April 7, 2021

GROVEPORT ROAD CORRIDOR STUDY

Groveport Road, Groveport, Ohio

Location of Groveport Road Corridor

Prepared for:

City of Groveport

Prepared by:

IBI Group

8101 N. High Street, Suite 101

Columbus, OH 43235

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EXECUTIVE SUMMARY

The City of Groveport commissioned IBI Group to conduct a corridor study of Groveport Road west of the downtown area of Groveport. The City has concerns about the long-term future of this gateway road to the City as development continues to occur within and adjacent to the corridor. The study includes 2020 traffic volumes as a baseline along with additional volumes expected to be present along the corridor due to future development both within the City and outside the City of Groveport.

The study area extends from Bixby Road on the west to London-Groveport Road (SR 317) on the east. Eight intersections were included in the study. Three signalized intersections (Bixby, Greenpointe and London-Groveport) and five unsignalized intersections (Knight, Gobel, Prater/Edinburgh, Swisher and Saltzgaber) comprise the initial list of intersections to be analyzed. The base year for this study is 2020. The horizon year is 2040 and the interim year for which data was prepared and analyzed is 2030. Intersection turning movement data for weekday morning and afternoon peak hours was used as the basis for this study.

The goals of this study are to provide the City of Groveport with:

- A snapshot of expected future conditions along the corridor which considers future residential and warehousing development both known and unknown but anticipated.
- A prioritized list of improvements along the corridor including intersection footprints, typical sections and phasing suggestions.
- Planning-level cost estimates and funding suggestions, where appropriate, including project cost breakdowns by responsible jurisdiction.

IBI Group collected 2020 (in some cases 2018) traffic count turning movement data, background traffic growth factors, 2017-2019 crash records and data on known development within the corridor. Traffic volumes for future unknown development was estimated based upon conversations with local officials about land use and the size of the parcel. Turning movement volumes for 2030 and 2040 were calculated and analyzed for corridor intersections to determine needed turn lane and through lane improvements by 2030 and 2040.

IBI Group also considered roundabouts as an alternative to traditional intersections across the Groveport Road Corridor. Often, the use of roundabouts can negate the need for lengthy turn lanes at signalized intersections and provide a cost savings. IBI Group analyzed roundabouts and found that a multi-lane roundabout with bypass lanes is needed to achieve an acceptable Level of Service at the Bixby Rd intersection in 2040. Such a roundabout would require a very large footprint and downstream widening for through lane end tapers. Hybrid multi-lane roundabouts would also be needed at the Prater/Edinburgh and Salzgaber Rd intersections. In our opinion, a continuous 3-lane section with traffic signals would provide a less expensive and more cohesive driving experience than a series of multi-lane roundabouts along a 2-lane corridor with widening for turn lanes at intermediate intersections. Therefore, roundabout intersections are not recommended.

The results of the data collection, analysis and recommendations are summarized in the table on the following page. This table recommends five standalone build projects which should be built by 2030 or 2040 to successfully accommodate the expected increases in traffic within the corridor, particularly at the west end of the corridor.

Recommended projects to improve the Groveport Road Corridor from London-Groveport Road to Bixby road are listed in the table on the next page.

Project	Jurisdiction	Description	Needed by	Cost Estimate[+]
1	**Groveport**	• New traffic signal at Saltzgaber Rd • 3-lane section w/ SUP from Saltzgaber Rd to Green Pointe Dr	**2030**	**$ 1.9 M**
2	**Obetz**	• New traffic signal at Edinburgh/Prater • Longer WB left turn lane at Edinburgh/Prater • WB right turn lane at Edinburgh/Prater	**2030**	**$ 1.1 M Some cost by developer**
3	**Franklin County Engineers Office**	• 3-lane section w/ SUP from Edinburgh/Prater to Saltzgaber Rd • WB right turn lane at Parcel 185-002772 driveway (depending on final land use)	**2030**	**$ 3.1 M Some cost by developer**
4	**Obetz**	• 5-lane section w/ SUP from 1,500' W of Bixby to Edinburgh/Prater • NB & SB left turn lanes on Bixby Rd • New traffic signal at Bixby Rd with protected/permissive left turn phasing • "Pork chop" island to prohibit NB left turns on Knight St • Convert WB right turn lane at Edinburgh to thru lane • Modify traffic signal at Edinburgh/Prater	**2040**	**$7.5 M**
5	**Groveport**	• SB right turn lane on London-Groveport Rd • Signal head & timing adjustments	**2040***	**$0.8 M**

[+]Construction costs for 2030 projects are in 2025 dollars.
[+]Construction costs for 2040 projects are in 2035 dollars.
*This right turn lane should be included in the City's Groveport Rd/London-Groveport Rd project to get a better construction price.

BACKGROUND

The City of Groveport commissioned IBI Group to conduct a corridor study of Groveport Road west of the downtown area of Groveport. The City has concerns about the long-term future of this gateway road to the City as development continues to occur within and adjacent to the corridor. The study includes 2020 traffic volumes as a baseline along with additional volumes expected to be present along the corridor due to future development both in the City and outside the City of Groveport.

STUDY AREA & ANALYSIS YEARS

The study area extends from Bixby Road on the west to London-Groveport Road (SR 317) on the east. Eight intersections were included in the study. Three signalized intersections (Bixby, Greenpointe and London-Groveport) and five unsignalized intersections (Knight, Gobel, Prater/Edinburgh, Swisher and Saltzgaber) comprise the initial list of intersections to be analyzed.

