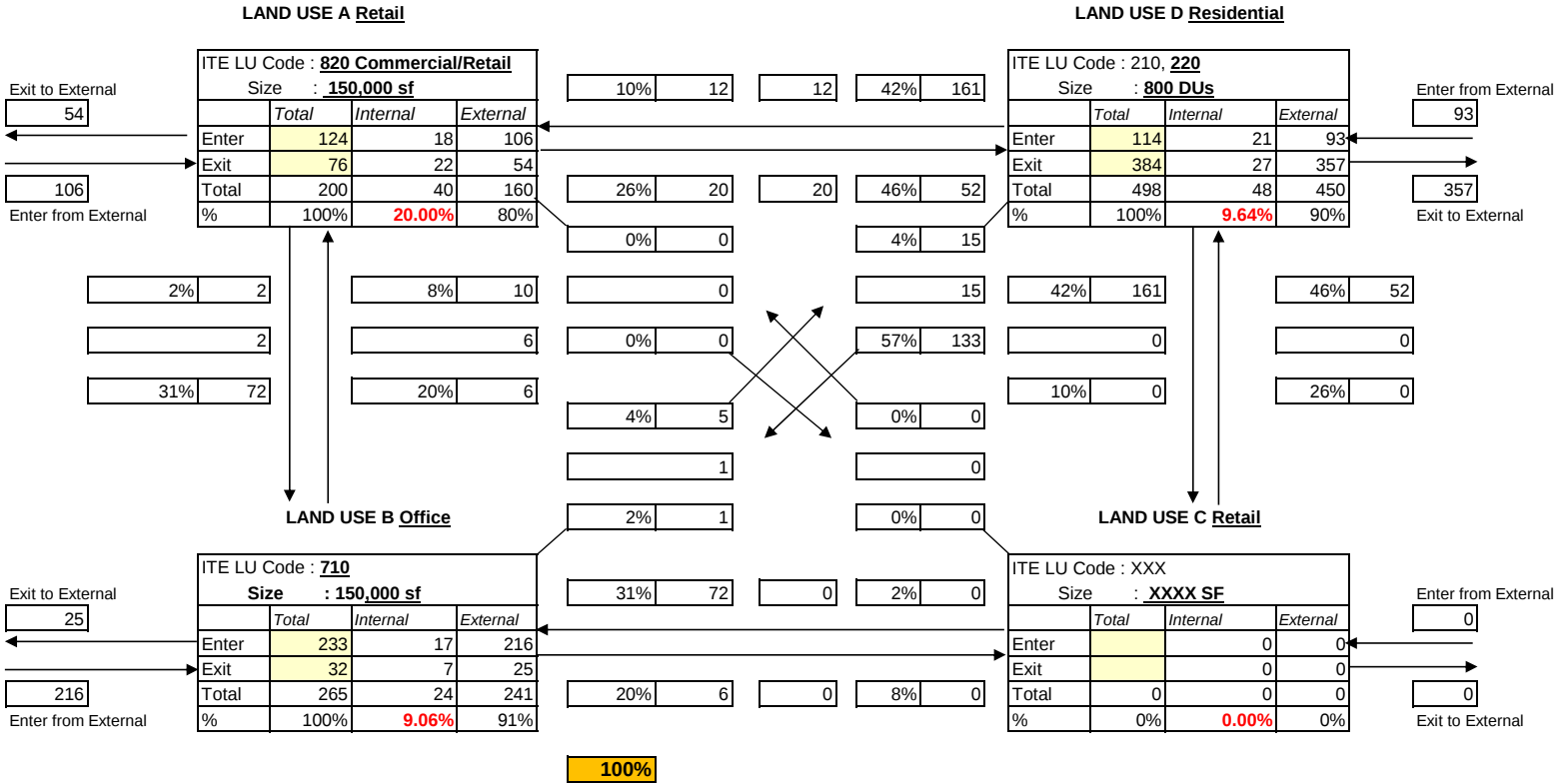
CTSi ** NOTE : Please do not change the land use order.
Please enter data here

Revise 11/30/2017

Analyst: RKC
Date : 11/30/2017

MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt.. Nassau Crossing
Time period: AM Peak Hour



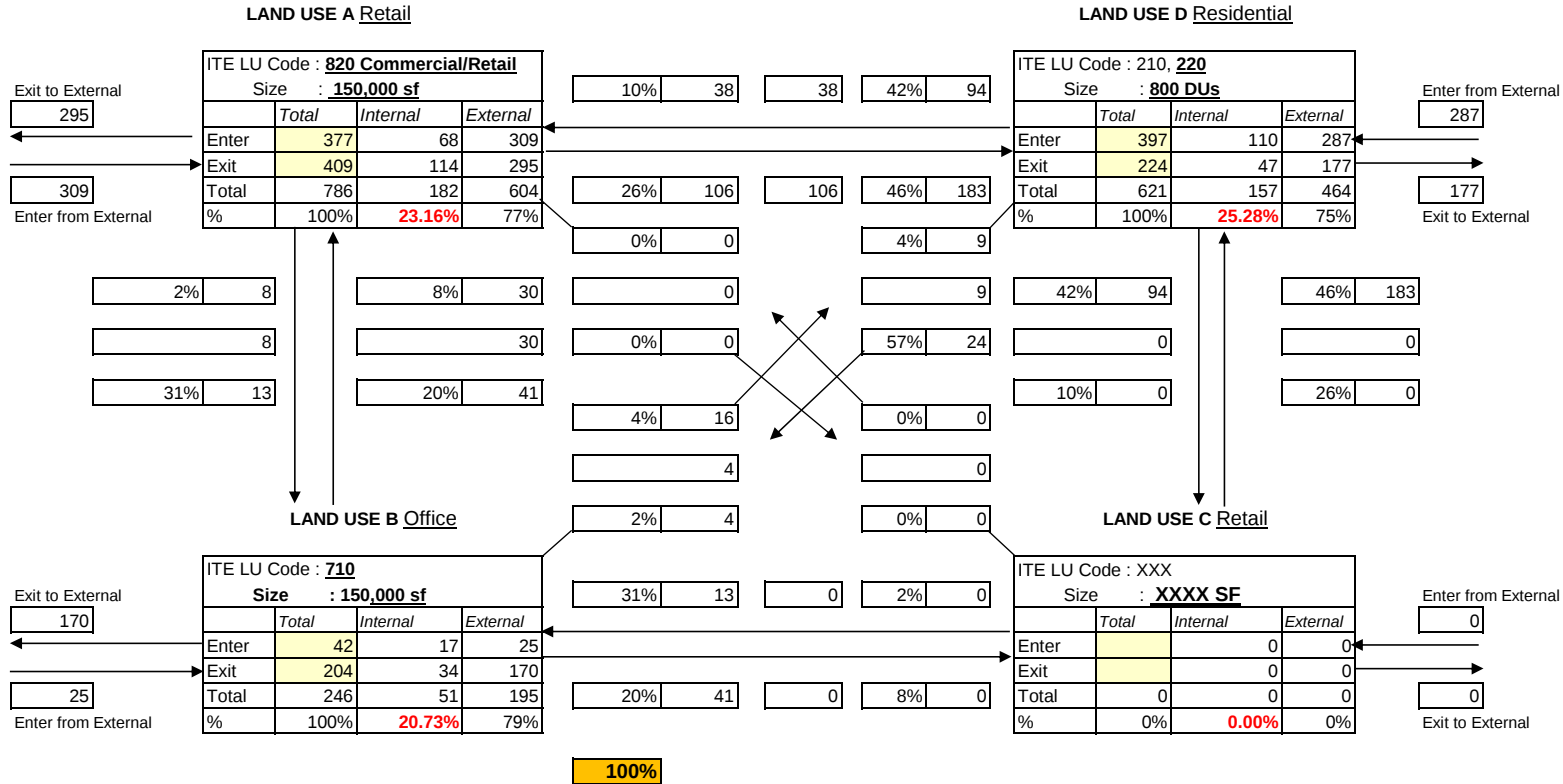
Net External Trips fro Multi-Use Development					
	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	106	216	0	93	415
Exit	54	25	0	357	436
Total	160	241	0	450	851
Single - Use Trip Gen. Est.	200	265	0	498	963

Internal Capture
11.63%

Analyst: RKC
Date : 11/30/2017

**MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY**

Name of Dvlpt.: Nassau Crossing
Time period: PM Peak Hour



Net External Trips fro Multi-Use Development					
	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	309	25	0	287	621
Exit	295	170	0	177	642
Total	604	195	0	464	1263
Single - Use Trip Gen. Est.	786	246	0	621	1653

Internal Capture
23.59%

Attachment D

NERPM_ABv3 Socio- Economic Data Variables

Attachment D
 ENCPA and Nassau Crossing Development Quantities and Socio-Economic Data Variables
 Nassau Crossing - Traffic Analysis

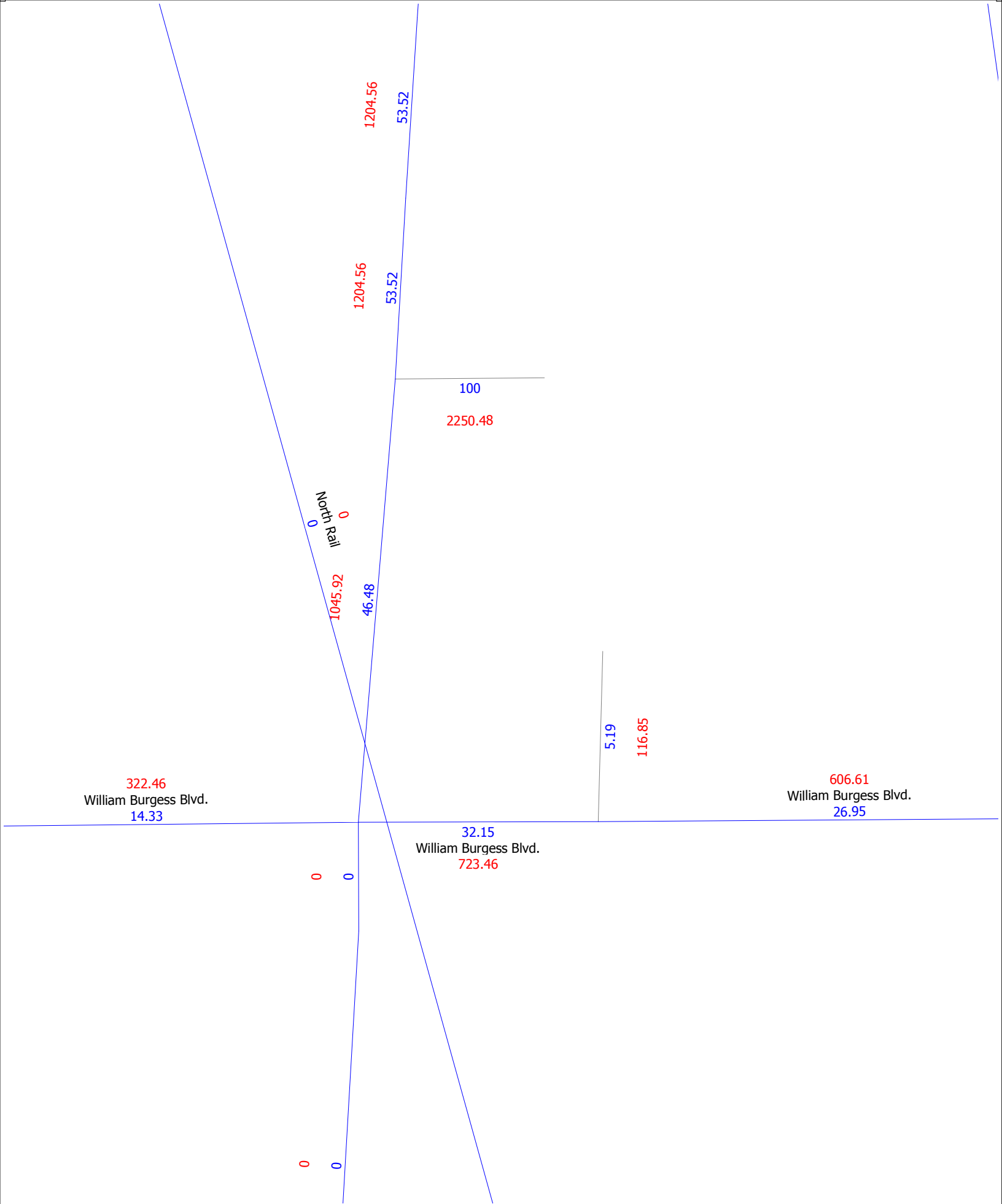
Development	Land Use	Units	Year and Development Quantities (Cumulative)						
			2017	2019	2021	2024	2025	2026	2027
Nassau Crossing	Single Family	DUs					350		350
	Multifamily	DUs							450
	Office	SF							150,000
	Commercial	SF							150,000
Chester Road	Single Family	DUs					400		1,200
	Multifamily	DUs					300		675
	Commercial	SF					31,000		91,000
Market Street	School - Elementary	Students	800	800		800			
	Single Family	DUs		100		536			
	Multifamily	DUs		250		381			
	Office	SF		80,000		150,000			
	Commercial	SF		40,000		75,000			
Wildlight Commerce	Light Industrial	SF			250,000			1,050,000	

Households and Employee Conversions for NERPM_ABV3

										Model TAZ
Nassau Crossing	Single Family	DUs					350		350	25
	Multifamily	DUs							450	26
	Office	SF							359	
	Commercial	SF							375	
Chester Road	Single Family	DUs					400			28
	Multifamily	DUs					300			
	Commercial	SF					78			
Market Street	School - Elementary	Students	800	800		800				29
	Single Family	DUs		100		536				
	Multifamily	DUs		250		381				
	Office	SF		191		359				
	Commercial	SF		100		188				
Wildlight Commerce	Light Industrial	SF			310			1,302		31