One additional analysis point, a driveway to Parcel 185–002772, an 8.4-acre site north of Groveport Road, was added to the 2030 and 2040 peak hour Build analyses due to an October 2020 rezoning application. While this zoning application was not approved by the City, the site is expected to develop by 2030. Multi-family was selected for the land use in this report since it generates more trips than warehousing. The final land use will depend on zoning decisions by the City.

Table 1 Groveport Road Corridor Study Area Intersections

CROSSROAD	RESPONSIBLE JURISDICTION
Bixby Road	Village of Obetz
Knight Street	Village of Obetz
Gobel Drive	Village of Obetz
Prater Drive/Edinburgh Drive	Village of Obetz
Swisher Road	Franklin County Engineer
Parcel 185–002772 Driveway	City of Groveport
Saltzgaber Road	City of Groveport
Greenpointe Drive	City of Groveport
London-Groveport Road	City of Groveport (ODOT R/W)

Please refer to Exhibit 1 for the study area and intersections.

The base year for this study is 2020. The horizon year is 2040 and the interim year for which data was prepared and analyzed is 2030. Traffic turning movement data for weekday morning and afternoon peak hours was used as the basis for this study.

STUDY GOALS

The goals of this study are to provide the City of Groveport with:

- A snapshot of expected future conditions along the corridor which considers future residential and warehousing development both known and unknown but anticipated.
- A prioritized list of improvements along the corridor including intersection footprints, typical sections and phasing suggestions.

- Planning-level cost estimates and funding suggestions, where appropriate, including project cost breakdowns by responsible jurisdiction.

STUDY METHODOLOGY

The study included the following major tasks:

- Stakeholders meeting with Groveport, Obetz, Franklin County Engineer, Madison Township
- Peak Hour traffic data collection-2020
- Peak Hour traffic data projection to 2030 and 2040
- Added peak hour traffic for Parcel 185-002772, Groveport Road
- Development of 2030 and 2040 peak hour traffic for known and unknown but anticipated future development on mostly vacant parcels
- Traffic Smoothing by hand for peak hour through volumes only; (turns into and from cross streets were determined by development and traffic growth factor application)
- Peak Hour capacity analyses using Highway Capacity Analysis software (& Sidra for roundabouts) for 2030 and 2040
- Crash analyses
- Future improvements needed in 2030 and 2040
- Recommendations
- Cost estimates
- Final stakeholder meeting to disseminate and discuss results and recommendations
- Final report

TRAFFIC COUNT DATA

For this study it was originally planned to make new same day traffic counts at all study area intersections during the Spring of 2020 to have the best possible current year traffic data to use in the study. Obviously, the arrival of COVID-19 in March of 2020 lead to a decision not to make any COVID-influenced 2020 traffic counts because traffic volumes dropped significantly nationwide and statewide as a result of stay at home orders. In lieu of making new counts, AM and PM peak hour traffic count data was sourced from MORPC and previous traffic studies at Saltzgaber Road, Greenpointe Drive and London-Groveport Road. The common peak hours were from 7:00 to 8:00 AM and 4:30 to 5:30 PM. These counts were from either 2018 or 2020.

Linear annual traffic growth rates were provided by MORPC for the entire study area. These rates were used to adjust the 2018 count data at certain intersections to 2020. The growth rates were applied to all segments in the corridor to establish baseline 2030 and 2040 peak hour No Build traffic volumes. The No Build volumes include new traffic from expected general growth in the area but do not include trips from the future residential and warehousing/distribution developments with direct access to the corridor.

While the study is based upon peak hour analyses, the 2020 24-hour Average Daily Traffic (ADT) was also calculated. ADT across the corridor ranges from 10,800 vehicles per day at the west end of the corridor to approximately 11,900 vehicles per day at the east end.

Traffic count data is included in Appendix A while the MORPC growth factors are in Appendix B.

The City initiated this study because of the expectation of considerable residential development on the horizon for the west end of the corridor, especially in Obetz, and expectation of continued warehousing/distribution-type development at the east end of the corridor. Several large vacant parcels of land were identified by the study team and discussed with Groveport and Obetz officials. The land use and likely number of units was known at the time of this study for some parcels and unknown for others. Exhibit 2 shows numbered vacant parcels abutting or near to the corridor. The table below shows the assumed land use, size or number of units and an estimate of when the trips might be fully on the network for each site. Site number 9 (Redwood-Obetz) had a preliminary site plan with number of units available at the time of this study. All other units were estimated based upon the size of the parcel.

Table 2 Anticipated New Development Along the Corridor

No.	Anticipated Access Point Location	Land Use	Size or Units	Expected By
1	Bixby Rd S of Groveport	Multi-Family	165	50% by 2030; 50% by 2040
2	Bixby Rd S of Groveport	Single Family	20	50% by 2030; 50% by 2040
2a	Bixby Rd S of Groveport	Single Family	60	50% by 2030; 50% by 2040
3	Prater Dr	Single Family	80	By 2030
4	Saltzgaber Rd	Warehousing	390,000 SF	By 2030
5	Parcel 185–2772	Multi-Family?	To Be Determined	By 2030
6	Greenpointe Dr	Warehousing	117,000 SF	By 2030
7	Edinburgh Dr	Single Family	40	By 2030
8	Edinburgh Dr	Single Family	50	By 2030
9	Edinburgh Dr (Redwood-Obetz)	Multi-Family	165	By 2025
10	Bixby Rd N of Groveport	Single Family	35	50% by 2030; 50% by 2040
11	Bixby Rd N of Groveport	Multi-Family	180	50% by 2030; 50% by 2040
Hemmer	Saltzgaber Rd	Warehousing	See Hemmer TIS	By 2022
Trailer Park	Bixby Rd S of Groveport	Multi-Family	100	50% by 2030; 50% by 2040

TRIP GENERATION for EXPECTED NEW DEVELOPMENT

The ITE Trip Generation Manual, 10th Edition, was used to calculate the morning and afternoon peak hour trip ends for the land uses and sizes/units shown in Table 2. The directional distribution for entering/exiting vehicles for each parcel was based upon the existing traffic count at that access point, if possible, or upon the nearest similar access point/cross road to avoid making any assumptions about directional distribution. The calculations for each parcel are assembled in Appendix C.

Following the calculation of expected future trip ends from the various development parcel, all traffic data from the 2018 and 2020 counts, background growth factors and trip generation calculations was assembled for each study area intersection in Exhibit 3 for AM peak hour and Exhibit 4 for PM peak hour.

Groveport Road 2030 and 2040 peak hour through volumes calculated for each study area intersection on these two exhibits were manually "smoothed" so that the sending and receiving volumes at each intersection matched up mathematically. Turning movement volumes were not smoothed. In general, new trips headed to the west were sent to/from Alum Creek via Groveport Road. New trips to/from the east were split proportionally between Groveport Road east of London-Groveport Road, Groveport-London Road to the south and Groveport- London Road to the north.

Exhibits 5 and 6 show the 2020 AM and PM peak hour turning movement volumes, respectively, for the corridor. The 2030 and 2040 smoothed volumes for AM and PM peak hours are shown in Exhibits 7, 8, 9 and 10.

The afternoon peak hour volumes for each year were converted to Average Daily Traffic (ADT) volumes by assuming that 9% of the daily ADT (typical for suburban area peak hours) occurs during the PM peak hour. By 2040 the ADT across the corridor will be roughly 6,000 vehicles per day (55%) greater than the current volumes. See Table 3.

Table 3 Groveport Road Corridor Average Daily Traffic

GROVEPORT ROAD CORRIDOR ADT

LINK	2020 ADT	2030 ADT	2040 ADT
Bixby to Prater/Edinburgh	**10,800**	**15,600**	**16,900**
Prater/Edinburgh to Saltzgaber	**10,400**	**14,700**	**16,000**
Saltzgaber to London-Groveport	**11,900**	**15,700**	**17,200**

STAKEHOLDERS MEETING No. 1 - VIRTUAL

The virtual **Groveport Road Corridor Study Stakeholders Meeting** was held on September 15, 2020 via Microsoft Teams at 1:30 PM. Attendees included:

Steve Farst, City of Groveport
B J King, City of Groveport
Stephen Moore, City of Groveport
Jeff Green, City of Groveport
Michael Corbitt, Village of Obetz
Stacy Boumis, Village of Obetz
Jim Brenneman, IBI Group
Judy Bennett, IBI Group
William Hebble, Franklin County Engineers Office
Susan Brobst, Madison Township
Nate Vogt, MORPC
Todd Garwick, Village of Obetz

The project area, purpose and goals were introduced to the stakeholders from the City and adjoining jurisdictions. The development sites for known and unknown but anticipated development over the next 20 years were discussed. The Redwood site in Obetz is one known multi-family site that will developed on the north side of Groveport Road soon since site plans are available. South of Groveport Road additional single-family homes are currently being constructed in the Bixby Grove subdivision. There is also new construction on Bixby Road south of Groveport Road. Other residential development sites are also anticipated to develop in the coming years.

Stakeholders were invited to share additional information about any of the unknown sites to the project team by the end of September.

See Appendix D for stakeholder meeting documentation.

2017-2019 TRAFFIC CRASH DATA & ANALYSIS

Crash data for the corridor for the years 2017-2019 was obtained from ODOT and analyzed using ODOT's Crash Analysis Module (CAM Tool).

Over the three-year period, a total of 105 crashes were reported within the 1.33-mile corridor for an average of 35 crashes/year. The London-Groveport Road intersection had the most crashes, 47, although this is to be expected since this intersection has the highest traffic volumes of the study area. No crashes were logged at Knight, Gobel or Prater/Edinburgh during the 2017 to 2019 3-year period.

Groveport Road Corridor Crash Statistics Entire 1.33-mile Corridor

Table 4 – Entire Corridor

BY INTERSECTING ROAD	Number	%
London-Groveport Road/SR 317	**47**	44.8%
Bixby Road	**17**	16.2%
Greenpointe Drive	**16**	15.2%
Saltzgaber Road	**13**	12.4%
Swisher Road	**1**	1.0%
Mid-Block	**11**	10.4%
	105	**100.0%**

Table 5 – Entire Corridor

BY TYPE_OF_CRASH	Number	%
Rear End	**51**	48.6%
Left Turn	**17**	16.2%
Angle	**9**	8.6%
Sideswipe - Passing	**8**	7.6%
Fixed Object	**6**	5.7%
Backing	**5**	4.8%
Right Turn	**4**	3.8%
Animal	**3**	2.9%
Head On	**1**	1.0%
Other Non-Collision	**1**	1.0%
Grand Total	**105**	**100.0%**

Table 6 – Entire Corridor

BY CRASH_SEVERITY	Number	%
Injury Crash	**31**	29.5%
Property Damage Crash	**74**	70.5%
Grand Total	**105**	**100.0%**

The most common crash type across the corridor was rear end. Most (42) of the 51 rear end crashes occurred at three signalized intersections: Bixby Road, Greenpointe and London-Groveport Road. It is not unexpected to have rear end crashes at signalized intersections and not uncommon to have them at unsignalized intersections as well.