Attachment E

Travel Demand Model Plots – Phase 1 Development

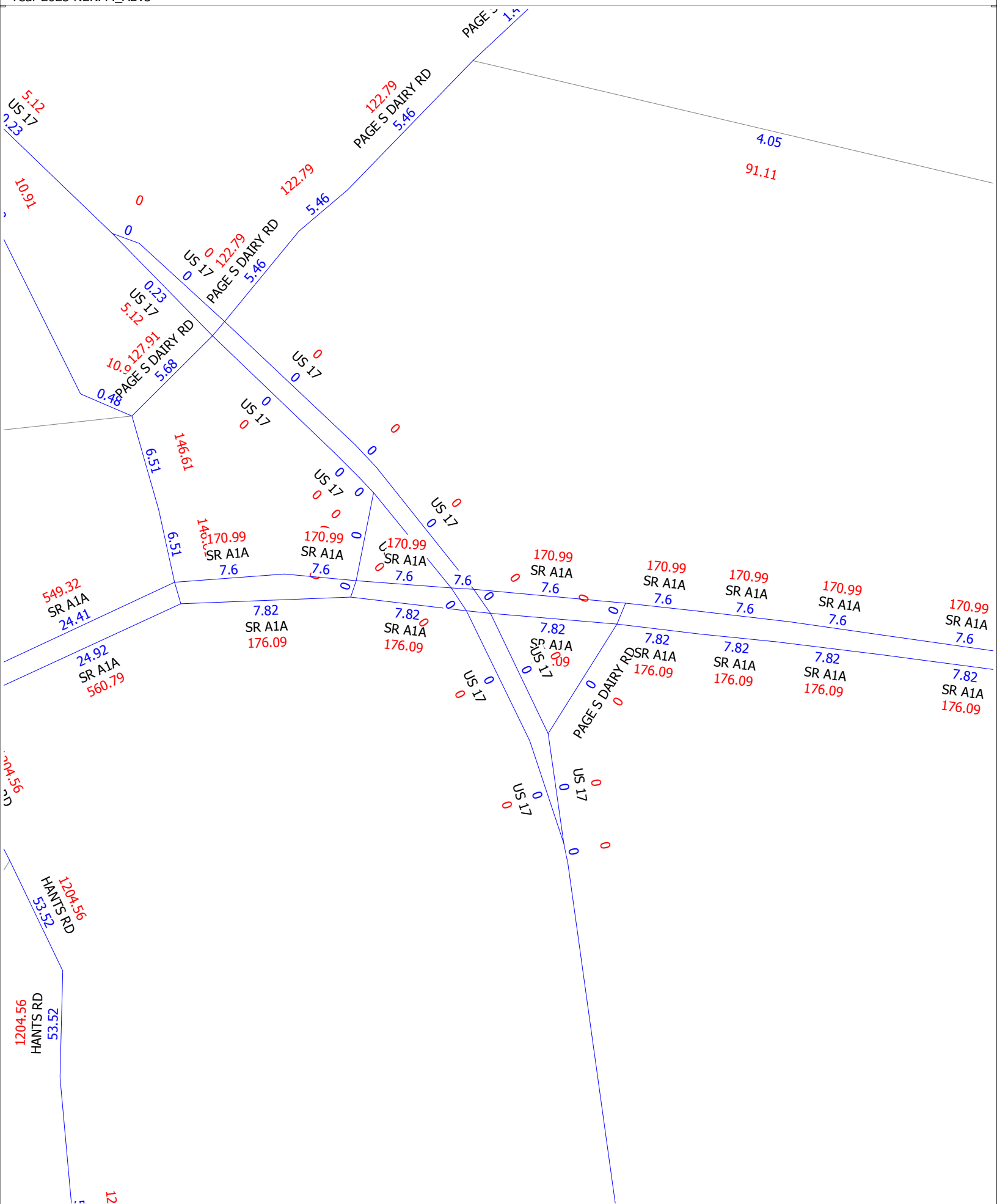


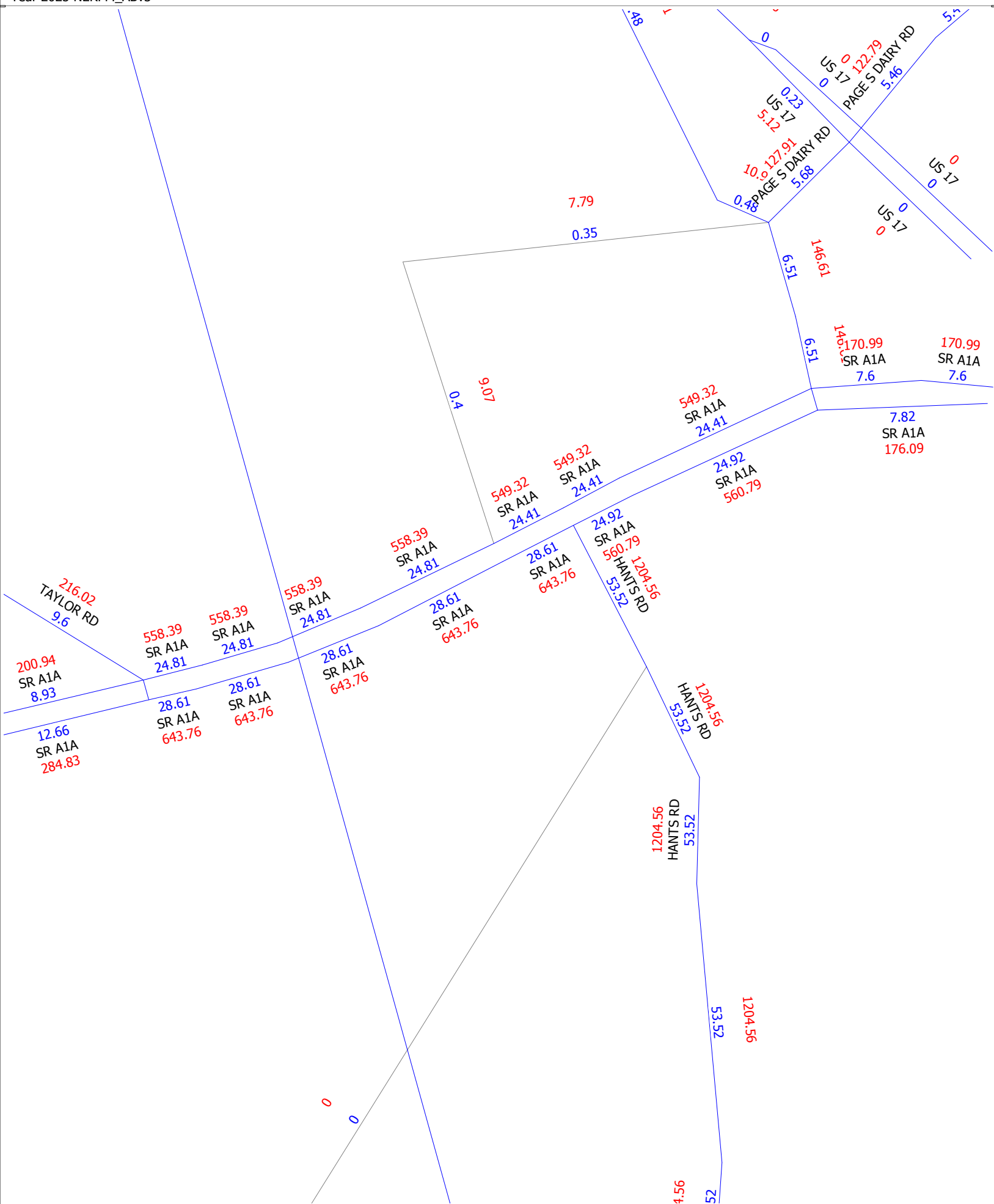
606.61
William Burgess Blvd.
26.95

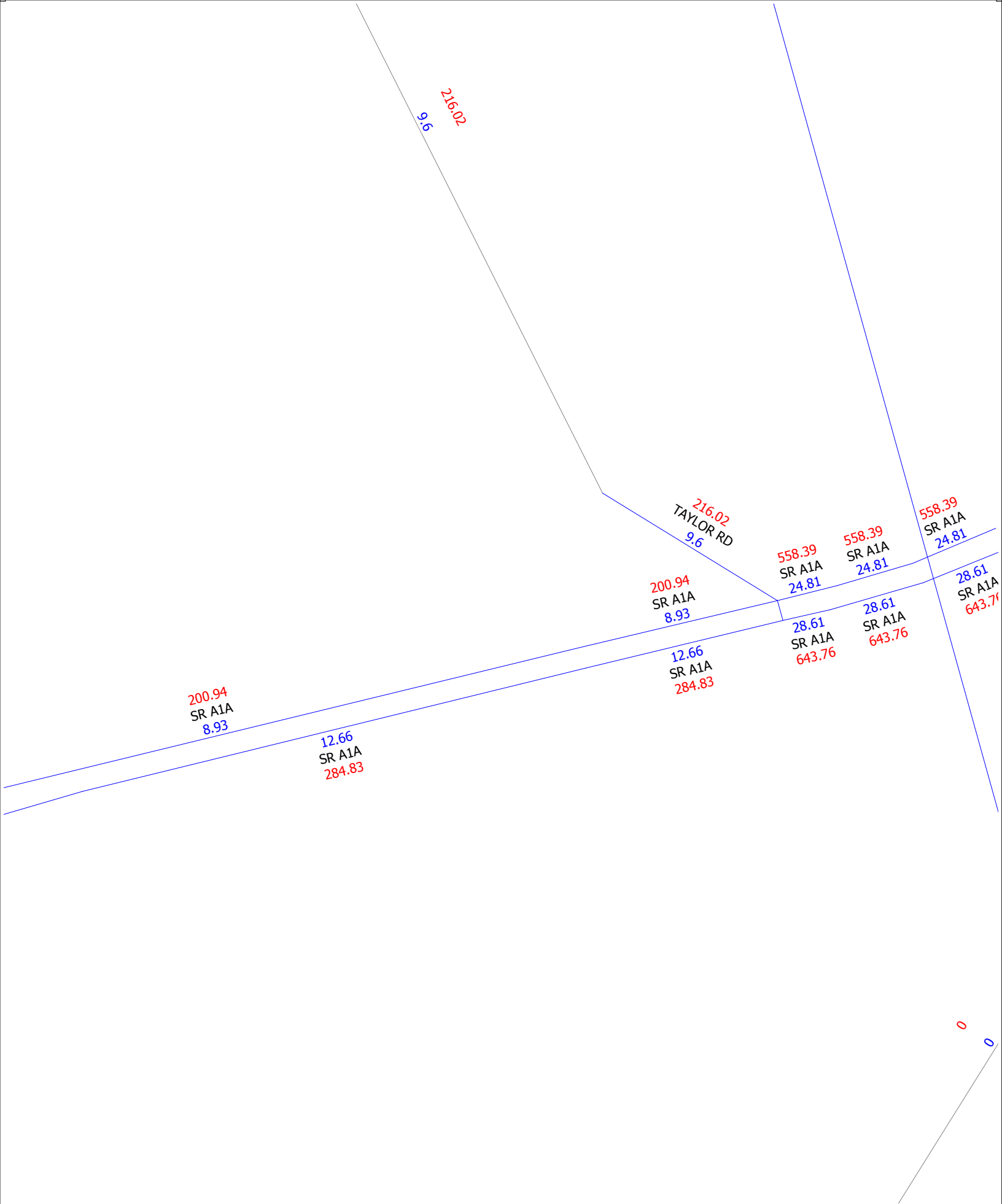
606.61
US 17
26.95

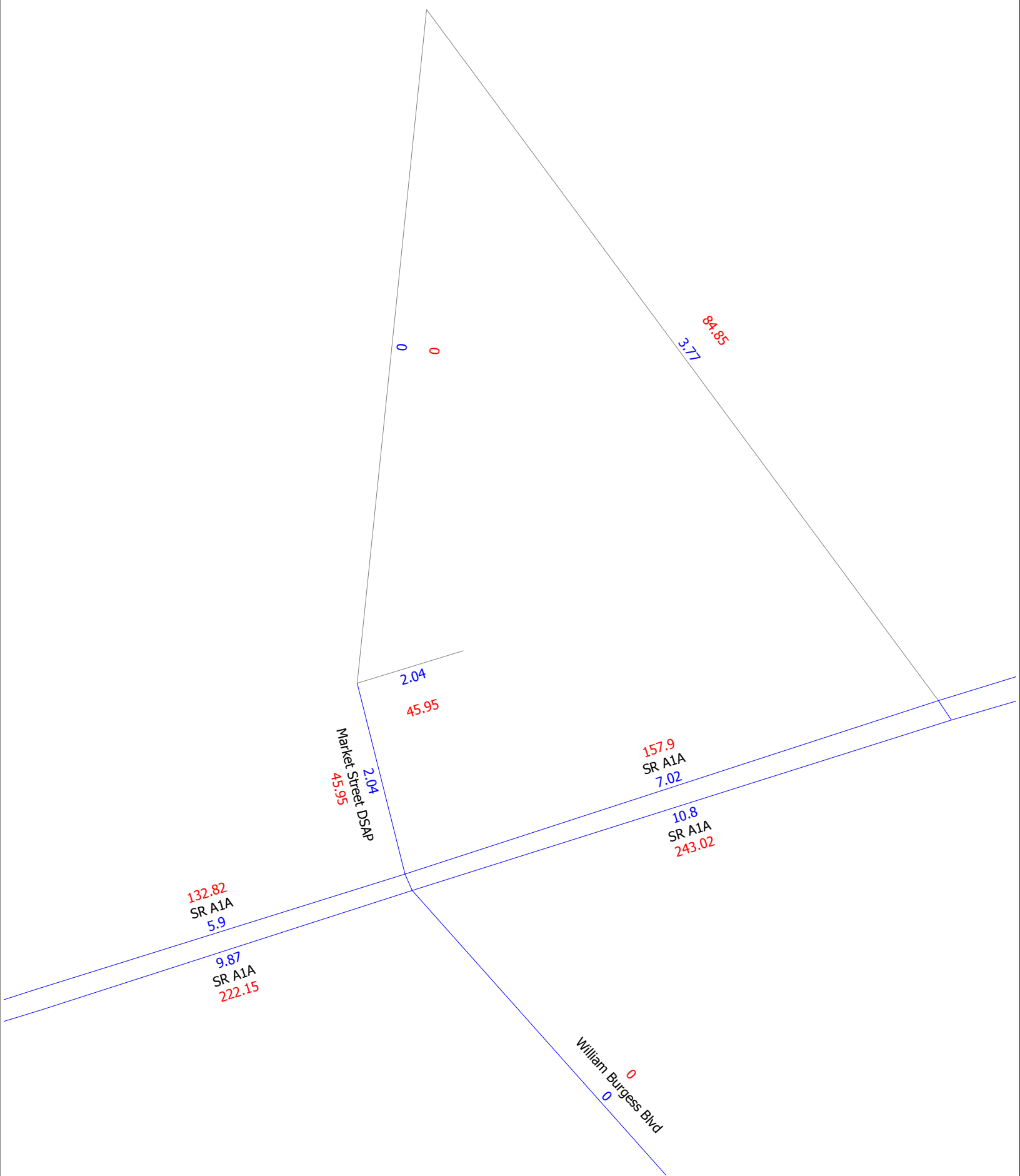
606.61
US 17
26.95

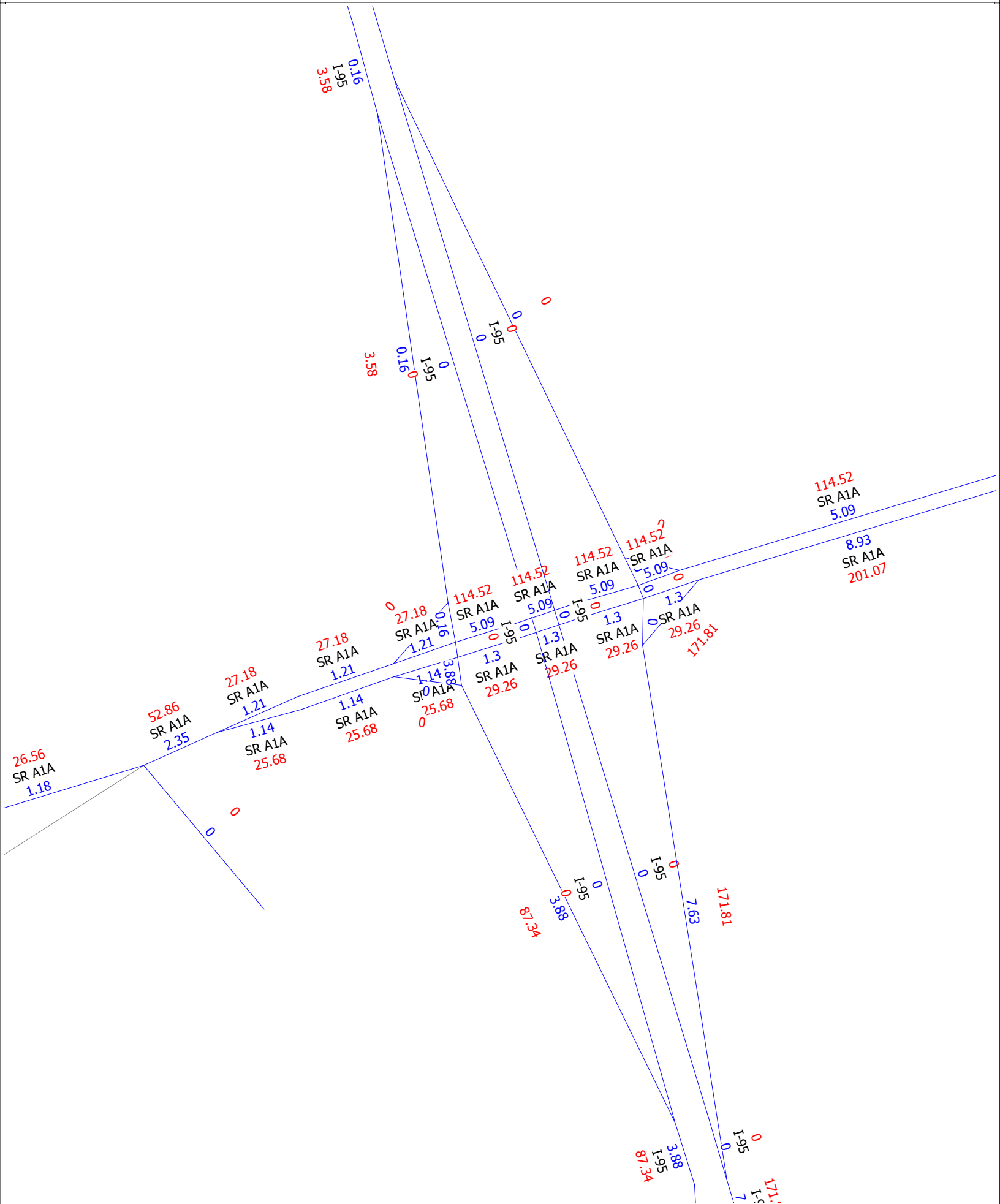
89.71
71 SN
285.34