The second most common crash type across the entire corridor was left turn. All left turn crashes (except for one at Saltzgaber Road) occurred at the three signalized intersections.

Crash severity for the corridor was 29.5% injury and 70.5% property damage only. Crash severity for this corridor is in line with data from other similar roads.

Bixby Road.

Table 7 – Bixby Rd

BY TYPE_OF_CRASH	Number	%
Rear End	**7**	41.2%
Left Turn	**4**	23.5%
Sideswipe - Passing	**3**	17.6%
Backing	**1**	5.9%
Fixed Object	**1**	5.9%
Angle	**1**	5.9%
Grand Total	**17**	**100.0%**

Table 8 – Bixby Rd

BY CRASH_SEVERITY	Number	%
Injury Crash	**3**	17.6%
Property Damage Crash	**14**	82.4%
Grand Total	**17**	**100.0%**

There were 17 crashes reported from 2017-2019 at this signalized intersection. Three involved injury and 14 were property damage only crashes. The eastbound approach is overrepresented in the crash pattern. There were seven eastbound rear end crashes and four eastbound left turn crashes. There are no left turn lanes on any approaches to the intersection. See Exhibit 11 Bixby Road Crash Diagram.

Swisher Road

Table 9 – Swisher Rd

BY TYPE_OF_CRASH	Number	%
Rear End	**1**	100.0%
Grand Total	**1**	**100.0%**

Table 10 – Swisher Rd

BY CRASH_SEVERITY	Number	%
Property Damage Crash	**1**	100.0%
Grand Total	**1**	**100.0%**

See Exhibit 12 Swisher Road Crash Diagram.

Saltzgaber Road

Table 11 – Saltzgaber Rd

BY TYPE_OF_CRASH	Number	%
Rear End	**5**	38.5%
Animal	**3**	23.1%
Fixed Object	**3**	23.1%
Left Turn	**1**	7.7%
Angle	**1**	7.7%
Grand Total	**13**	**100.0%**

Table 12 – Saltzgaber Rd

BY CRASH_SEVERITY	Number	%
Injury Crash	**4**	30.8%
Property Damage Crash	**9**	69.2%
Grand Total	**13**	**100.0%**

This unsignalized intersection had five rear end crashes, three eastbound and two westbound. In addition, there was one left turn crash and one angle crash. The developer of a warehousing site on Saltzgaber Road will contribute for construction of left turn lanes on both Groveport Road approaches to the intersection because of expected new left turns. This project is in design as of November 2020 and will be constructed in 2021 as part of a Franklin County Engineer's Office project with OPWC funding. The new lanes

will benefit the noted left turn crash problem by providing deceleration/left turn storage. See Exhibit 13 Saltzgaber Road Crash Diagram.

Greenpointe Drive

Table 13 – Greenpointe Dr

BY TYPE_OF_CRASH	Number	%
Rear End	**9**	56.3%
Right Turn	**3**	18.8%
Backing	**2**	12.5%
Left Turn	**1**	6.3%
Angle	**1**	6.3%
Grand Total	**16**	**100.0%**

Table 14 – Greenpointe Dr

BY CRASH_SEVERITY	Number	%
Injury Crash	**3**	18.8%
Property Damage Crash	**13**	81.3%
Grand Total	**16**	**100.0%**

There is one pattern noted at this intersection: eight eastbound rear end crashes. These generally non-injury crashes occurred on weekday afternoon/early evening and the at-fault drivers were cited for following too closely/ACDA in all cases. See Exhibit 14 Greenpointe Drive Crash Diagram.

The City of Groveport has a potential safety project in preliminary design for construction in 2023 or thereafter (depending on receiving safety funding from ODOT) which will retime the traffic signal, including clearance intervals, at this intersection. These improvements should help to address the rear end crash pattern.

London-Groveport Road/SR 317

Table 15 – London Groveport Rd

BY TYPE_OF_CRASH	Number	%
Rear End	**23**	48.9%
Left Turn	**11**	23.4%
Angle	**6**	12.8%
Sideswipe - Passing	**4**	8.5%
Fixed Object	**1**	2.1%
Head On	**1**	2.1%
Other Non-Collision	**1**	2.1%
Grand Total	**47**	**100.0%**

Table 16 – London-Groveport Rd

BY CRASH_SEVERITY	Number	%
Injury Crash	**19**	40.4%
Property Damage Crash	**28**	59.6%
Grand Total	**47**	**100.0%**

The most common crash type at this intersection was rear end: nine westbound, four eastbound, six southbound and four northbound. There were also 11 left turn crashes: four westbound, four northbound and three southbound. Also: six angle crashes and four sideswipe passing crashes. Rear end crashes are typical at a signalized intersection, especially during peak period congestion. See Exhibit 15 London-Groveport Road/SR 317 Crash Diagram

The City of Groveport has a potential safety project in preliminary design for construction in 2023 or thereafter (depending on receipt of ODOT safety funding) which will:

- Create zero offset left turn lanes on both London-Groveport Road approaches.
- Add a westbound right turn lane on Groveport Road at London-Groveport Road.
- Add a second eastbound through lane from west of London-Groveport Road, past the Kroger traffic signal to the Kroger RIRO driveway.
- Retime the signal including updated clearance intervals.