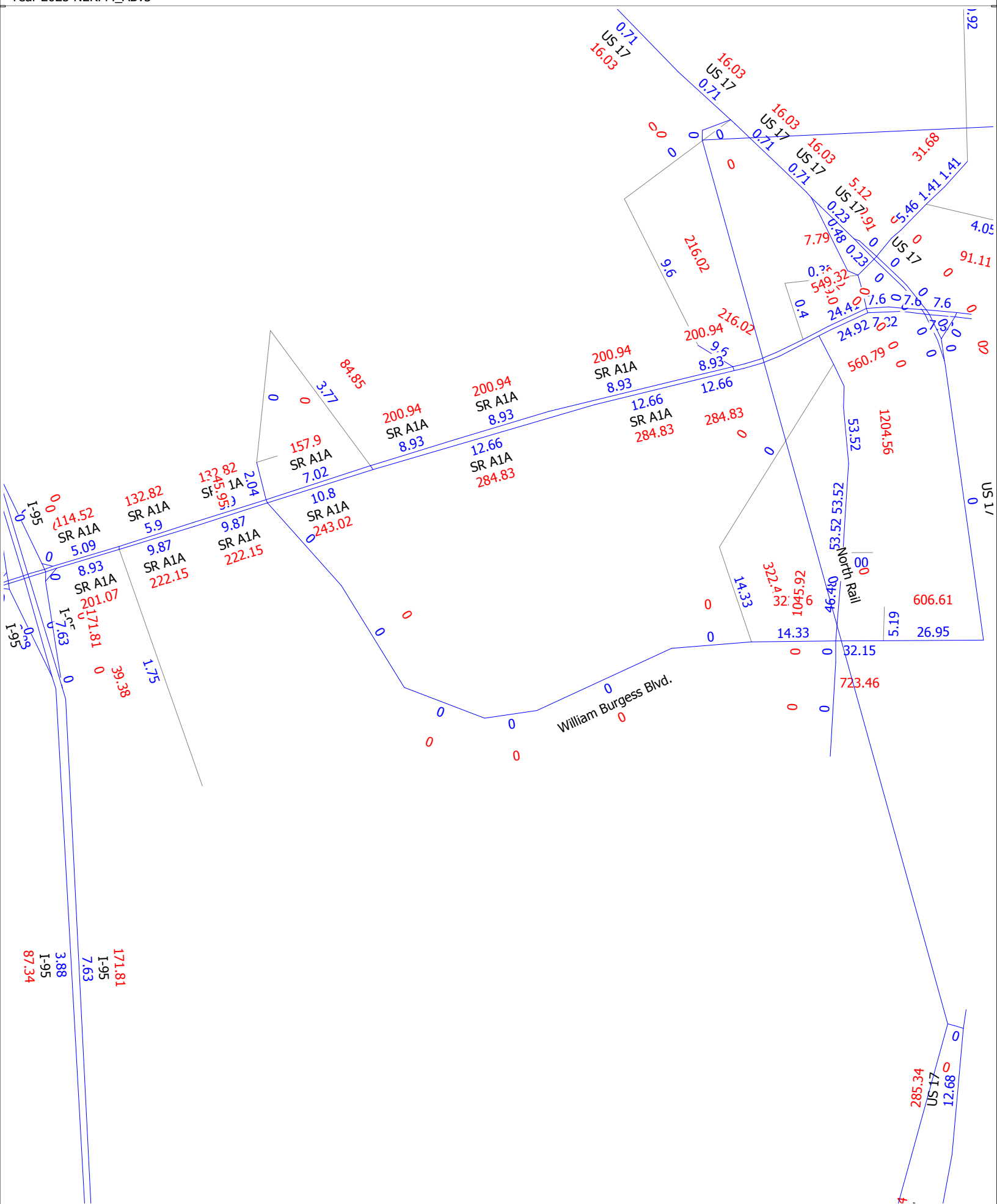


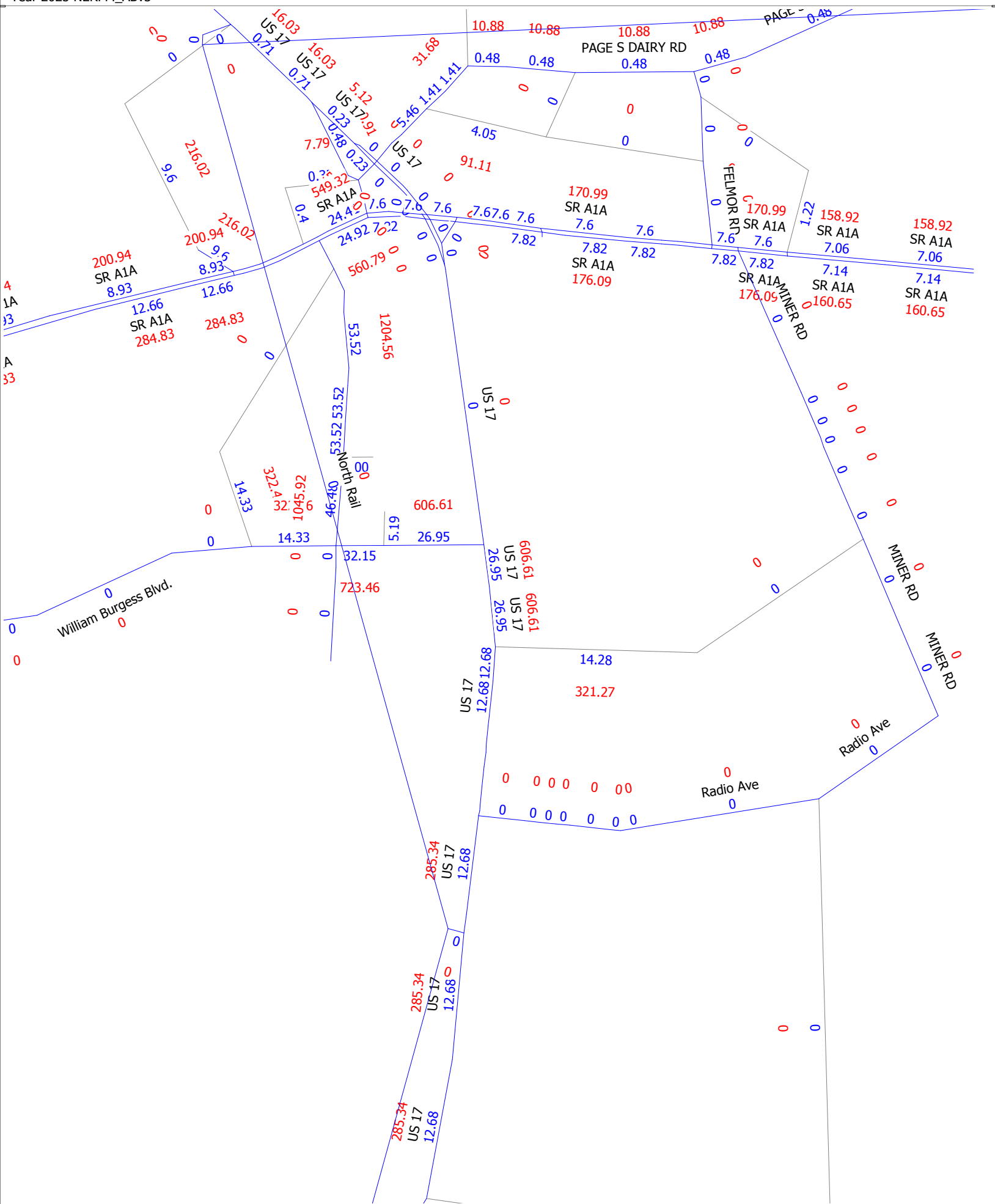






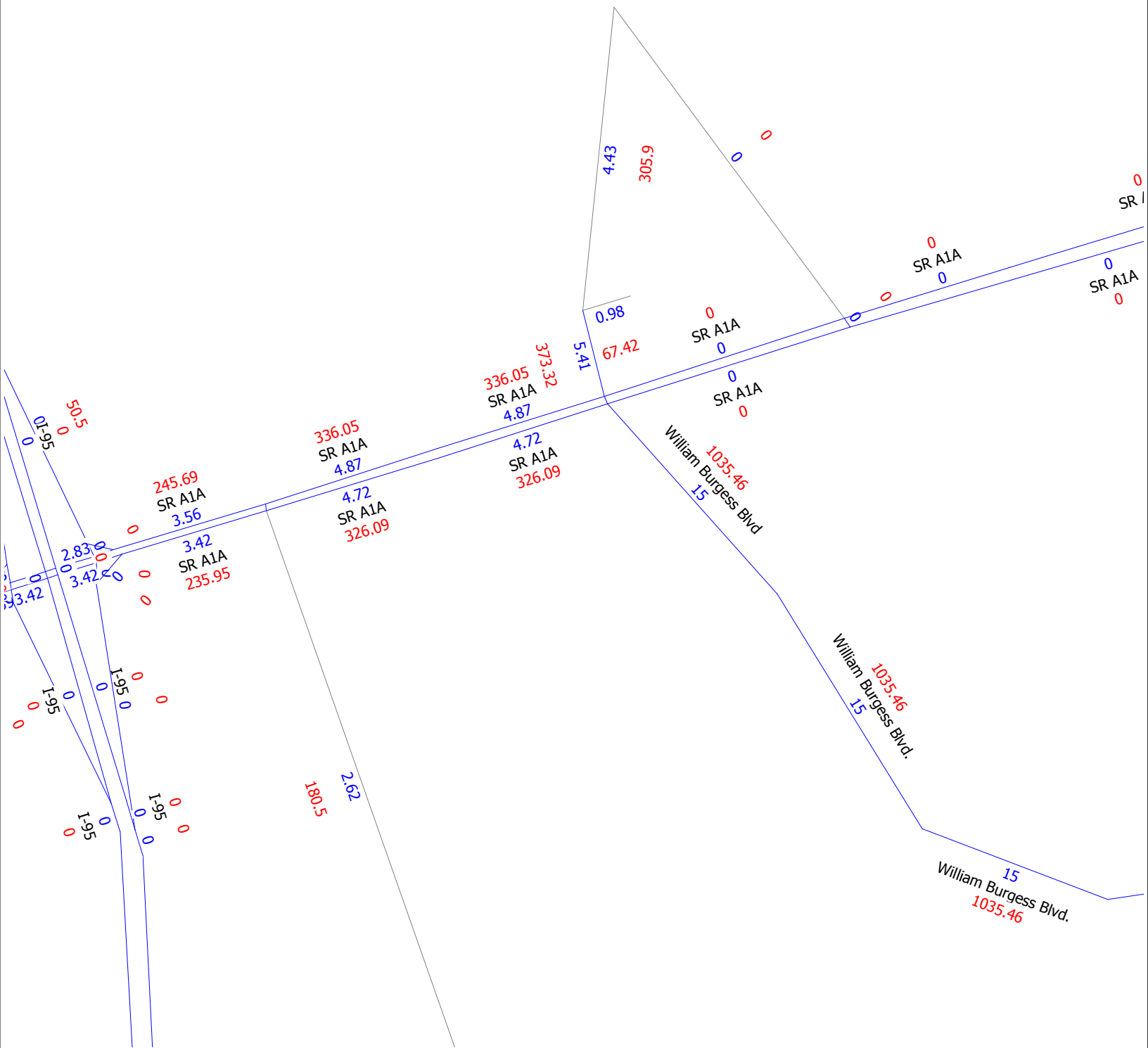


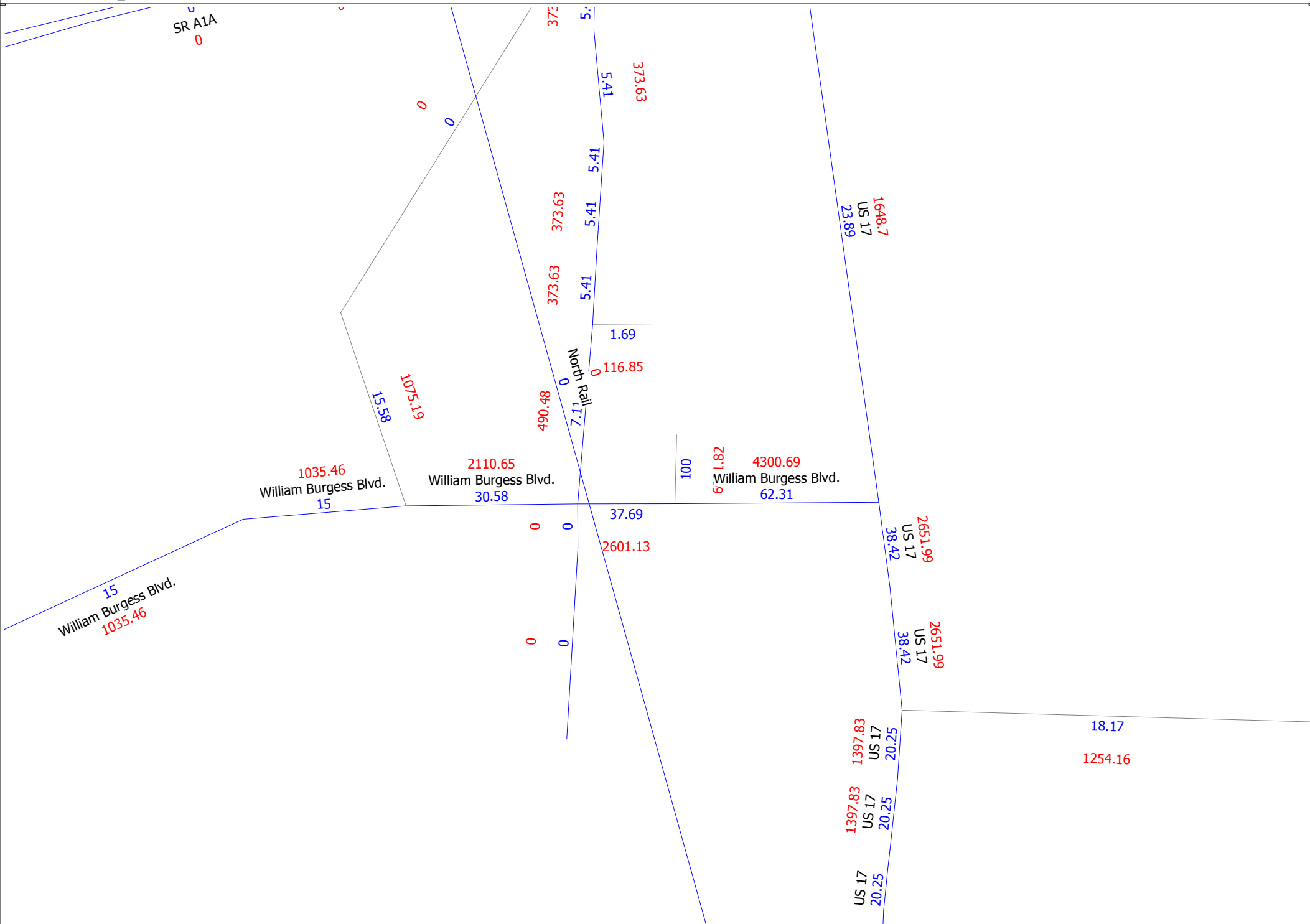


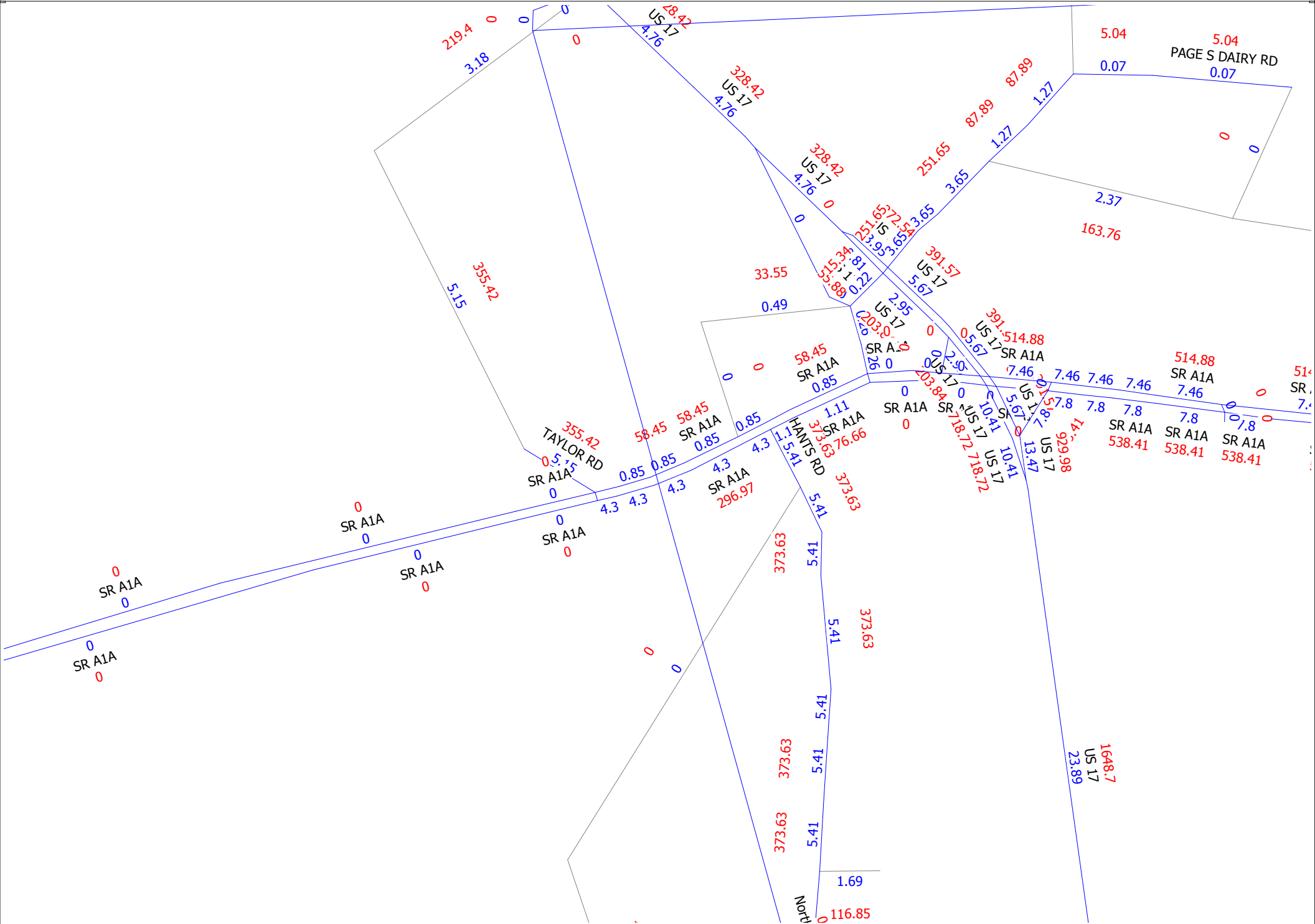


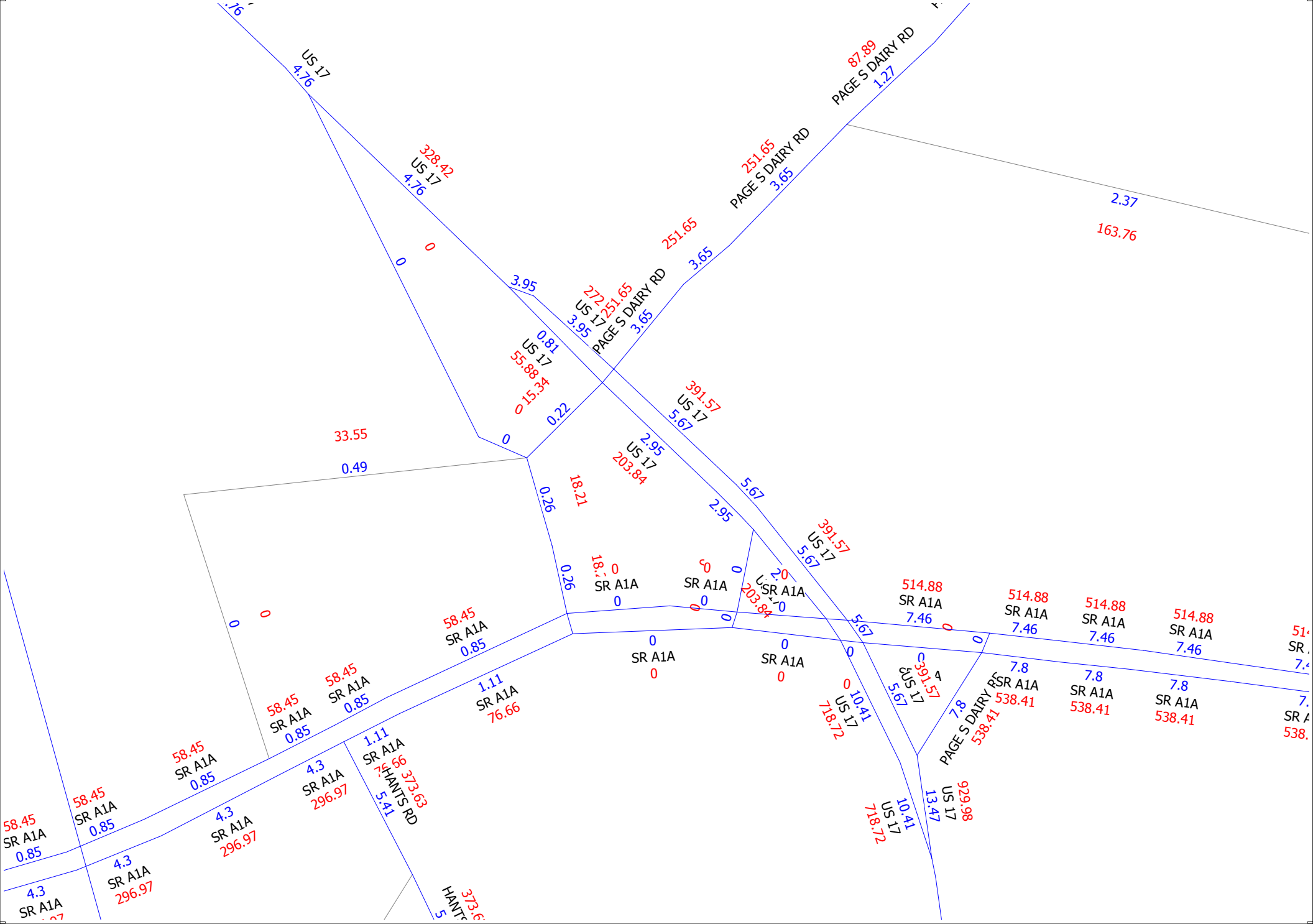
Attachment F

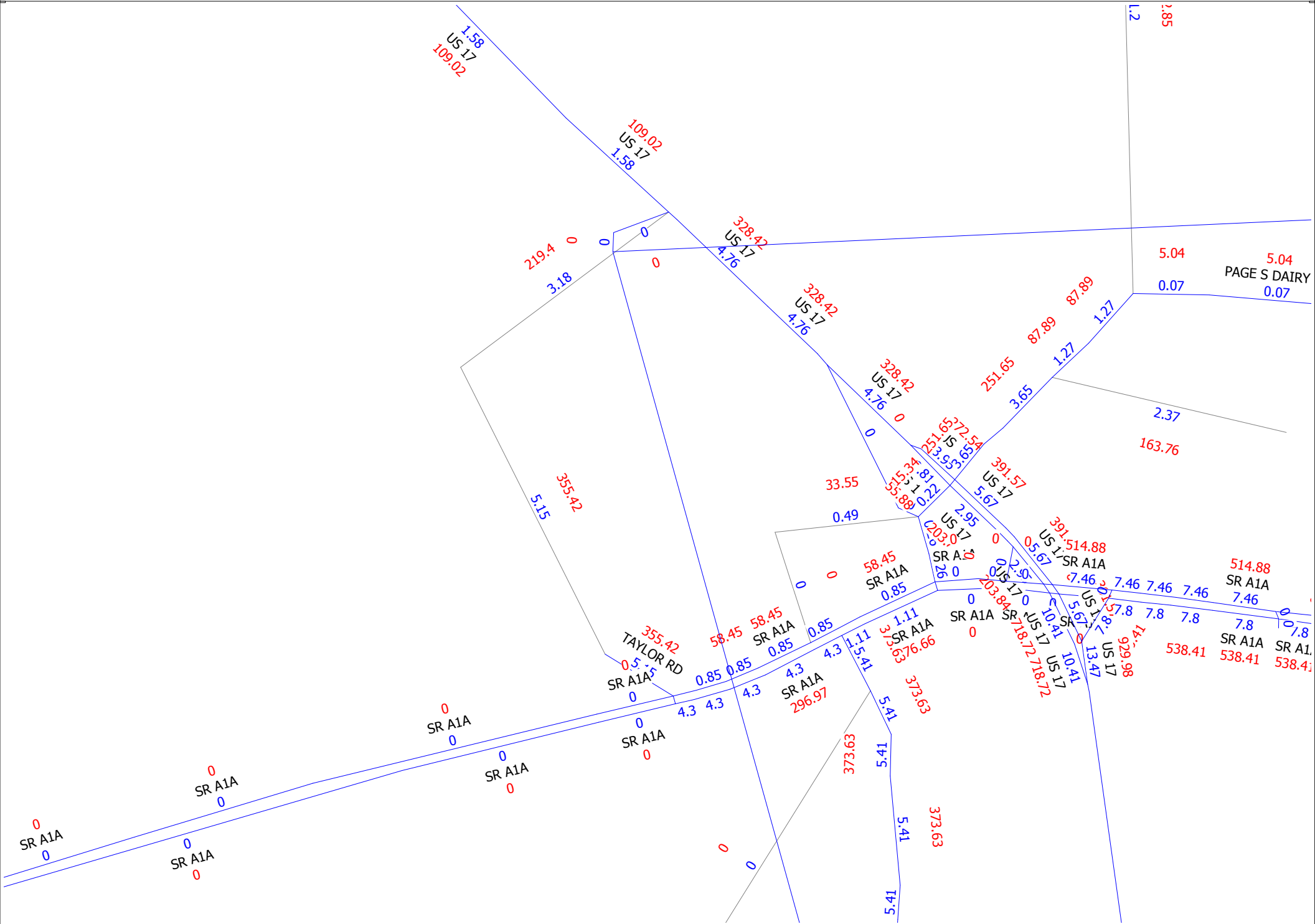
Travel Demand Model Plots – Phase 2 Development