The countermeasures included in this project are expected to add capacity and address the rear end, angle and left turn crash patterns noted at the intersection.

See Appendix E for additional crash data tables by intersection.

Based upon the 2017-2019 crash data, the Groveport Road corridor study area exhibits both crash frequency and crash types that are typical for a roadway of this type, keeping in mind that the characteristics of the corridor transition from relatively rural/suburban to urban moving from west to east. As new development in Groveport and Obetz continues to influence the corridor, it is expected that crash frequency will increase in pace with increasing volumes. Rear-end, left turn and angle crashes may also increase as mainline and side road traffic volume increases are added to the corridor. As signals are added to the corridor, more severe crashes such as left turns and angles will likely be reduced with a parallel increase in less severe rear-end crashes at the signals.

LEVEL OF SERVICE RESULTS

Using the 2020, 2030 and 2040 turning movement volumes along with the existing network for 2020 and the Existing + Committed (E+C) Network for 2030 and 2040, IBI used highway capacity analysis software to determine the Level of Service (LOS) for each movement at each intersection across the corridor. When the LOS for an individual movement or intersection fell below LOS E, capacity in the form of a turn lane or through lane was added to improve to LOS D or better for the analysis year. Capacity was also added if the Volume/Capacity ratio for a given movement was 0.930 or higher. See Exhibit 16 for a tabulated summary of the results of the capacity analyses.

See Appendix F for full capacity analysis results.

COMMITTED PROJECTS by INTERSECTION (E + C Network)

The Level of Service calculations prepared for this study include the existing intersections and lanes along with several committed projects which will be constructed in the near term

by either the City of Groveport, Village of Obetz or private developers. Existing roadways plus committed projects are typically referred to as the *Existing + Committed Network.* The E+C Network was used in the 2030 and 2040 capacity analysis calculations.

Bixby Road
The Village of Obetz has a roadway project currently in the design phase to add capacity to this intersection:

- Westbound left turn lane on Groveport Road
- Eastbound left turn lane on Groveport Road

This project is scheduled for construction in 2021 with completion in late 2021 or early 2022.

Edinburg/Prater
None are currently proposed. However, the proposed Redwood development (165 multi-family units proposed) in Obetz could require a longer eastbound left turn lane at Edinburgh due to the size of the proposed development. A traffic impact study for this development could confirm the need for a longer left turn lane.

Likewise, the underway construction of additional (80 +/-) homes in the Bixby Grove subdivision served by Prater Drive could require more left turn storage (currently approximately 130 ft) for the existing westbound left turn lane on Groveport Road.

Swisher Road
None are currently proposed.

Parcel 185–002772 Driveway
None are currently proposed. However, depending on future rezoning of this parcel, it is expected that a Traffic Impact Study required for development will show the need for:

- Eastbound left turn lane
- Westbound right turn lane, depending on the land use.

Saltzgaber Road
A Traffic Impact Study prepared by a private developer has established the need for:

- Westbound left turn lane on Groveport Road
- Eastbound left turn lane on Groveport Road
- Eastbound right turn lane on Groveport Road
- Northbound left turn lane on Saltzgaber Road.

It is expected that these improvements will be constructed by a FCEO project in the second half of 2021.

Greenpointe Drive
None currently proposed.

London-Groveport Road/SR 317

The City of Groveport has a potential safety project in preliminary design for construction in 2023 or thereafter (depending on receiving ODOT safety funding or other state funding assistance) which includes:

- Zero offset left turn lanes on both London-Groveport Road approaches
- Westbound right turn lane on Groveport Road at London-Groveport Road
- Second eastbound through lane from west of London-Groveport Road, past the Kroger traffic signal to the Kroger RIRO driveway.
- Signal retiming including updated clearance intervals.

IMPROVEMENTS NEEDED by 2030 (Beyond E + C Network)

Capacity improvements needed at each intersection or link were identified through capacity analyses of expected future traffic volumes, taking into consideration committed projects as well.

Bixby Road

The Obetz project provides the improvements (left turn lanes on Groveport Road and upgraded traffic signal) that are required by 2030.

Knight Street

- Westbound left turn lane and eastbound right turn lane are technically warranted in 2030; however, the turning movement volumes are modest (maximum is 26 for PM peak hour right turns). A 5-lane section on Groveport Road is recommended with Project 4 by 2040.

Gobel Drive

- Westbound left turn lane is warranted in 2030; however, the volumes are modest (maximum is 11 in PM peak hour). A 5-lane section on Groveport Road is recommended with Project 4 by 2040,

Edinburg/Prater

- Traffic signal - warranted and necessary by 2030 at this intersection based on new development on both sides of Groveport Road.
- Longer westbound left turn lane on Groveport Road
- 3-lane section from Edinburgh/Prater to Swisher
- Westbound right turn lane to be converted to through-right lane in Project 4 by 2040.

Swisher Road

- Westbound left turn lane
- 3-lane section from Swisher to Parcel 185-002772

Parcel 185-002772 Driveway

- 3-lane section from this driveway to Saltzgaber Road prior to 2030

- A westbound right turn lane may be justified by the development upon opening day prior to 2030 if the land use is multi-family residential.

Saltzgaber Road

- Traffic signal - warranted and necessary by 2030 at this intersection due increase in through traffic.
- 3-lane section from Saltzgaber Road to Greenpointe Drive for through lane continuity

Greenpointe Drive

- 3-lane section from Saltzgaber Road to Greenpointe Drive for through lane continuity

London-Groveport Road/SR 317

None.

See Exhibit 17 for schematic of Groveport Road recommended improvements by 2030.

IMPROVEMENTS NEEDED by 2040 (Beyond E + C Network)

Bixby Road

- 5-lane section on Groveport Road from west of Bixby Road to Edinburg/Prater
- Northbound & southbound left turn lanes on Bixby Road at Groveport Road
- Rebuilt traffic signal with protected/permissive left turn phasing on all approaches.

Knight Street

- 5-lane section on Groveport Road from west of Bixby Road to Edinburg/Prater
- Prohibit northbound left turns from Knight to Groveport Road by constructing a “pork chop” to physically prevent this movement. The left turning traffic would be shifted to Bixby Road.

With the reconstruction of the signalized Bixby intersection including a westbound left turn lane, the Knight Street intersection is judged too close to Bixby to safely permit all movements.

Gobel Drive

- 5-lane section on Groveport Road from west of Bixby Road to Edinburg/Prater

Edinburg/Prater

- 5-lane section on Groveport Road from west of Bixby Road to Edinburg/Prater
- Second eastbound through lane terminates into right turn lane at Prater Drive
- Convert westbound right turn lane built with Project 2 into a second through-right lane.

Although the additional westbound through lane is technically not needed until west of this intersection, IBI recommends extending east past the intersection because the westbound V/C ratio is 0.917 with only one through lane.

Swisher Road

No additional improvements required beyond those needed by 2030.

Parcel 185-002772 Driveway

No additional improvements required beyond those needed by 2030 based upon a TIS submitted by the eventual developer.

Saltzgaber Road

No additional improvements required beyond those needed by 2030.

Greenpointe Drive

No additional improvements required beyond those needed by 2030.

London-Groveport Road/SR 317

- Southbound right turn lane on London-Groveport Road

This improvement was identified as needed by this corridor study. The southbound right turn and eastbound left turn are expected to be the two heaviest turning movements at this intersection in the future. Adding the southbound right turn lane will allow these movements to run in overlap in the same signal phase, thus improving the overall efficiency of the intersection. The signal support mast arm pole in the northwest quadrant may need to be relocated to accommodate this additional lane.

IBI recommends that this improvement be included in the City's intersection project for which ODOT safety funding has been requested even though it is not technically needed until after 2030. The construction cost of this lane will be much less if it is included as part of this larger project.

See Exhibit 18 for schematic of proposed improvements by 2040.

NON-TRADITIONAL INTERSECTIONS

IBI Group also looked at non-traditional intersections such as roundabouts as an alternative to traditional intersection improvements (i.e. signals and turn lanes) across the Groveport Road Corridor. Often, the use of roundabouts can negate the need for lengthy turn lanes at signalized intersections and provide a cost savings. IBI Group used Sidra software to analyze roundabouts and found that a multi-lane roundabout with bypass lanes is needed to achieve an acceptable Level of Service at the Bixby Rd intersection in 2040. Such a roundabout would require a large footprint, downstream widening for through lane end tapers, and a greater number of conflict points reducing safety. Hybrid multi-lane roundabouts would also be needed at the Prater/Edinburgh and Salzgaber Rd intersections. In our opinion, a series of multi-lane roundabouts along a 2-lane corridor

with widening for turn lanes at intermediate intersections would be more expensive and less cohesive for the driving experience than a continuous 3-lane section with traffic signals. Therefore, roundabout intersections are not recommended.

See Exhibit 19 for conceptual roundabout designs evaluated by IBI Group.

BICYCLE & PEDESTRIAN FACILITIES

IBI Group also looked at the current bicycle and pedestrian facilities across the Groveport Road Corridor as part of this study.

Existing Facilities

Presently there are no bicycle- or pedestrian-specific facilities located within any link of the corridor. However, it is legal for bicyclists to ride within the roadway and legal for pedestrians to walk upon the edge of the roadway facing traffic.

There are no marked pedestrian crosswalks within the corridor at any of the intersections or at any mid-block locations.

There are existing ADA Ramps but no crosswalks or pedestrian indications at the following intersections:

- London-Groveport Road signal, 1 ADA ramp per quadrant.
- Greenpointe Drive signal, 1 ADA ramp per quadrant

There are sidewalks on both sides of Prater Drive that extend roughly to the Groveport Road right of way line and a multi-use path that ends at the right of way. On Edinburgh Drive there are ADA ramps on both sides of the street but no crosswalks and no sidewalks that connect to the ADA ramps.

Proposed Facilities

The proposed site plan for the Redwood multi-family development in the northeast quadrant of the Groveport Road & Bixby Road intersection includes a 10-ft multi-use path along Groveport Road from Edinburgh to Bixby. The MUP then continues along Bixby Road northeasterly to the property line. Provisions are shown in the site plan for crossings of both Groveport Road and Bixby Road near the intersection of these two roads. At Edinburgh, the 10-ft MUP will connect to a proposed 5-ft sidewalk along the west side of Edinburgh Drive.