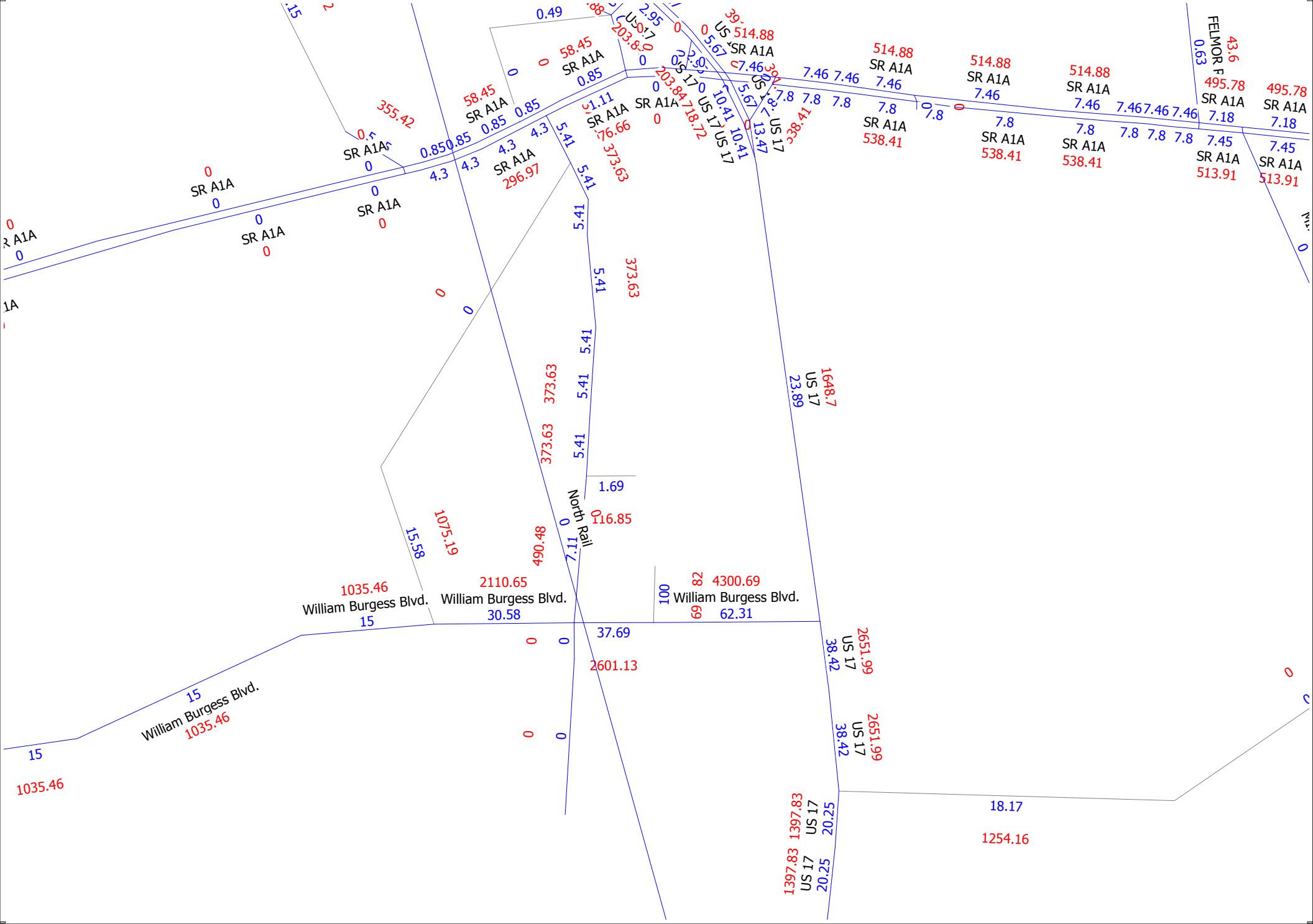












Attachment G

Historical AADT and Trends Analysis Plots

Florida Department of Transportation
 Transportation Statistics Office
 2016 Historical AADT Report

County: 74 - NASSAU

Site: 9133 - HARTS RD. .1 MI. S. OF SR 200

Year	AADT	Direction 1	Direction 2	*K Factor	D Factor	T Factor
----	-----	-----	-----	-----	-----	-----
2016	1600 R	0	0	9.00	56.00	5.90
2015	1500 T	0	0	9.00	55.30	3.50
2014	1500 S			9.00	55.10	4.30
2013	1500 F	0	0	9.00	56.90	4.10
2012	1500 C	N 0	S 0	9.00	54.70	4.50

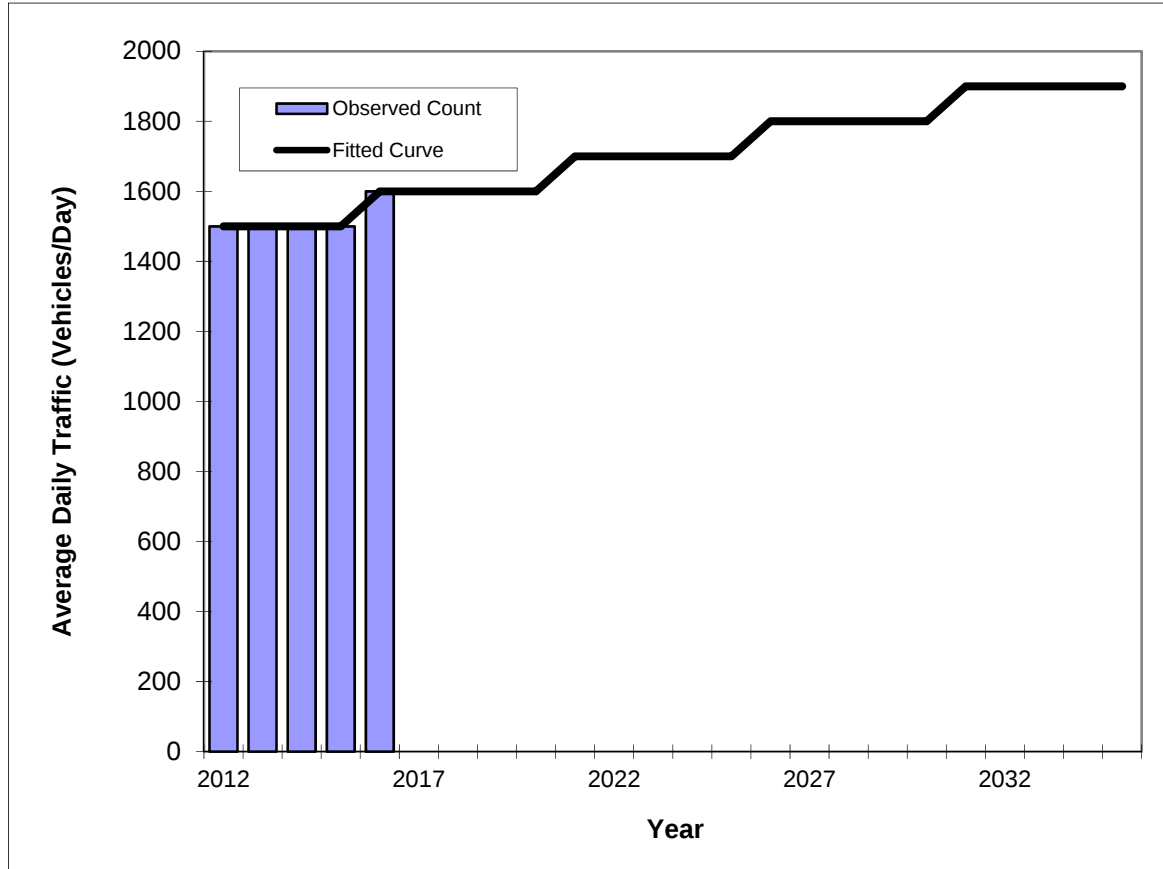
AADT Flags: C = Computed; E = Manual Estimate; F = First Year Estimate
 S = Second Year Estimate; T = Third Year Estimate; R = Fourth Year Estimate
 V = Fifth Year Estimate; 6 = Sixth Year Estimate; X = Unknown
 *K Factor: Starting with Year 2011 is StandardK, Prior years are K30 values

Traffic Trends - V2.0

HARTS ROAD --

PIN#	973215-1
Location	1

County:	Nassau (74)
Station #:	0
Highway:	HARTS ROAD



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	1500	1500
2013	1500	1500
2014	1500	1500
2015	1500	1500
2016	1600	1600
2018 Opening Year Trend		
2018	N/A	1600
2022 Mid-Year Trend		
2022	N/A	1700
2027 Design Year Trend		
2027	N/A	1800
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	20
Trend R-squared:	50.00%
Trend Annual Historic Growth Rate:	1.67%
Trend Growth Rate (2016 to Design Year):	1.14%
Printed:	28-Aug-17
Straight Line Growth Option	

*Axle-Adjusted

Florida Department of Transportation
 Transportation Statistics Office
 2016 Historical AADT Report

County: 74 - NASSAU

Site: 0011 - SR 5 .25 MI. S. OF SR 200

Year	AADT	Direction 1	Direction 2	*K Factor	D Factor	T Factor
----	-----	-----	-----	-----	-----	-----
2016	12500 C	N 6700	S 5800	9.00	56.00	4.40
2015	12300 C	N 6500	S 5800	9.00	55.30	3.20
2014	12000 C	N 6400	S 5600	9.00	55.10	3.90
2013	11200 C	N 6000	S 5200	9.00	56.90	6.10
2012	11300 C	N 6100	S 5200	9.00	54.70	3.60
2011	10800 C	N 5700	S 5100	9.00	55.80	4.10
2010	10600 C	N 5600	S 5000	12.04	58.48	4.20
2009	10800 C	N 5700	S 5100	11.44	57.12	3.70
2008	11800 C	N 6200	S 5600	10.08	59.26	3.60
2007	10800 C	N 5600	S 5200	11.16	57.15	3.80
2006	11900 C	N 6100	S 5800	11.41	58.30	4.60
2005	11200 C	N 5900	S 5300	11.70	59.30	10.60
2004	10200 C	N 5100	S 5100	11.50	58.30	10.60
2003	8600 C	N 4300	S 4300	11.00	57.60	8.70
2002	8200 C	N 4300	S 3900	11.90	60.00	5.70
2001	6900 C	N 3500	S 3400	12.70	59.10	5.60

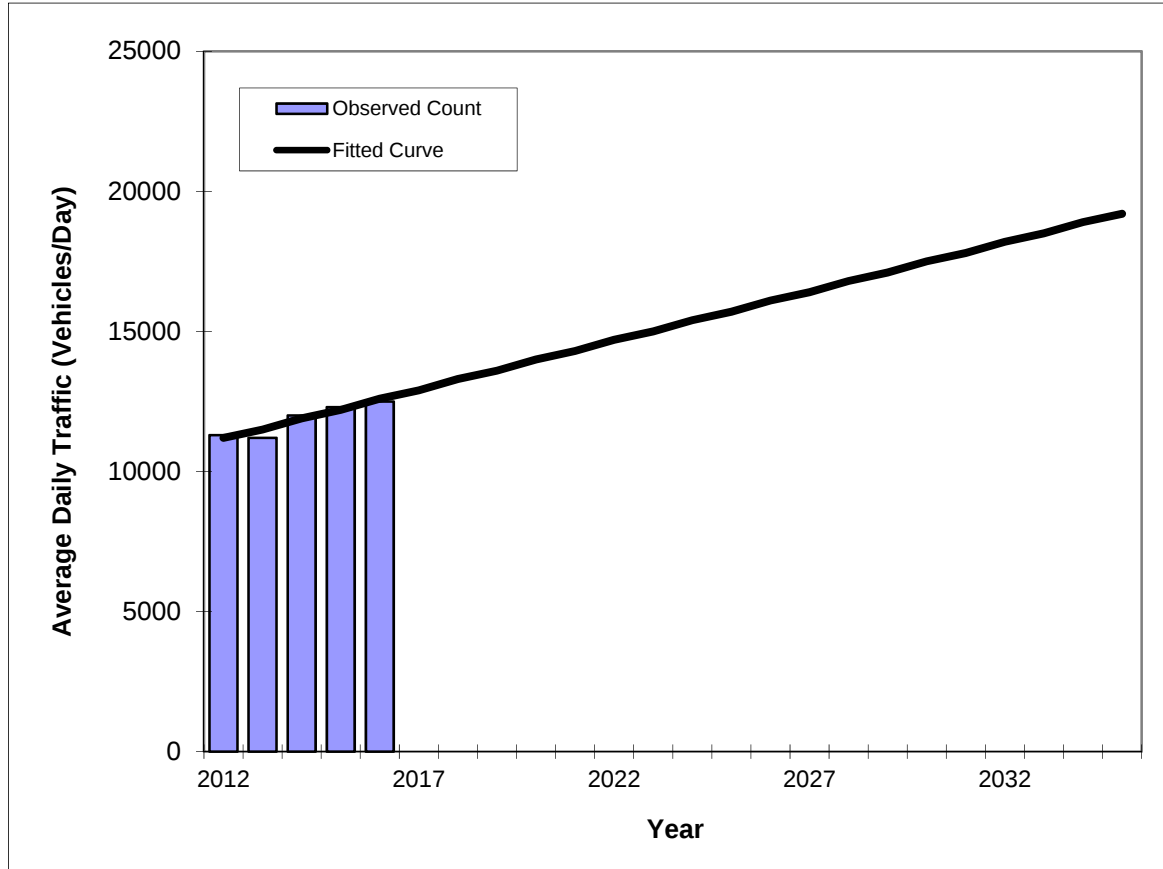
AADT Flags: C = Computed; E = Manual Estimate; F = First Year Estimate
 S = Second Year Estimate; T = Third Year Estimate; R = Fourth Year Estimate
 V = Fifth Year Estimate; 6 = Sixth Year Estimate; X = Unknown
 *K Factor: Starting with Year 2011 is StandardK, Prior years are K30 values

Traffic Trends - V2.0

US 17 --

PIN#	973215-1
Location	1

County:	Nassau (74)
Station #:	0
Highway:	US 17



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	11300	11200
2013	11200	11500
2014	12000	11900
2015	12300	12200
2016	12500	12600
2018 Opening Year Trend		
2018	N/A	13300
2022 Mid-Year Trend		
2022	N/A	14700
2027 Design Year Trend		
2027	N/A	16400
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	350
Trend R-squared:	89.29%
Trend Annual Historic Growth Rate:	3.13%
Trend Growth Rate (2016 to Design Year):	2.74%
Printed:	28-Aug-17
Straight Line Growth Option	

*Axle-Adjusted

Attachment H

Left Turn and Right Turn Lane Warrant Criteria

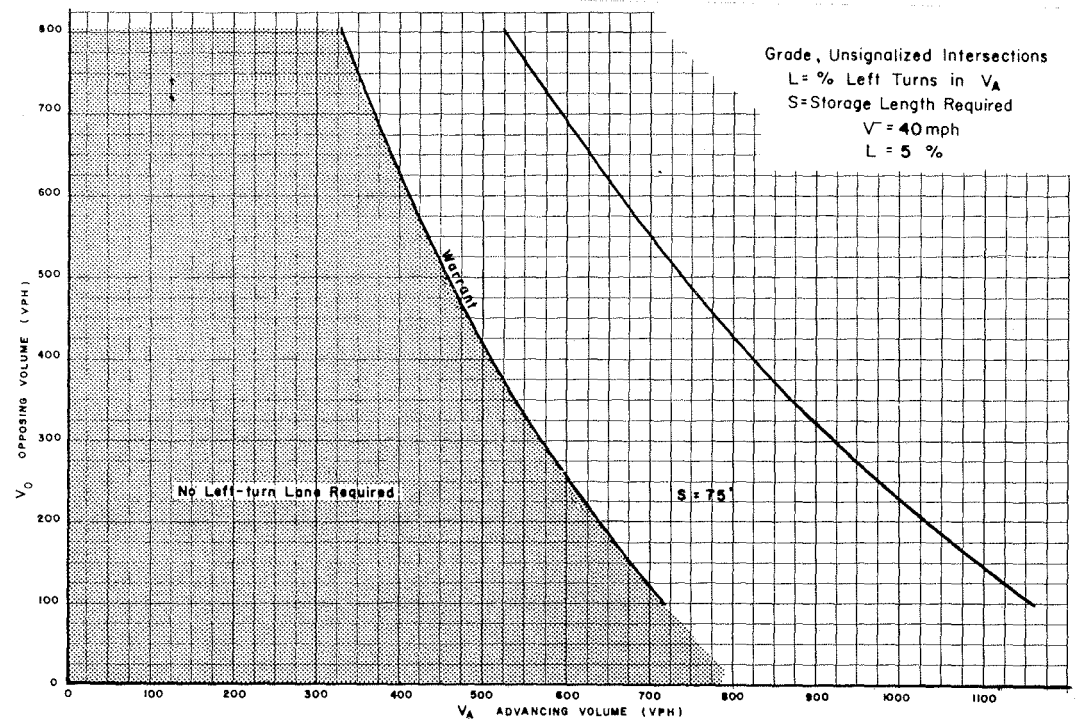


Figure 2. Warrant for left-turn storage lanes on two-lane highways.