Modal Recommendations

Roughly the eastern half of the corridor is comprised of business/warehousing/office land uses while the western half is rapidly transitioning from rural multi-acre homesites to single family and multi-family residential. In the central area of the corridor there are also three churches located on large campus settings.

With the residential areas located west of Groveport and the commercial, recreational, shopping and dining opportunities situated within the city to the east, it is reasonable to

assume that demand for pedestrian and bicycle accommodations will increase over time across the corridor.

The following recommendations are made for bicycle and pedestrian users within the corridor:

- Add 10-ft Shared Use Path (SUP) on Groveport Road within right of way on the north side of the road from Edinburgh Drive (connect to 10-ft SUP to be built by developer) to London-Groveport Road. All private developers along the corridor should be instructed to include the 10-ft SUP across site frontage north of Groveport Road.

- Add 5-ft sidewalk on Groveport Road within the right of way on the south side of the road from Bixby Road to London-Groveport Road. All private developers along the corridor should be instructed to include a 5-ft sidewalk across site frontage south of Groveport Road.

See Exhibit 20 for 3-lane and 5-lane typical sections with sidewalk and SUP.

COST ESTIMATES

The planning level cost estimates included in Table 16 above were prepared by IBI Group using the schematics in Exhibits 17 and 18 and construction costs based upon square feet of pavement area or resurfacing.

Assumptions and unit costs used in the cost estimates include:

- Existing pavement on Groveport Road to be salvaged, where possible.
- Asphalt pavement for all new pavement and overlays.
- New traffic signals at $175,000 ea.
- Rebuilt traffic signals at $100,000 ea.
- Highway lighting at $375,000 per mile.
- Contingencies at 35%.
- Preliminary engineering at 15%.
- Construction engineering at 10%.
- Construction cost inflation at 12.8% to 2025 for projects needed by 2030.
- Construction cost inflation at 44.7% to 2035 for projects needed by 2040.
- 10-ft Shared Use Path on Projects 1-4.
- 5-ft sidewalk on Projects 1-4.
- Open ditch drainage on all projects.

See Appendix G for detailed breakdown of the planning level cost estimates.

RECOMMENDED PROJECTS & PHASING

The table on the following page comprises the “meat” of the recommendations from this study. The needed improvements at each intersection were identified by capacity analysis

of current and expected future traffic volumes in relation to the E + C Network. The improvements were then packaged into five recommended projects which could each advance as a standalone project. It is noted that Project 5 at London-Groveport Road is not technically needed until after 2030 but it is recommended to include this project (southbound right turn lane) in the safety project currently under design for this intersection to obtain better construction pricing.

Table 17 Recommended Projects in Addition to Committed Projects

Project	Jurisdiction	Description	Needed by	Cost Estimate[+]
1	**Groveport**	• New traffic signal at Saltzgaber Rd • 3-lane section w/ SUP from Saltzgaber Rd to Green Pointe Dr	**2030**	**$ 1.9 M**
2	**Obetz**	• New traffic signal at Edinburgh/Prater • Longer WB left turn lane at Edinburgh/Prater • WB right turn lane at Edinburgh/Prater	**2030**	**$ 1.1 M Some cost by developer**
3	**Franklin County Engineers Office**	• 3-lane section w/ SUP from Edinburgh/Prater to Saltzgaber Rd • WB right turn lane at Parcel 185-002772 driveway (depending on final land use)	**2030**	**$ 3.1 M Some cost by developer**
4	**Obetz**	• 5-lane section w/ SUP from 1,500' W of Bixby to Edinburgh/Prater • NB & SB left turn lanes on Bixby Rd • New traffic signal at Bixby Rd with protected/permissive left turn phasing • "Pork chop" island to prohibit NB left turns on Knight St • Convert WB right turn lane at Edinburgh to thru lane • Modify traffic signal at Edinburgh/Prater	**2040**	**$7.5 M**
5	**Groveport**	• SB right turn lane on London-Groveport Rd • Signal head & timing adjustments	**2040***	**$0.8 M**

[+]Construction costs for 2030 projects are in 2025 dollars.
[+]Construction costs for 2040 projects are in 2035 dollars.
*This right turn lane should be included in the City's Groveport Rd/London-Groveport Rd project to get a better construction price.

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	EXHIBIT 1	STUDY AREA	CALCULATED BSS / CHECKED JEB	0 320 / 160 640 HORIZONTAL SCALE IN FEET

\\usaeast.ibigroup.com\J\WS\126108_GrprtRdCorr\7.0_Production\Groveport Rd Traffic Study\Draft Report_03192021\Exhibits\Build schematics\study area.dgn Development Parcels 2021-03-03 3:39:2

EXHIBIT 2	VACANT PARCELS FOR DEVELOPMENT	CALCULATED BSS CHECKED JEB	0 320 160 640 HORIZONTAL SCALE IN FEET	N

EXHIBIT 3

WORKSHEET FOR 2020, 2030 & 2040 AM PEAK HOURS (NOT SMOOTHED)