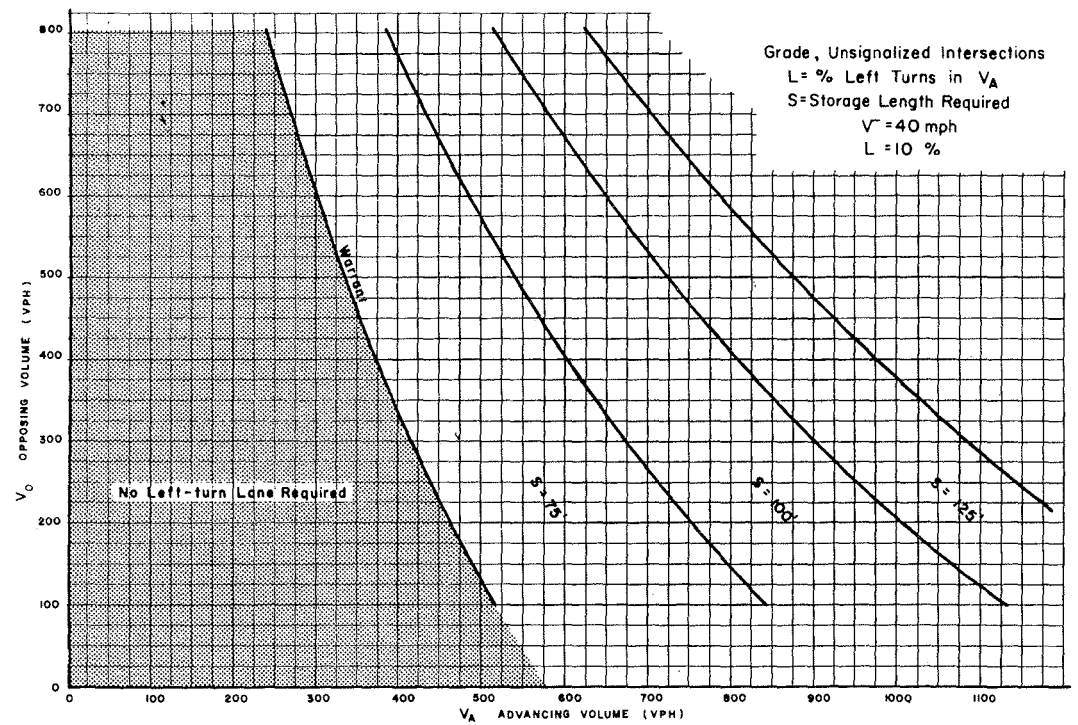


Figure 3. Warrant for left-turn storage lanes on two-lane highways.

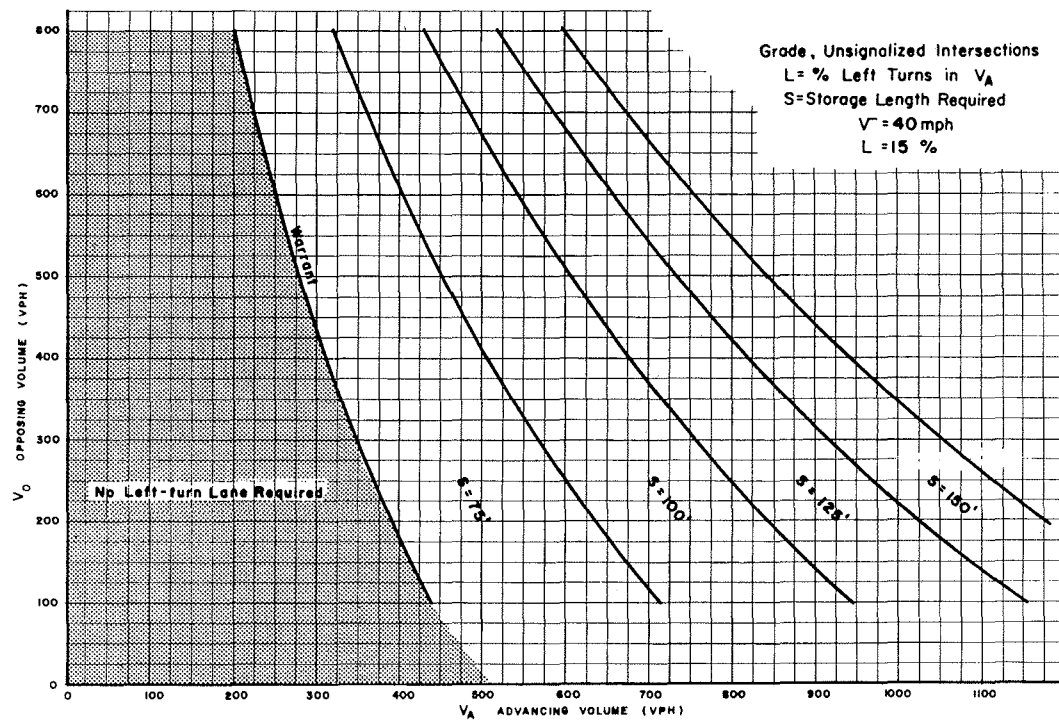


Figure 4. Warrant for left-turn storage lanes on two-lane highways.

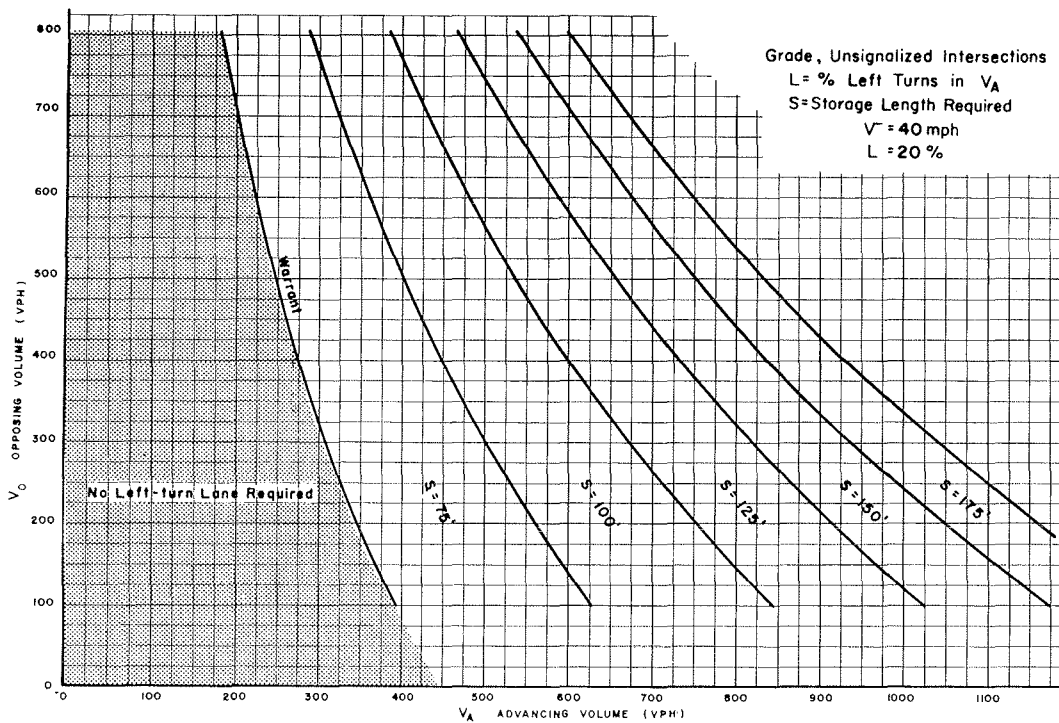


Figure 5. Warrant for left-turn storage lanes on two-lane highways.

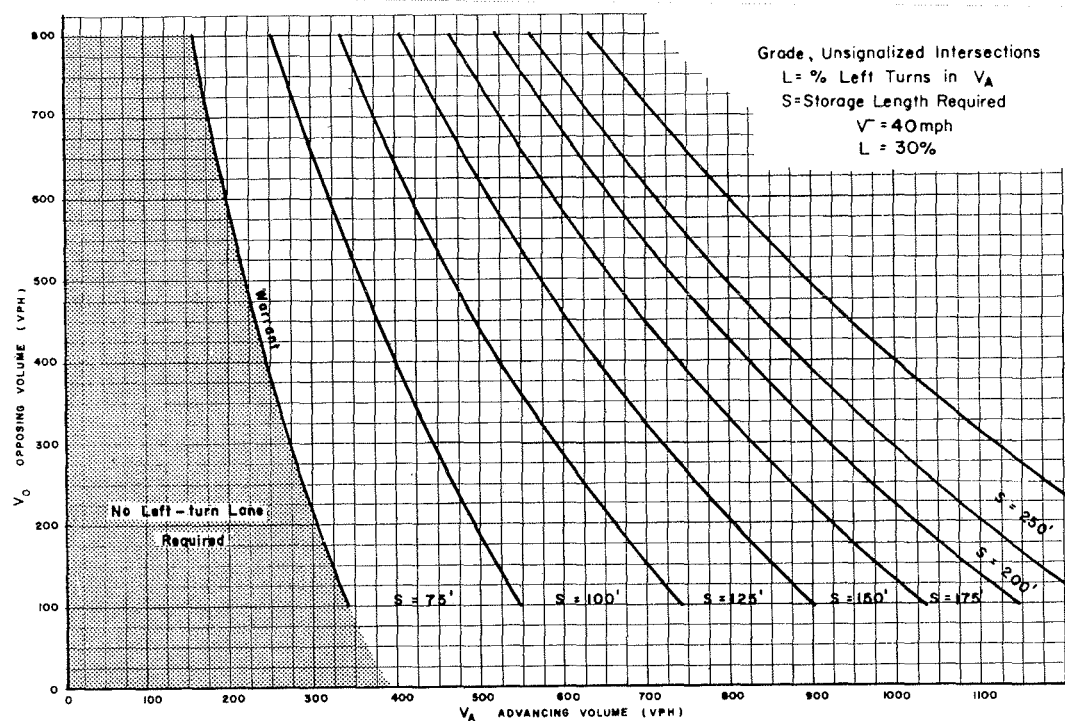


Figure 6. Warrant for left-turn storage lanes on two-lane highways.

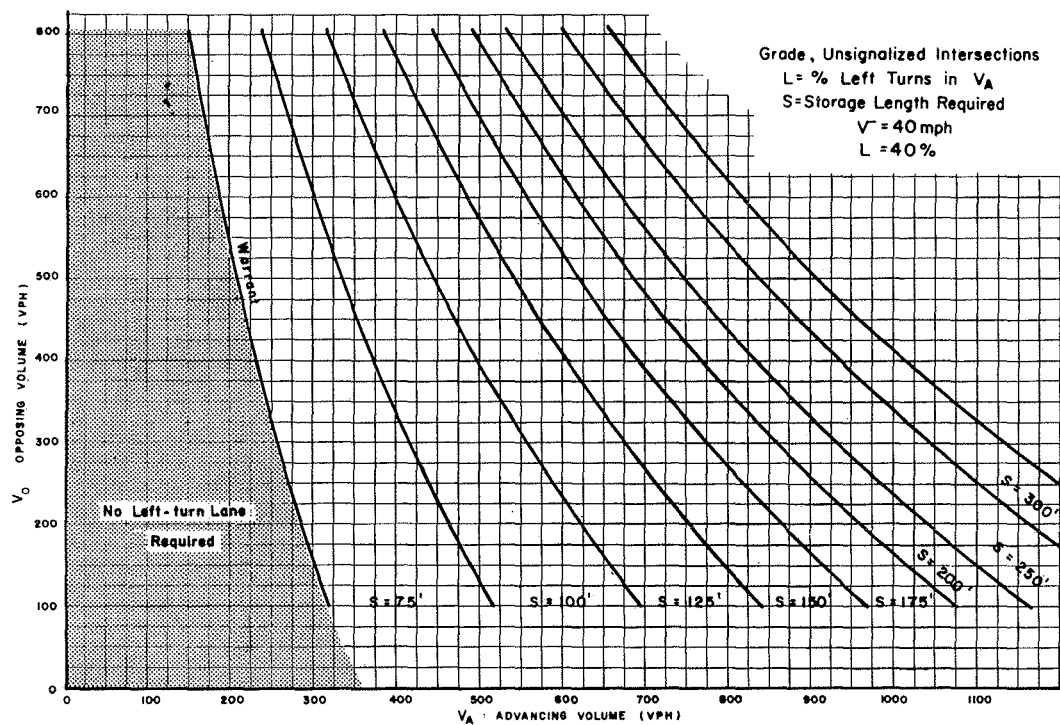


Figure 7. Warrant for left-turn storage lanes on two-lane highways.

VTrans has adopted an alternate right turn lane volume warrant⁸, which is based on the Harmelink left turn warrant (Figure 4). A limited probability of a right turn vehicle delaying a through vehicle is set to derive a design chart with curves for speeds of 30-60 mph on two-lane highways and one curve for four-lane highways. When approach volumes are 800 vehicles per hour, the warranting right turn volumes range from 25 vehicles at 60 mph to 90 at 30 mph for two-lane roadways and 60 right turn vehicles on four-lane roadways.

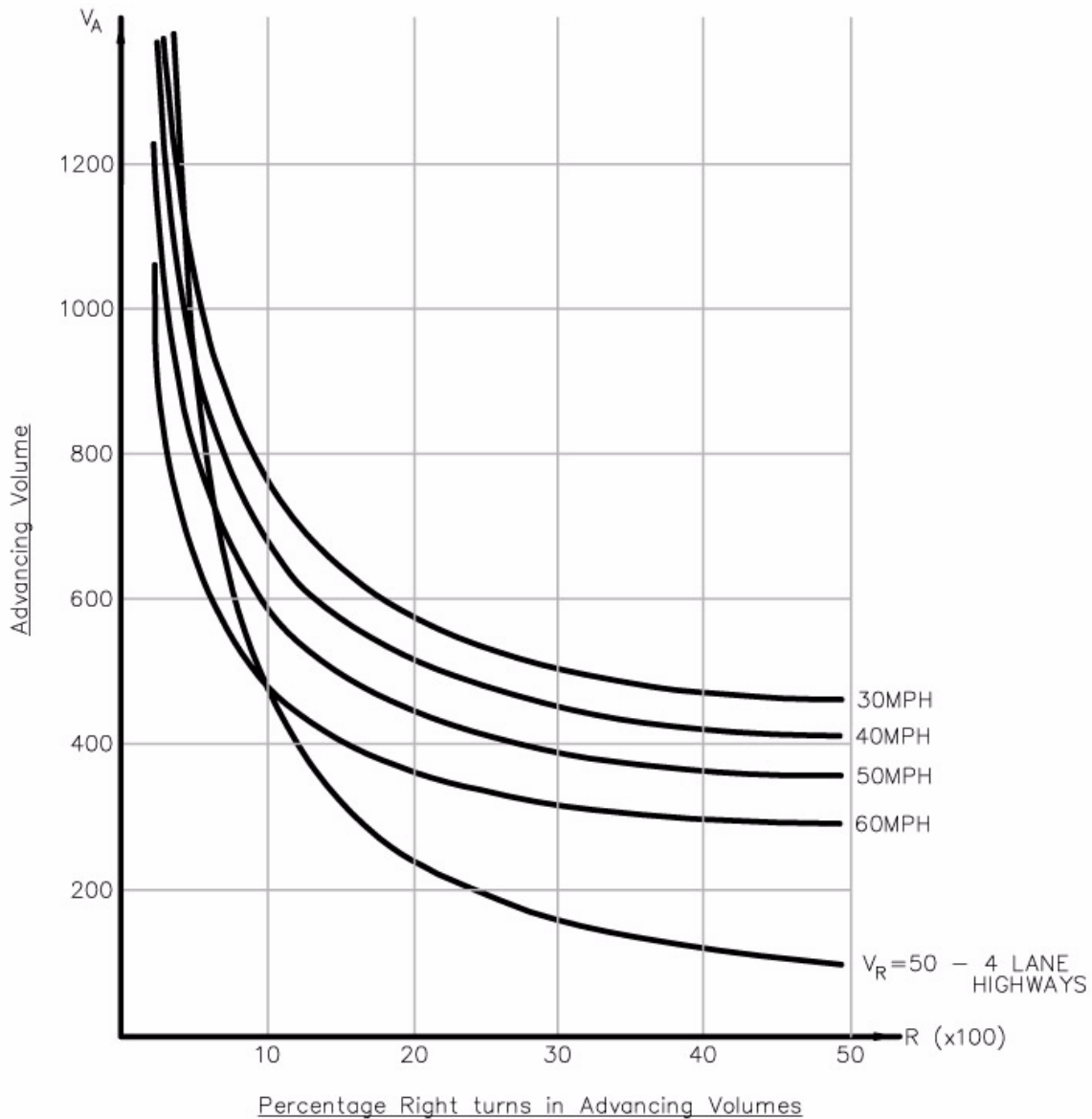


Figure 4: VTrans Right Turn Auxiliary Lanes Traffic Volume Warrants

The Cottrell right turn lane warrant model was prepared around 1981 after surveying state DOTs and determining that volume based warrants was used by the greater number of DOTs that used any consistent criteria. His research involved field data collection and previously established state DOT standards. It may be noted that during this same time period, the Virginia Transportation Research Council documented a similar pair of graphs with plots of thresholds for a full width lane and for taper treatment. These are presented in Figures 7 and 8.

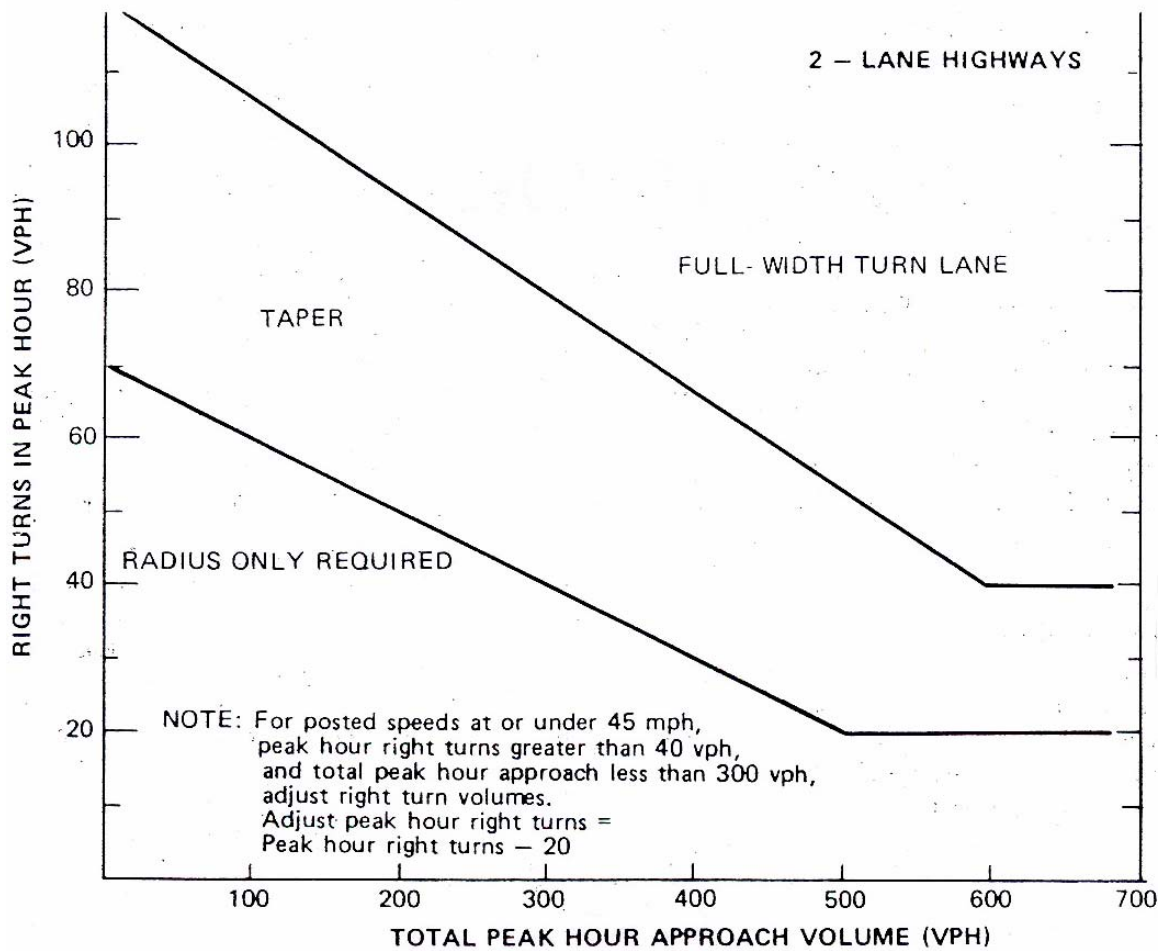


Figure 7: Cottrell's Two Lane Right Turn Treatment

Attachment I

Existing Conditions (Year
2017) HCM Worksheets

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	19	117	12	19	85	18	7	9	44	31	1	14
Future Vol, veh/h	19	117	12	19	85	18	7	9	44	31	1	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	6	9	6	2	0	0	0	5	0	0	17
Mvmt Flow	21	131	13	21	96	20	8	10	49	35	1	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	116	0	0	145	0	0	338	339	138	359	336	106
Stage 1	-	-	-	-	-	-	181	181	-	148	148	-
Stage 2	-	-	-	-	-	-	157	158	-	211	188	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.5	6.25	7.1	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4	3.345	3.5	4	3.453
Pot Cap-1 Maneuver	1485	-	-	1413	-	-	620	586	902	600	588	909
Stage 1	-	-	-	-	-	-	825	754	-	859	779	-
Stage 2	-	-	-	-	-	-	850	771	-	796	748	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1485	-	-	1413	-	-	594	568	902	546	570	909
Mov Cap-2 Maneuver	-	-	-	-	-	-	594	568	-	546	570	-
Stage 1	-	-	-	-	-	-	813	743	-	846	767	-
Stage 2	-	-	-	-	-	-	821	759	-	731	737	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	1.2	9.9	11.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	594	820	1485	-	-	1413	-	-	622
HCM Lane V/C Ratio	0.013	0.073	0.014	-	-	0.015	-	-	0.083
HCM Control Delay (s)	11.1	9.7	7.5	0	-	7.6	0	-	11.3
HCM Lane LOS	B	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0.2	0	-	-	0	-	-	0.3

Intersection

Int Delay, s/veh 3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	105	69	501	456	42
Future Vol, veh/h	60	105	69	501	456	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	320	0	325	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	3	2	7	6	0
Mvmt Flow	63	109	72	522	475	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1163	497	519	0	-	0
Stage 1	497	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Critical Hdwy	6.4	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.327	2.218	-	-	-
Pot Cap-1 Maneuver	217	571	1047	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	202	571	1047	-	-	-
Mov Cap-2 Maneuver	202	-	-	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	480	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.3	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1047	-	202	571	-	-
HCM Lane V/C Ratio	0.069	-	0.309	0.192	-	-
HCM Control Delay (s)	8.7	-	30.6	12.8	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.3	0.7	-	-

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	108	17	45	117	34	15	7	29	15	5	17
Future Vol, veh/h	25	108	17	45	117	34	15	7	29	15	5	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	1	1	1	0	0	0	0	0	0	0
Mvmt Flow	27	117	18	49	127	37	16	8	32	16	5	18
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	164	0	0	136	0	0	436	443	127	444	433	146
Stage 1	-	-	-	-	-	-	181	181	-	243	243	-
Stage 2	-	-	-	-	-	-	255	262	-	201	190	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1427	-	-	1454	-	-	534	512	929	528	519	906
Stage 1	-	-	-	-	-	-	825	754	-	765	708	-
Stage 2	-	-	-	-	-	-	754	695	-	805	747	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1427	-	-	1454	-	-	496	483	929	482	489	906
Mov Cap-2 Maneuver	-	-	-	-	-	-	496	483	-	482	489	-
Stage 1	-	-	-	-	-	-	808	738	-	749	682	-
Stage 2	-	-	-	-	-	-	706	669	-	754	731	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			1.7			10.6			11.3		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	496	788	1427	-	-	1454	-	-	616			
HCM Lane V/C Ratio	0.033	0.05	0.019	-	-	0.034	-	-	0.065			
HCM Control Delay (s)	12.5	9.8	7.6	0	-	7.6	0	-	11.3			
HCM Lane LOS	B	A	A	A	-	A	A	-	B			
HCM 95th %tile Q(veh)	0.1	0.2	0.1	-	-	0.1	-	-	0.2			

Intersection							
Int Delay, s/veh	3.6						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	53	100	101	646	561	88	
Future Vol, veh/h	53	100	101	646	561	88	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	320	0	325	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	96	96	96	96	96	96	
Heavy Vehicles, %	0	3	2	7	6	0	
Mvmt Flow	55	104	105	673	584	92	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	1513	630	676	0	-	0	
Stage 1	630	-	-	-	-	-	
Stage 2	883	-	-	-	-	-	
Critical Hdwy	6.4	6.23	4.12	-	-	-	
Critical Hdwy Stg 1	5.4	-	-	-	-	-	
Critical Hdwy Stg 2	5.4	-	-	-	-	-	
Follow-up Hdwy	3.5	3.327	2.218	-	-	-	
Pot Cap-1 Maneuver	133	480	915	-	-	-	
Stage 1	535	-	-	-	-	-	
Stage 2	408	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	118	480	915	-	-	-	
Mov Cap-2 Maneuver	118	-	-	-	-	-	
Stage 1	535	-	-	-	-	-	
Stage 2	361	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	30.3	1.3		0			
HCM LOS	D						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR	
Capacity (veh/h)	915	-	118	480	-	-	
HCM Lane V/C Ratio	0.115	-	0.468	0.217	-	-	
HCM Control Delay (s)	9.4	-	59.9	14.6	-	-	
HCM Lane LOS	A	-	F	B	-	-	
HCM 95th %tile Q(veh)	0.4	-	2.1	0.8	-	-	

Attachment J

Year 2022 Background
Conditions HCM
Worksheets

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Traffic Vol, veh/h	22	233	14	38	170	36	8	10	88	62	1	16
Future Vol, veh/h	22	233	14	38	170	36	8	10	88	62	1	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	6	9	6	2	0	0	0	5	0	0	17
Mvmt Flow	25	262	16	43	191	40	9	11	99	70	1	18
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	231	0	0	278	0	0	625	636	270	671	624	211
Stage 1	-	-	-	-	-	-	319	319	-	297	297	-
Stage 2	-	-	-	-	-	-	306	317	-	374	327	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.5	6.25	7.1	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4	3.345	3.5	4	3.453
Pot Cap-1 Maneuver	1349	-	-	1262	-	-	400	398	761	373	404	793
Stage 1	-	-	-	-	-	-	697	657	-	716	671	-
Stage 2	-	-	-	-	-	-	708	658	-	651	651	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1349	-	-	1262	-	-	372	374	761	303	380	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	372	374	-	303	380	-
Stage 1	-	-	-	-	-	-	682	643	-	700	645	-
Stage 2	-	-	-	-	-	-	664	632	-	544	637	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			1.2			11.5			18.9		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	372	688	1349	-	-	1262	-	-	347			
HCM Lane V/C Ratio	0.024	0.16	0.018	-	-	0.034	-	-	0.256			
HCM Control Delay (s)	14.9	11.2	7.7	0	-	8	0	-	18.9			
HCM Lane LOS	B	B	A	A	-	A	A	-	C			
HCM 95th %tile Q(veh)	0.1	0.6	0.1	-	-	0.1	-	-	1			

Intersection							
Int Delay, s/veh	23.8						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	139	244	152	569	518	92	
Future Vol, veh/h	139	244	152	569	518	92	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	320	0	325	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	96	96	96	96	96	96	
Heavy Vehicles, %	0	3	2	7	6	0	
Mvmt Flow	145	254	158	593	540	96	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	1497	588	635	0	-	0	
Stage 1	588	-	-	-	-	-	
Stage 2	909	-	-	-	-	-	
Critical Hdwy	6.4	6.23	4.12	-	-	-	
Critical Hdwy Stg 1	5.4	-	-	-	-	-	
Critical Hdwy Stg 2	5.4	-	-	-	-	-	
Follow-up Hdwy	3.5	3.327	2.218	-	-	-	
Pot Cap-1 Maneuver	~ 136	507	948	-	-	-	
Stage 1	559	-	-	-	-	-	
Stage 2	396	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	~ 113	507	948	-	-	-	
Mov Cap-2 Maneuver	~ 113	-	-	-	-	-	
Stage 1	559	-	-	-	-	-	
Stage 2	330	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	102.7	2		0			
HCM LOS	F						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR	
Capacity (veh/h)	948	-	113	507	-	-	
HCM Lane V/C Ratio	0.167	-	1.281	0.501	-	-	
HCM Control Delay (s)	9.6	-	249.7	19	-	-	
HCM Lane LOS	A	-	F	C	-	-	
HCM 95th %tile Q(veh)	0.6	-	9.6	2.8	-	-	
Notes							
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon							

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	198	19	83	215	62	17	8	53	28	6	19
Future Vol, veh/h	28	198	19	83	215	62	17	8	53	28	6	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	1	1	1	0	0	0	0	0	0	0
Mvmt Flow	30	215	21	90	234	67	18	9	58	30	7	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	301	0	0	236	0	0	747	768	226	768	745	267
Stage 1	-	-	-	-	-	-	286	286	-	448	448	-
Stage 2	-	-	-	-	-	-	461	482	-	320	297	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1272	-	-	1337	-	-	332	334	818	321	345	777
Stage 1	-	-	-	-	-	-	726	679	-	594	576	-
Stage 2	-	-	-	-	-	-	584	557	-	696	671	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1272	-	-	1337	-	-	292	298	818	268	308	777
Mov Cap-2 Maneuver	-	-	-	-	-	-	292	298	-	268	308	-
Stage 1	-	-	-	-	-	-	706	661	-	578	529	-
Stage 2	-	-	-	-	-	-	515	511	-	621	653	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	1.8	12.6	17
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	292	666	1272	-	-	1337	-	-	357
HCM Lane V/C Ratio	0.063	0.1	0.024	-	-	0.067	-	-	0.161
HCM Control Delay (s)	18.2	11	7.9	0	-	7.9	0	-	17
HCM Lane LOS	C	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.2	-	-	0.6

Intersection							
Int Delay, s/veh	29.1						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	97	182	192	733	637	168	
Future Vol, veh/h	97	182	192	733	637	168	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	320	0	325	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	96	96	96	96	96	96	
Heavy Vehicles, %	0	3	2	7	6	0	
Mvmt Flow	101	190	200	764	664	175	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	1915	751	839	0	-	0	
Stage 1	751	-	-	-	-	-	
Stage 2	1164	-	-	-	-	-	
Critical Hdwy	6.4	6.23	4.12	-	-	-	
Critical Hdwy Stg 1	5.4	-	-	-	-	-	
Critical Hdwy Stg 2	5.4	-	-	-	-	-	
Follow-up Hdwy	3.5	3.327	2.218	-	-	-	
Pot Cap-1 Maneuver	~ 75	409	796	-	-	-	
Stage 1	470	-	-	-	-	-	
Stage 2	300	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	~ 56	409	796	-	-	-	
Mov Cap-2 Maneuver	~ 56	-	-	-	-	-	
Stage 1	470	-	-	-	-	-	
Stage 2	225	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	202.2	2.3		0			
HCM LOS	F						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR	
Capacity (veh/h)	796	-	56	409	-	-	
HCM Lane V/C Ratio	0.251	-	1.804	0.464	-	-	
HCM Control Delay (s)	11	\$	541.7	21.2	-	-	
HCM Lane LOS	B	-	F	C	-	-	
HCM 95th %tile Q(veh)	1	-	9.6	2.4	-	-	
Notes							
-: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined		*: All major volume in platoon			

Intersection						
Intersection Delay, s/veh	10.4					
Intersection LOS	B					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	399		751		636	
Demand Flow Rate, veh/h	407		796		668	
Vehicles Circulating, veh/h	572		145		161	
Vehicles Exiting, veh/h	257		834		780	
Follow-Up Headway, s	3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	8.4		11.2		10.5	
Approach LOS	A		B		B	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	R
Assumed Moves	L	TR	L	TR	LT	R
RT Channelized						
Lane Util	0.356	0.644	0.202	0.798	0.856	0.144
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	145	262	161	635	572	96
Cap Entry Lane, veh/h	736	757	1014	1021	1001	1010
Entry HV Adj Factor	1.000	0.969	0.981	0.935	0.943	1.000
Flow Entry, veh/h	145	254	158	593	540	96
Cap Entry, veh/h	736	734	995	954	945	1010
V/C Ratio	0.197	0.346	0.159	0.622	0.571	0.095
Control Delay, s/veh	7.1	9.2	5.1	12.9	11.6	4.4
LOS	A	A	A	B	B	A
95th %tile Queue, veh	1	2	1	4	4	0

Intersection						
Intersection Delay, s/veh	14.5					
Intersection LOS	B					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	291		964		839	
Demand Flow Rate, veh/h	297		1021		879	
Vehicles Circulating, veh/h	704		101		204	
Vehicles Exiting, veh/h	379		900		918	
Follow-Up Headway, s	3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	8.3		16.1		14.8	
Approach LOS	A		C		B	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	R
Assumed Moves	L	TR	L	TR	LT	R
RT Channelized						
Lane Util	0.340	0.660	0.200	0.800	0.801	0.199
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	101	196	204	817	704	175
Cap Entry Lane, veh/h	666	690	1048	1053	970	980
Entry HV Adj Factor	1.000	0.969	0.980	0.935	0.943	1.000
Flow Entry, veh/h	101	190	200	764	664	175
Cap Entry, veh/h	666	669	1027	984	915	980
V/C Ratio	0.152	0.284	0.195	0.776	0.726	0.179
Control Delay, s/veh	7.1	8.9	5.3	18.9	17.2	5.4
LOS	A	A	A	C	C	A
95th %tile Queue, veh	1	1	1	8	7	1

Attachment K

Year 2027 Background
Conditions HCM
Worksheets

Intersection												
Int Delay, s/veh	9.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	350	15	57	254	54	9	12	132	93	1	18
Future Vol, veh/h	24	350	15	57	254	54	9	12	132	93	1	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	6	9	6	2	0	0	0	5	0	0	17
Mvmt Flow	27	393	17	64	285	61	10	13	148	104	1	20
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	346	0	0	410	0	0	910	930	402	981	908	316
Stage 1	-	-	-	-	-	-	456	456	-	444	444	-
Stage 2	-	-	-	-	-	-	454	474	-	537	464	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.5	6.25	7.1	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4	3.345	3.5	4	3.453
Pot Cap-1 Maneuver	1224	-	-	1128	-	-	258	269	642	231	277	691
Stage 1	-	-	-	-	-	-	588	572	-	597	579	-
Stage 2	-	-	-	-	-	-	589	561	-	532	567	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1224	-	-	1128	-	-	231	243	642	157	250	691
Mov Cap-2 Maneuver	-	-	-	-	-	-	231	243	-	157	250	-
Stage 1	-	-	-	-	-	-	571	555	-	580	538	-
Stage 2	-	-	-	-	-	-	530	521	-	388	551	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			1.3			14.3			61.6		
HCM LOS							B			F		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	231	565	1224	-	-	1128	-	-	180			
HCM Lane V/C Ratio	0.044	0.286	0.022	-	-	0.057	-	-	0.699			
HCM Control Delay (s)	21.3	13.9	8	0	-	8.4	0	-	61.6			
HCM Lane LOS	C	B	A	A	-	A	A	-	F			
HCM 95th %tile Q(veh)	0.1	1.2	0.1	-	-	0.2	-	-	4.3			

Intersection						
Int Delay, s/veh	130.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	209	365	227	645	587	138
Future Vol, veh/h	209	365	227	645	587	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	320	0	325	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	3	2	7	6	0
Mvmt Flow	218	380	236	672	611	144
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1828	683	755	0	-	0
Stage 1	683	-	-	-	-	-
Stage 2	1145	-	-	-	-	-
Critical Hdwy	6.4	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.327	2.218	-	-	-
Pot Cap-1 Maneuver	~ 85	448	855	-	-	-
Stage 1	505	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 62	448	855	-	-	-
Mov Cap-2 Maneuver	~ 62	-	-	-	-	-
Stage 1	505	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	\$ 490.1		2.8		0	
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	855	-	62	448	-	-
HCM Lane V/C Ratio	0.277	-	3.511	0.849	-	-
HCM Control Delay (s)	10.8	\$ 1269.3	44	-	-	-
HCM Lane LOS	B	-	F	E	-	-
HCM 95th %tile Q(veh)	1.1	-	23	8.4	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Intersection

Int Delay, s/veh 5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	289	22	120	313	91	19	9	78	40	6	22
Future Vol, veh/h	32	289	22	120	313	91	19	9	78	40	6	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	1	1	1	0	0	0	0	0	0	0
Mvmt Flow	35	314	24	130	340	99	21	10	85	43	7	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	439	0	0	338	0	0	1062	1096	326	1094	1059	390
Stage 1	-	-	-	-	-	-	396	396	-	651	651	-
Stage 2	-	-	-	-	-	-	666	700	-	443	408	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1132	-	-	1227	-	-	203	215	720	193	226	663
Stage 1	-	-	-	-	-	-	633	607	-	461	468	-
Stage 2	-	-	-	-	-	-	452	444	-	598	600	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1132	-	-	1227	-	-	165	177	720	141	187	663
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	177	-	141	187	-
Stage 1	-	-	-	-	-	-	609	584	-	443	402	-
Stage 2	-	-	-	-	-	-	368	381	-	499	577	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1.9	16	34.3
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	165	547	1132	-	-	1227	-	-	195
HCM Lane V/C Ratio	0.125	0.173	0.031	-	-	0.106	-	-	0.379
HCM Control Delay (s)	29.9	13	8.3	0	-	8.3	0	-	34.3
HCM Lane LOS	D	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.4	0.6	0.1	-	-	0.4	-	-	1.7

Intersection							
Int Delay, s/veh	155.6						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	141	266	280	831	722	244	
Future Vol, veh/h	141	266	280	831	722	244	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	320	0	325	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	96	96	96	96	96	96	
Heavy Vehicles, %	0	3	2	7	6	0	
Mvmt Flow	147	277	292	866	752	254	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	2328	879	1006	0	-	0	
Stage 1	879	-	-	-	-	-	
Stage 2	1449	-	-	-	-	-	
Critical Hdwy	6.4	6.23	4.12	-	-	-	
Critical Hdwy Stg 1	5.4	-	-	-	-	-	
Critical Hdwy Stg 2	5.4	-	-	-	-	-	
Follow-up Hdwy	3.5	3.327	2.218	-	-	-	
Pot Cap-1 Maneuver	~ 41	345	689	-	-	-	
Stage 1	409	-	-	-	-	-	
Stage 2	218	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	~ 24	345	689	-	-	-	
Mov Cap-2 Maneuver	~ 24	-	-	-	-	-	
Stage 1	409	-	-	-	-	-	
Stage 2	~ 126	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	\$ 940.4	3.5		0			
HCM LOS	F						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR	
Capacity (veh/h)	689	-	24	345	-	-	
HCM Lane V/C Ratio	0.423	-	6.12	0.803	-	-	
HCM Control Delay (s)	14	\$ 2626.1	46.9	-	-	-	
HCM Lane LOS	B	-	F	E	-	-	
HCM 95th %tile Q(veh)	2.1	-	18.4	6.8	-	-	
Notes							
-: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined		*: All major volume in platoon			

HCM 2010 TWSC
1: Harts Road & William Burgess Blvd.

Year 2027 Background Conditions - Improved

Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	24	350	15	57	254	54	9	12	132	93	1	18
Future Vol, veh/h	24	350	15	57	254	54	9	12	132	93	1	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	6	9	6	2	0	0	0	5	0	0	17
Mvmt Flow	27	393	17	64	285	61	10	13	148	104	1	20
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	346	0	0	410	0	0	910	930	402	981	908	316
Stage 1	-	-	-	-	-	-	456	456	-	444	444	-
Stage 2	-	-	-	-	-	-	454	474	-	537	464	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.5	6.25	7.1	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4	3.345	3.5	4	3.453
Pot Cap-1 Maneuver	1224	-	-	1128	-	-	258	269	642	231	277	691
Stage 1	-	-	-	-	-	-	588	572	-	597	579	-
Stage 2	-	-	-	-	-	-	589	561	-	532	567	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1224	-	-	1128	-	-	231	243	642	157	250	691
Mov Cap-2 Maneuver	-	-	-	-	-	-	231	243	-	157	250	-
Stage 1	-	-	-	-	-	-	571	555	-	580	538	-
Stage 2	-	-	-	-	-	-	530	521	-	388	551	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			1.3			14.3			55.5		
HCM LOS							B			F		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	231	565	1224	-	-	1128	-	-	157	632		
HCM Lane V/C Ratio	0.044	0.286	0.022	-	-	0.057	-	-	0.666	0.034		
HCM Control Delay (s)	21.3	13.9	8	0	-	8.4	0	-	64.6	10.9		
HCM Lane LOS	C	B	A	A	-	A	A	-	F	B		
HCM 95th %tile Q(veh)	0.1	1.2	0.1	-	-	0.2	-	-	3.8	0.1		

Intersection						
Intersection Delay, s/veh	13.9					
Intersection LOS	B					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	598		908		755	
Demand Flow Rate, veh/h	609		960		792	
Vehicles Circulating, veh/h	648		218		241	
Vehicles Exiting, veh/h	385		1039		937	
Follow-Up Headway, s	3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	12.1		15.1		13.8	
Approach LOS	B		C		B	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	R
Assumed Moves	L	TR	L	TR	LT	R
RT Channelized						
Lane Util	0.358	0.642	0.251	0.749	0.818	0.182
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	218	391	241	719	648	144
Cap Entry Lane, veh/h	695	718	960	970	943	955
Entry HV Adj Factor	1.000	0.972	0.979	0.935	0.943	1.000
Flow Entry, veh/h	218	380	236	672	611	144
Cap Entry, veh/h	695	698	940	907	890	955
V/C Ratio	0.314	0.545	0.251	0.741	0.687	0.151
Control Delay, s/veh	9.1	13.9	6.4	18.1	15.9	5.2
LOS	A	B	A	C	C	A
95th %tile Queue, veh	1	3	1	7	6	1

HCM 2010 TWSC
1: Harts Road & William Burgess Blvd.

Year 2027 Background Conditions - Improved

Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	289	22	120	313	91	19	9	78	40	6	22
Future Vol, veh/h	32	289	22	120	313	91	19	9	78	40	6	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	1	1	1	0	0	0	0	0	0	0
Mvmt Flow	35	314	24	130	340	99	21	10	85	43	7	24
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	439	0	0	338	0	0	1062	1096	326	1094	1059	390
Stage 1	-	-	-	-	-	-	396	396	-	651	651	-
Stage 2	-	-	-	-	-	-	666	700	-	443	408	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1132	-	-	1227	-	-	203	215	720	193	226	663
Stage 1	-	-	-	-	-	-	633	607	-	461	468	-
Stage 2	-	-	-	-	-	-	452	444	-	598	600	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1132	-	-	1227	-	-	165	177	720	141	187	663
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	177	-	141	187	-
Stage 1	-	-	-	-	-	-	609	584	-	443	402	-
Stage 2	-	-	-	-	-	-	368	381	-	499	577	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			1.9			16			30.2		
HCM LOS							C			D		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	165	547	1132	-	-	1227	-	-	141	429		
HCM Lane V/C Ratio	0.125	0.173	0.031	-	-	0.106	-	-	0.308	0.071		
HCM Control Delay (s)	29.9	13	8.3	0	-	8.3	0	-	41.5	14		
HCM Lane LOS	D	B	A	A	-	A	A	-	E	B		
HCM 95th %tile Q(veh)	0.4	0.6	0.1	-	-	0.4	-	-	1.2	0.2		

Intersection						
Intersection Delay, s/veh	23.0					
Intersection LOS	C					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	424		1158		1006	
Demand Flow Rate, veh/h	432		1225		1051	
Vehicles Circulating, veh/h	797		147		298	
Vehicles Exiting, veh/h	552		1082		1074	
Follow-Up Headway, s	3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	11.1		25.8		24.8	
Approach LOS	B		D		C	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	R
Assumed Moves	L	TR	L	TR	LT	R
RT Channelized						
Lane Util	0.340	0.660	0.243	0.757	0.758	0.242
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	147	285	298	927	797	254
Cap Entry Lane, veh/h	622	647	1012	1019	904	917
Entry HV Adj Factor	1.000	0.972	0.980	0.935	0.943	1.000
Flow Entry, veh/h	147	277	292	866	752	254
Cap Entry, veh/h	622	629	992	953	852	917
V/C Ratio	0.237	0.441	0.294	0.909	0.882	0.277
Control Delay, s/veh	8.8	12.4	6.6	32.2	30.9	6.8
LOS	A	B	A	D	D	A
95th %tile Queue, veh	1	2	1	13	12	1

Attachment L

Phase 1 (Year 2022) Build-Out Conditions HCM Worksheets

HCM 2010 TWSC
6: Harts Road & Northern Project Driveway

Year 2022 Build-Out Conditions - Improved

Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 				
Traffic Vol, veh/h	7	0	7	95	0	28	7	65	32	9	52	7
Future Vol, veh/h	7	0	7	95	0	28	7	65	32	9	52	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	155	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	8	103	0	30	8	71	35	10	57	8
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	181	166	60	170	170	71	64	0	0	71	0	0
Stage 1	80	80	-	86	86	-	-	-	-	-	-	-
Stage 2	101	86	-	84	84	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	781	727	1005	794	723	991	1538	-	-	1529	-	-
Stage 1	929	828	-	922	824	-	-	-	-	-	-	-
Stage 2	905	824	-	924	825	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	750	718	1005	780	714	991	1538	-	-	1529	-	-
Mov Cap-2 Maneuver	750	718	-	780	714	-	-	-	-	-	-	-
Stage 1	923	822	-	916	819	-	-	-	-	-	-	-
Stage 2	872	819	-	911	819	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.3			10.2			0.5			1		
HCM LOS	A			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1538	-	-	859	820	1529	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.018	0.163	0.006	-	-				
HCM Control Delay (s)	7.4	0	-	9.3	10.2	7.4	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0	-	-				

HCM 2010 TWSC
9: Harts Road & Middle Project Driveway

Year 2022 Build-Out Conditions - Improved

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	9	92	11	3	150
Future Vol, veh/h	32	9	92	11	3	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	10	100	12	3	163
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	276	106	0	0	112	0
Stage 1	106	-	-	-	-	-
Stage 2	170	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	714	948	-	-	1478	-
Stage 1	918	-	-	-	-	-
Stage 2	860	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	713	948	-	-	1478	-
Mov Cap-2 Maneuver	713	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.1		0		0.1	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 754	1478	-		
HCM Lane V/C Ratio	-	- 0.059	0.002	-		
HCM Control Delay (s)	-	- 10.1	7.4	0		
HCM Lane LOS	-	- B	A	A		
HCM 95th %tile Q(veh)	-	- 0.2	0	-		

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	9	94	11	3	178
Future Vol, veh/h	32	9	94	11	3	178
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	10	102	12	3	193
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	308	108	0	0	114	0
Stage 1	108	-	-	-	-	-
Stage 2	200	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	684	946	-	-	1475	-
Stage 1	916	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	683	946	-	-	1475	-
Mov Cap-2 Maneuver	683	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.3		0		0.1	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 727	1475	-		
HCM Lane V/C Ratio	-	- 0.061	0.002	-		
HCM Control Delay (s)	-	- 10.3	7.4	0		
HCM Lane LOS	-	- B	A	A		
HCM 95th %tile Q(veh)	-	- 0.2	0	-		

Intersection												
Int Delay, s/veh	13.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Traffic Vol, veh/h	45	233	14	38	170	67	8	10	88	152	1	84
Future Vol, veh/h	45	233	14	38	170	67	8	10	88	152	1	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	6	9	6	2	0	0	0	5	0	0	17
Mvmt Flow	51	262	16	43	191	75	9	11	99	171	1	94
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	266	0	0	278	0	0	733	723	270	740	693	229
Stage 1	-	-	-	-	-	-	371	371	-	314	314	-
Stage 2	-	-	-	-	-	-	362	352	-	426	379	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.5	6.25	7.1	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4	3.345	3.5	4	3.453
Pot Cap-1 Maneuver	1310	-	-	1262	-	-	339	355	761	335	369	774
Stage 1	-	-	-	-	-	-	653	623	-	701	660	-
Stage 2	-	-	-	-	-	-	661	635	-	610	618	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1310	-	-	1262	-	-	278	325	761	266	338	774
Mov Cap-2 Maneuver	-	-	-	-	-	-	278	325	-	266	338	-
Stage 1	-	-	-	-	-	-	623	594	-	669	634	-
Stage 2	-	-	-	-	-	-	556	610	-	497	590	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.2			1.1			11.9			42.6		
HCM LOS							B			E		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	278	669	1310	-	-	1262	-	-	347			
HCM Lane V/C Ratio	0.032	0.165	0.039	-	-	0.034	-	-	0.767			
HCM Control Delay (s)	18.4	11.4	7.9	0	-	8	0	-	42.6			
HCM Lane LOS	C	B	A	A	-	A	A	-	E			
HCM 95th %tile Q(veh)	0.1	0.6	0.1	-	-	0.1	-	-	6.2			

Intersection						
Intersection Delay, s/veh	10.8					
Intersection LOS	B					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	493		775		644	
Demand Flow Rate, veh/h	503		821		676	
Vehicles Circulating, veh/h	572		169		186	
Vehicles Exiting, veh/h	290		906		804	
Follow-Up Headway, s	3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	9.7		11.5		10.8	
Approach LOS	A		B		B	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	R
Assumed Moves	L	TR	L	TR	LT	R
RT Channelized						
Lane Util	0.336	0.664	0.227	0.773	0.846	0.154
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	169	334	186	635	572	104
Cap Entry Lane, veh/h	736	757	995	1004	983	992
Entry HV Adj Factor	1.000	0.970	0.978	0.935	0.943	1.000
Flow Entry, veh/h	169	324	182	593	540	104
Cap Entry, veh/h	736	734	974	938	927	992
V/C Ratio	0.230	0.441	0.187	0.633	0.582	0.105
Control Delay, s/veh	7.5	10.9	5.5	13.4	12.1	4.6
LOS	A	B	A	B	B	A
95th %tile Queue, veh	1	2	1	5	4	0

HCM 2010 TWSC
6: Harts Road & Northern Residential Driveway

Year 2022 Build-Out Conditions - Improved
Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	0	7	61	0	18	7	87	104	31	56	7
Future Vol, veh/h	7	0	7	61	0	18	7	87	104	31	56	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	155	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	8	66	0	20	8	95	113	34	61	8
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	252	242	65	246	246	95	68	0	0	95	0	0
Stage 1	132	132	-	110	110	-	-	-	-	-	-	-
Stage 2	120	110	-	136	136	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	701	660	999	708	656	962	1533	-	-	1499	-	-
Stage 1	871	787	-	895	804	-	-	-	-	-	-	-
Stage 2	884	804	-	867	784	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	671	640	999	687	636	962	1533	-	-	1499	-	-
Mov Cap-2 Maneuver	671	640	-	687	636	-	-	-	-	-	-	-
Stage 1	866	768	-	890	799	-	-	-	-	-	-	-
Stage 2	861	799	-	840	765	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.6			10.5			0.3			2.5		
HCM LOS	A			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1533	-	-	803	735	1499	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.019	0.117	0.022	-	-				
HCM Control Delay (s)	7.4	0	-	9.6	10.5	7.5	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.1	-	-				

HCM 2010 TWSC
9: Harts Road & Middle Residential Driveway

Year 2022 Build-Out Conditions - Improved

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	6	184	35	10	113
Future Vol, veh/h	20	6	184	35	10	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	7	200	38	11	123
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	364	219	0	0	238	0
Stage 1	219	-	-	-	-	-
Stage 2	145	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	635	821	-	-	1329	-
Stage 1	817	-	-	-	-	-
Stage 2	882	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	629	821	-	-	1329	-
Mov Cap-2 Maneuver	629	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	874	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.7		0		0.6	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 665	1329	-		
HCM Lane V/C Ratio	-	- 0.042	0.008	-		
HCM Control Delay (s)	-	- 10.7	7.7	0		
HCM Lane LOS	-	- B	A	A		
HCM 95th %tile Q(veh)	-	- 0.1	0	-		

HCM 2010 TWSC
15: Harts Road & Southern Residential Driveway

Year 2022 Build-Out Conditions - Improved

Timing Plan: PM Peak

Intersection

Int Delay, s/veh 0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	6	213	35	10	122
Future Vol, veh/h	20	6	213	35	10	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	7	232	38	11	133

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	405	251	0	0	270	0
Stage 1	251	-	-	-	-	-
Stage 2	154	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	602	788	-	-	1293	-
Stage 1	791	-	-	-	-	-
Stage 2	874	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	597	788	-	-	1293	-
Mov Cap-2 Maneuver	597	-	-	-	-	-
Stage 1	791	-	-	-	-	-
Stage 2	866	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	11		0		0.6
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 632	1293	-
HCM Lane V/C Ratio	-	- 0.045	0.008	-
HCM Control Delay (s)	-	- 11	7.8	0
HCM Lane LOS	-	- B	A	A
HCM 95th %tile Q(veh)	-	- 0.1	0	-

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Traffic Vol, veh/h	102	198	19	83	215	161	17	8	53	84	6	62
Future Vol, veh/h	102	198	19	83	215	161	17	8	53	84	6	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	1	1	1	0	0	0	0	0	0	0
Mvmt Flow	111	215	21	90	234	175	18	9	58	91	7	67
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	409	0	0	236	0	0	986	1036	226	982	960	321
Stage 1	-	-	-	-	-	-	447	447	-	502	502	-
Stage 2	-	-	-	-	-	-	539	589	-	480	458	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1161	-	-	1337	-	-	229	233	818	230	259	724
Stage 1	-	-	-	-	-	-	595	577	-	555	545	-
Stage 2	-	-	-	-	-	-	530	499	-	571	570	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1161	-	-	1337	-	-	173	189	818	176	210	724
Mov Cap-2 Maneuver	-	-	-	-	-	-	173	189	-	176	210	-
Stage 1	-	-	-	-	-	-	530	514	-	494	496	-
Stage 2	-	-	-	-	-	-	432	455	-	464	507	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.7			1.4			15.7			41.2		
HCM LOS							C			E		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	173	569	1161	-	-	1337	-	-	257			
HCM Lane V/C Ratio	0.107	0.117	0.095	-	-	0.067	-	-	0.643			
HCM Control Delay (s)	28.3	12.2	8.4	0	-	7.9	0	-	41.2			
HCM Lane LOS	D	B	A	A	-	A	A	-	E			
HCM 95th %tile Q(veh)	0.4	0.4	0.3	-	-	0.2	-	-	4			

Intersection						
Intersection Delay, s/veh	15.4					
Intersection LOS	C					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	349		1041		865	
Demand Flow Rate, veh/h	356		1100		905	
Vehicles Circulating, veh/h	704		116		283	
Vehicles Exiting, veh/h	484		944		933	
Follow-Up Headway, s	3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	9.1		16.0		17.2	
Approach LOS	A		C		C	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	R
Assumed Moves	L	TR	L	TR	LT	R
RT Channelized						
Lane Util	0.326	0.674	0.257	0.743	0.778	0.222
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	116	240	283	817	704	201
Cap Entry Lane, veh/h	666	690	1036	1042	914	927
Entry HV Adj Factor	1.000	0.971	0.979	0.935	0.943	1.000
Flow Entry, veh/h	116	233	277	764	664	201
Cap Entry, veh/h	666	670	1014	974	862	927
V/C Ratio	0.174	0.348	0.273	0.784	0.770	0.217
Control Delay, s/veh	7.4	9.9	6.2	19.6	20.5	6.0
LOS	A	A	A	C	C	A
95th %tile Queue, veh	1	2	1	8	8	1

Attachment M

Phase 2 (Year 2027) Build-Out Conditions HCM Worksheets

HCM 2010 TWSC
6: Harts Road & Northern Residential Driveway

Year 2027 Build-Out Conditions - Improved

Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	0	8	93	0	26	8	89	36	9	81	8
Future Vol, veh/h	8	0	8	93	0	26	8	89	36	9	81	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	155	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	9	101	0	28	9	97	39	10	88	9
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	240	226	92	230	230	97	97	0	0	97	0	0
Stage 1	112	112	-	114	114	-	-	-	-	-	-	-
Stage 2	128	114	-	116	116	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	714	673	965	725	670	959	1496	-	-	1496	-	-
Stage 1	893	803	-	891	801	-	-	-	-	-	-	-
Stage 2	876	801	-	889	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	686	664	965	711	661	959	1496	-	-	1496	-	-
Mov Cap-2 Maneuver	686	664	-	711	661	-	-	-	-	-	-	-
Stage 1	887	797	-	885	795	-	-	-	-	-	-	-
Stage 2	844	795	-	875	794	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.6			10.8			0.4			0.7		
HCM LOS	A			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1496	-	-	802	754	1496	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.022	0.172	0.007	-	-				
HCM Control Delay (s)	7.4	0	-	9.6	10.8	7.4	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0	-	-				

HCM 2010 TWSC
9: Harts Road & Middle Residential Driveway

Year 2027 Build-Out Conditions - Improved

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	9	123	12	3	178
Future Vol, veh/h	31	9	123	12	3	178
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	10	134	13	3	193
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	340	140	0	0	147	0
Stage 1	140	-	-	-	-	-
Stage 2	200	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	656	908	-	-	1435	-
Stage 1	887	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	655	908	-	-	1435	-
Mov Cap-2 Maneuver	655	-	-	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.5		0		0.1	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 699	1435	-		
HCM Lane V/C Ratio	-	- 0.062	0.002	-		
HCM Control Delay (s)	-	- 10.5	7.5	0		
HCM Lane LOS	-	- B	A	A		
HCM 95th %tile Q(veh)	-	- 0.2	0	-		

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	9	126	12	3	207
Future Vol, veh/h	31	9	126	12	3	207
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	10	137	13	3	225
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	375	143	0	0	150	0
Stage 1	143	-	-	-	-	-
Stage 2	232	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	626	905	-	-	1431	-
Stage 1	884	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	625	905	-	-	1431	-
Mov Cap-2 Maneuver	625	-	-	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.7	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 672	1431	-		
HCM Lane V/C Ratio	-	- 0.065	0.002	-		
HCM Control Delay (s)	-	- 10.7	7.5	-		
HCM Lane LOS	-	- B	A	-		
HCM 95th %tile Q(veh)	-	- 0.2	0	-		

HCM 2010 TWSC
11: Harts Road & Mixed Use Driveway

Year 2027 Build-Out Conditions - Improved

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	21	117	5	27	211
Future Vol, veh/h	5	21	117	5	27	211
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	23	127	5	29	229
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	418	130	0	0	133	0
Stage 1	130	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	591	920	-	-	1452	-
Stage 1	896	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	577	920	-	-	1452	-
Mov Cap-2 Maneuver	577	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	743	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	9.5		0		0.9	
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 826	1452	-		
HCM Lane V/C Ratio	-	- 0.034	0.02	-		
HCM Control Delay (s)	-	- 9.5	7.5	0		
HCM Lane LOS	-	- A	A	A		
HCM 95th %tile Q(veh)	-	- 0.1	0.1	-		

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	737	453	42	31	19
Future Vol, veh/h	23	737	453	42	31	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	155	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	801	492	46	34	21
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	492	0	-	0	1343	492
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	851	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1071	-	-	-	168	577
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	419	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1071	-	-	-	164	577
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	409	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		16.7	
HCM LOS					C	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1071	-	-	-	362	
HCM Lane V/C Ratio	0.023	-	-	-	0.15	
HCM Control Delay (s)	8.4	-	-	-	16.7	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	767	546	42	31	19
Future Vol, veh/h	23	767	546	42	31	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	155	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	834	593	46	34	21

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	593	0	1477
Stage 1	-	-	593
Stage 2	-	-	884
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	983	-	139
Stage 1	-	-	552
Stage 2	-	-	404
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	983	-	135
Mov Cap-2 Maneuver	-	-	269
Stage 1	-	-	552
Stage 2	-	-	394

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	18.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	983	-	-	-	327
HCM Lane V/C Ratio	0.025	-	-	-	0.166
HCM Control Delay (s)	8.8	-	-	-	18.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection					
Intersection Delay, s/veh	11.1				
Intersection LOS	B				
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	2	1	
Conflicting Circle Lanes	2	2	2	2	
Adj Approach Flow, veh/h	560	530	178	298	
Demand Flow Rate, veh/h	592	541	186	313	
Vehicles Circulating, veh/h	283	74	781	449	
Vehicles Exiting, veh/h	479	893	94	166	
Follow-Up Headway, s	3.186	3.186	3.186	3.186	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	14.3	9.4	9.0	9.3	
Approach LOS	B	A	A	A	
Lane	Left	Left	Left	Right	Left
Designated Moves	LTR	LTR	L	TR	LTR
Assumed Moves	LTR	LTR	L	TR	LTR
RT Channelized					
Lane Util	1.000	1.000	0.054	0.946	1.000
Critical Headway, s	4.113	4.113	4.293	4.113	4.113
Entry Flow, veh/h	592	541	10	176	313
Cap Entry Lane, veh/h	927	1073	629	654	825
Entry HV Adj Factor	0.947	0.979	1.000	0.955	0.952
Flow Entry, veh/h	560	530	10	168	298
Cap Entry, veh/h	877	1051	629	624	786
V/C Ratio	0.639	0.504	0.016	0.269	0.379
Control Delay, s/veh	14.3	9.4	5.9	9.2	9.3
LOS	B	A	A	A	A
95th %tile Queue, veh	5	3	0	1	2

Intersection			
Intersection Delay, s/veh	17.1		
Intersection LOS	C		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	835	614	162
Demand Flow Rate, veh/h	852	627	165
Vehicles Circulating, veh/h	102	78	486
Vehicles Exiting, veh/h	549	876	219
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	22.9	11.6	8.1
Approach LOS	C	B	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	852	627	165
Cap Entry Lane, veh/h	1020	1045	695
Entry HV Adj Factor	0.980	0.980	0.982
Flow Entry, veh/h	835	614	162
Cap Entry, veh/h	1000	1024	682
V/C Ratio	0.835	0.600	0.237
Control Delay, s/veh	22.9	11.6	8.1
LOS	C	B	A
95th %tile Queue, veh	10	4	1

HCM 2010 TWSC
6: Harts Road & Northern Residential Driveway

Year 2027 Build-Out Conditions - Improved

Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↗		↕	
Traffic Vol, veh/h	8	0	8	72	0	14	8	127	105	23	88	8
Future Vol, veh/h	8	0	8	72	0	14	8	127	105	23	88	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	155	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	9	78	0	15	9	138	114	25	96	9
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	313	305	100	309	309	138	104	0	0	138	0	0
Stage 1	150	150	-	155	155	-	-	-	-	-	-	-
Stage 2	163	155	-	154	154	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	640	608	956	643	605	910	1488	-	-	1446	-	-
Stage 1	853	773	-	847	769	-	-	-	-	-	-	-
Stage 2	839	769	-	848	770	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	617	593	956	625	590	910	1488	-	-	1446	-	-
Mov Cap-2 Maneuver	617	593	-	625	590	-	-	-	-	-	-	-
Stage 1	847	759	-	841	764	-	-	-	-	-	-	-
Stage 2	819	764	-	825	756	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.9			11.4			0.2			1.5		
HCM LOS	A			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1488	-	-	750	659	1446	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.023	0.142	0.017	-	-				
HCM Control Delay (s)	7.4	0	-	9.9	11.4	7.5	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.1	0.5	0.1	-	-				

HCM 2010 TWSC
9: Harts Road & Middle Residential Driveway

Year 2027 Build-Out Conditions - Improved

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	5	236	34	8	158
Future Vol, veh/h	24	5	236	34	8	158
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	5	257	37	9	172
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	464	275	0	0	293	0
Stage 1	275	-	-	-	-	-
Stage 2	189	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	556	764	-	-	1269	-
Stage 1	771	-	-	-	-	-
Stage 2	843	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	552	764	-	-	1269	-
Mov Cap-2 Maneuver	552	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	836	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.6	0		0.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 580	1269	-		
HCM Lane V/C Ratio	-	- 0.054	0.007	-		
HCM Control Delay (s)	-	- 11.6	7.9	0		
HCM Lane LOS	-	- B	A	A		
HCM 95th %tile Q(veh)	-	- 0.2	0	-		

HCM 2010 TWSC
15: Harts Road & Southern Residential Driveway

Year 2027 Build-Out Conditions - Improved
Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	5	265	34	8	175
Future Vol, veh/h	24	5	265	34	8	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	5	288	37	9	190
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	515	307	0	0	325	0
Stage 1	307	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	520	733	-	-	1235	-
Stage 1	746	-	-	-	-	-
Stage 2	827	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	516	733	-	-	1235	-
Mov Cap-2 Maneuver	516	-	-	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12	0		0.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 544	1235	-		
HCM Lane V/C Ratio	-	- 0.058	0.007	-		
HCM Control Delay (s)	-	- 12	7.9	0		
HCM Lane LOS	-	- B	A	A		
HCM 95th %tile Q(veh)	-	- 0.2	0	-		

HCM 2010 TWSC
11: Harts Road & Mixed-Use Driveway

Year 2027 Build-Out Conditions - Improved

Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	65	233	5	62	137
Future Vol, veh/h	5	65	233	5	62	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	71	253	5	67	149
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	540	256	0	0	259	0
Stage 1	256	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	503	783	-	-	1306	-
Stage 1	787	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	475	783	-	-	1306	-
Mov Cap-2 Maneuver	475	-	-	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.4		0		2.5	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 748	1306	-		
HCM Lane V/C Ratio	-	- 0.102	0.052	-		
HCM Control Delay (s)	-	- 10.4	7.9	0		
HCM Lane LOS	-	- B	A	A		
HCM 95th %tile Q(veh)	-	- 0.3	0.2	-		

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	556	727	56	65	40
Future Vol, veh/h	32	556	727	56	65	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	155	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	604	790	61	71	43

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	790	0	1464
Stage 1	-	-	790
Stage 2	-	-	674
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	830	-	141
Stage 1	-	-	447
Stage 2	-	-	506
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	830	-	135
Mov Cap-2 Maneuver	-	-	274
Stage 1	-	-	447
Stage 2	-	-	485

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	23.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	830	-	-	-	309
HCM Lane V/C Ratio	0.042	-	-	-	0.369
HCM Control Delay (s)	9.5	-	-	-	23.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.6

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	690	793	56	65	40
Future Vol, veh/h	32	690	793	56	65	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	255	-	-	155	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	750	862	61	71	43
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	862	0	-	0	1682	862
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	820	-
Critical Hdwy	4.12	-	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	6.12	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	780	-	-	-	75	355
Stage 1	-	-	-	-	350	-
Stage 2	-	-	-	-	369	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	780	-	-	-	72	355
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	334	-
Stage 2	-	-	-	-	352	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.4		0		35.1	
HCM LOS					E	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	780	-	-	-	230	
HCM Lane V/C Ratio	0.045	-	-	-	0.496	
HCM Control Delay (s)	9.8	-	-	-	35.1	
HCM Lane LOS	A	-	-	-	E	
HCM 95th %tile Q(veh)	0.1	-	-	-	2.5	

Intersection					
Intersection Delay, s/veh	15.5				
Intersection LOS	C				
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	2	1	
Conflicting Circle Lanes	2	2	2	2	
Adj Approach Flow, veh/h	557	832	124	175	
Demand Flow Rate, veh/h	561	838	124	175	
Vehicles Circulating, veh/h	257	126	645	659	
Vehicles Exiting, veh/h	577	643	173	305	
Follow-Up Headway, s	3.186	3.186	3.186	3.186	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	12.3	20.5	6.4	7.9	
Approach LOS	B	C	A	A	
Lane	Left	Left	Left	Right	Left
Designated Moves	LTR	LTR	L	TR	LTR
Assumed Moves	LTR	LTR	L	TR	LTR
RT Channelized					
Lane Util	1.000	1.000	0.169	0.831	1.000
Critical Headway, s	4.113	4.113	4.293	4.113	4.113
Entry Flow, veh/h	561	838	21	103	175
Cap Entry Lane, veh/h	944	1035	697	719	712
Entry HV Adj Factor	0.992	0.993	1.000	1.000	1.000
Flow Entry, veh/h	557	832	21	103	175
Cap Entry, veh/h	937	1027	697	719	712
V/C Ratio	0.594	0.810	0.030	0.143	0.246
Control Delay, s/veh	12.3	20.5	5.5	6.6	7.9
LOS	B	C	A	A	A
95th %tile Queue, veh	4	9	0	0	1

Intersection			
Intersection Delay, s/veh	25.1		
Intersection LOS	D		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	675	906	340
Demand Flow Rate, veh/h	688	924	347
Vehicles Circulating, veh/h	216	104	737
Vehicles Exiting, veh/h	868	800	291
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	19.1	31.0	21.4
Approach LOS	C	D	C
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	688	924	347
Cap Entry Lane, veh/h	910	1018	541
Entry HV Adj Factor	0.980	0.980	0.980
Flow Entry, veh/h	675	906	340
Cap Entry, veh/h	893	998	530
V/C Ratio	0.756	0.907	0.642
Control Delay, s/veh	19.1	31.0	21.4
LOS	C	D	C
95th %tile Queue, veh	7	14	5

Attachment N

Phase 2 (Year 2027)
Build-Out Conditions
US17 at William Burgess
Boulevard Roundabout
and Signalized
Conditions ICA HCM
Worksheets

Intersection						
Intersection Delay, s/veh	17.9					
Intersection LOS	C					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	830		1054		841	
Demand Flow Rate, veh/h	846		1109		878	
Vehicles Circulating, veh/h	648		295		390	
Vehicles Exiting, veh/h	620		1199		1014	
Follow-Up Headway, s	3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	19.4		17.0		17.7	
Approach LOS	C		C		C	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	R
Assumed Moves	L	TR	L	TR	LT	R
RT Channelized						
Lane Util	0.349	0.651	0.352	0.648	0.738	0.262
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	295	551	390	719	648	230
Cap Entry Lane, veh/h	695	718	906	919	843	860
Entry HV Adj Factor	1.000	0.971	0.979	0.935	0.943	1.000
Flow Entry, veh/h	295	535	382	672	611	230
Cap Entry, veh/h	695	697	887	859	796	860
V/C Ratio	0.424	0.768	0.431	0.782	0.768	0.267
Control Delay, s/veh	11.1	23.9	9.2	21.4	21.7	7.0
LOS	B	C	A	C	C	A
95th %tile Queue, veh	2	7	2	8	8	1

HCM 2010 Signalized Intersection Summary 2: US 17 & William Burgess Blvd.

Year 2027 Build-Out Conditions - Improved

Timing Plan: AM Peak

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	283	514	367	645	587	221		
Future Volume (veh/h)	283	514	367	645	587	221		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1845	1863	1776	1792	1900		
Adj Flow Rate, veh/h	295	535	382	672	611	230		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	0	3	2	7	6	0		
Cap, veh/h	494	677	418	1084	730	658		
Arrive On Green	0.27	0.27	0.16	0.61	0.41	0.41		
Sat Flow, veh/h	1810	1568	1774	1776	1792	1615		
Grp Volume(v), veh/h	295	535	382	672	611	230		
Grp Sat Flow(s),veh/h/ln	1810	1568	1774	1776	1792	1615		
Q Serve(g_s), s	14.5	28.0	13.7	24.4	31.5	10.1		
Cycle Q Clear(g_c), s	14.5	28.0	13.7	24.4	31.5	10.1		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	494	677	418	1084	730	658		
V/C Ratio(X)	0.60	0.79	0.91	0.62	0.84	0.35		
Avail Cap(c_a), veh/h	494	677	525	1384	926	834		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	32.4	25.1	23.6	12.5	27.4	21.0		
Incr Delay (d2), s/veh	2.0	6.3	17.9	0.6	5.5	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	7.6	25.0	12.6	11.9	16.6	4.5		
LnGrp Delay(d),s/veh	34.4	31.4	41.5	13.1	32.9	21.3		
LnGrp LOS	C	C	D	B	C	C		
Approach Vol, veh/h	830			1054	841			
Approach Delay, s/veh	32.5			23.4	29.7			
Approach LOS	C			C	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		68.6		34.0	20.8	47.8		
Change Period (Y+Rc), s		6.0		6.0	4.5	6.0		
Max Green Setting (Gmax), s		80.0		28.0	22.5	53.0		
Max Q Clear Time (g_c+I1), s		26.4		30.0	15.7	33.5		
Green Ext Time (p_c), s		10.9		0.0	0.7	8.3		
Intersection Summary								
HCM 2010 Ctrl Delay			28.1					
HCM 2010 LOS			C					

Intersection						
Intersection Delay, s/veh	38.1					
Intersection LOS	E					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	788		1375		1127	
Demand Flow Rate, veh/h	803		1446		1172	
Vehicles Circulating, veh/h	797		281		519	
Vehicles Exiting, veh/h	894		1319		1208	
Follow-Up Headway, s	3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	23.4		37.2		49.3	
Approach LOS	C		E		E	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	R
Assumed Moves	L	TR	L	TR	LT	R
RT Channelized						
Lane Util	0.350	0.650	0.359	0.641	0.680	0.320
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	281	522	519	927	797	375
Cap Entry Lane, veh/h	622	647	915	928	766	786
Entry HV Adj Factor	1.000	0.971	0.981	0.935	0.943	1.000
Flow Entry, veh/h	281	507	509	866	752	375
Cap Entry, veh/h	622	628	898	867	722	786
V/C Ratio	0.452	0.807	0.567	0.999	1.041	0.477
Control Delay, s/veh	12.7	29.3	12.0	52.0	68.4	11.1
LOS	B	D	B	F	F	B
95th %tile Queue, veh	2	8	4	18	19	3

HCM 2010 Signalized Intersection Summary 2: US 17 & William Burgess Blvd.

Year 2027 Build-Out Conditions - Improved

Timing Plan: PM Peak

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	270	487	489	831	722	360		
Future Volume (veh/h)	270	487	489	831	722	360		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1845	1863	1776	1792	1900		
Adj Flow Rate, veh/h	281	507	509	866	752	375		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	0	3	2	7	6	0		
Cap, veh/h	304	641	532	1350	833	751		
Arrive On Green	0.17	0.17	0.24	0.76	0.46	0.46		
Sat Flow, veh/h	1810	1568	1774	1776	1792	1615		
Grp Volume(v), veh/h	281	507	509	866	752	375		
Grp Sat Flow(s),veh/h/ln	1810	1568	1774	1776	1792	1615		
Q Serve(g_s), s	16.8	18.5	24.5	25.1	42.6	17.8		
Cycle Q Clear(g_c), s	16.8	18.5	24.5	25.1	42.6	17.8		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	304	641	532	1350	833	751		
V/C Ratio(X)	0.92	0.79	0.96	0.64	0.90	0.50		
Avail Cap(c_a), veh/h	304	641	532	1350	833	751		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	45.1	28.4	32.0	6.2	27.1	20.5		
Incr Delay (d2), s/veh	32.3	6.6	28.6	2.4	14.9	2.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	11.2	25.7	19.3	12.9	24.3	8.4		
LnGrp Delay(d),s/veh	77.4	35.0	60.5	8.5	42.1	22.9		
LnGrp LOS	E	D	E	A	D	C		
Approach Vol, veh/h	788			1375	1127			
Approach Delay, s/veh	50.1			27.8	35.7			
Approach LOS	D			C	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		89.6		24.5	32.5	57.1		
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		
Max Green Setting (Gmax), s		80.0		18.5	26.5	47.5		
Max Q Clear Time (g_c+I1), s		27.1		20.5	26.5	44.6		
Green Ext Time (p_c), s		18.1		0.0	0.0	2.4		
Intersection Summary								
HCM 2010 Ctrl Delay			35.8					
HCM 2010 LOS			D					
Notes								