Year	Start Time	Southbound				Westbound				Northbound				Eastbound				Inter Total
		Right	Thru	Left	Appr Total	Right	Thru	Left	Appr Total	Right	Thru	Left	Appr Total	Right	Thru	Left	Appr Total	
GROVEPORT ROAD & BIXBY ROAD																		
2020 Raw	7:00 AM	128	14	7	149	20	568	2	590	4	20	30	54	9	231	60	300	1,093
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		128	14	7	149	20	568	2	590	4	20	30	54	9	231	60	300	1,093
Yrly Grth		0.017	0.017	0.017		0.010	0.010	0.010		0.018	0.018	0.018		0.010	0.010	0.010		
2030 ST		150	16	8	174	22	625	2	649	5	24	35	64	10	254	66	330	1,217
Dev		63		17		18		8		40		71		25		6		
2030 FULL		213	16	25	254	40	625	11	676	44	24	106	174	35	254	72	361	1,465
2040 ST		234	19	27	280	42	682	11	735	45	27	111	184	36	277	78	391	1,589
Dev		63		17		18		8		40		71		25		6		
2040 FULL		297	19	44	360	60	682	19	761	85	27	182	294	61	277	84	423	1,838
GROVEPORT ROAD & KNIGHT STREET																		
2020 Raw	7:00 AM	0	0	0	0	0	565	3	568	14	0	25	40	10	232	0	242	850
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		0	0	0	0	0	565	3	568	14	0	25	40	10	232	0	242	850
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.010	0.010	0.010		
2030		0	0	0	0	0	621	4	625	14	0	25	40	11	255	0	266	931
2040		0	0	0	0	0	678	4	682	14	0	25	40	12	278	0	290	1,012
GROVEPORT ROAD & GOBEL DRIVE																		
2020 Raw	7:00 AM	0	0	0	0	0	555	2	557	8	0	13	21	5	241	0	247	824
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		0	0	0	0	0	555	2	557	8	0	13	21	5	241	0	247	824
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.010	0.010	0.010		
2030		0	0	0	0	0	610	2	612	8	0	13	21	6	266	0	271	904
2040		0	0	0	0	0	666	2	668	8	0	13	21	6	290	0	296	984
GROVEPORT ROAD & PRATER DRIVE/EDINBURGH DRIVE																		
2020 Raw	7:00 AM	11	1	3	15	3	507	3	513	12	0	21	33	9	235	1	245	806
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		11	1	3	15	3	507	3	513	12	0	21	33	9	235	1	245	806
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.010	0.010	0.010		
2030 ST		11	1	3	15	3	558	3	564	12	0	21	33	10	259	1	270	882
Dev		172		47		51		4		17		29		12		17		
2030 FULL		183	1	50	234	54	558	7	619	29	0	50	79	21	259	18	298	1,230
2040 ST		183	1	50	234	54	608	7	670	29	0	50	79	22	282	18	322	1,305
Dev																		
2040 FULL		183	1	50	234	54	608	7	670	29	0	50	79	22	282	18	322	1,305
GROVEPORT ROAD & SWISHER ROAD																		
2020 Raw	7:00 AM	0	0	0	0	0	530	4	534	3	0	10	13	1	249	0	250	797
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		0	0	0	0	0	530	4	534	3	0	10	13	1	249	0	250	797
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.033	0.033	0.033		0.010	0.010	0.010		
2030 ST		0	0	0	0	0	583	4	587	4	0	13	17	1	274	0	275	880
Dev																		
2030 FULL		0	0	0	0	0	583	4	587	4	0	13	17	1	274	0	275	880
2040 ST		0	0	0	0	0	636	5	641	5	0	17	22	1	299	0	300	962
Dev																		
2040 FULL		0	0	0	0	0	636	5	641	5	0	17	22	1	299	0	300	962
GROVEPORT ROAD & SALTZGABER ROAD																		
2018 Raw	7:00 AM	3	1	1	5	4	612	62	678	12	1	3	16	1	256	3	260	959
Yrly Grth		0.005	0.005	0.005		0.010	0.010	0.010		0.015	0.015	0.015		0.010	0.010	0.010		
2020		3	1	1	5	4	624	63	692	12	1	3	16	1	261	3	265	978
Yrly Grth		0.005	0.005	0.005		0.010	0.010	0.010		0.015	0.015	0.015		0.010	0.010	0.010		
2030 ST		3	1	1	5	4	687	70	761	14	1	4	19	1	287	3	292	1,077
TIS+Dev								140		28		104		120				
2030 FULL		3	1	1	5	4	687	210	901	42	1	108	151	121	287	3	412	1,469
2040 ST		3	1	1	6	5	749	216	970	44	1	108	153	122	313	4	439	1,568
TIS																		
2040 FULL		3	1	1	6	5	749	216	970	44	1	108	153	122	313	4	439	1,568
GROVEPORT ROAD & GREENPOINTE DRIVE																		
2018 Raw	7:00 AM	7	4	4	15	38	626	120	784	68	4	43	115	77	170	26	273	1,187
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.008	0.008	0.008		
2020		7	4	4	15	39	639	122	800	68	4	43	115	78	173	26	277	1,207
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.008	0.008	0.008		
2030 ST		7	4	4	15	43	702	135	880	68	4	43	115	84	185	28	298	1,308
Dev		3		2		10										7		
2030 FULL		10	4	6	20	53	702	135	890	68	4	43	115	84	185	35	305	1,330
2040 ST		10	4	6	20	57	766	147	970	68	4	43	115	90	198	37	326	1,431
Dev																		
2040 FULL		10	4	6	20	57	766	147	970	68	4	43	115	90	198	37	326	1,431
GROVEPORT ROAD & LONDON GROVEPORT ROAD (SR 317)																		
2018 Raw	7:00 AM	161	293	25	479	69	564	46	679	37	235	60	332	35	105	97	237	1,727
Yrly Grth		0.012	0.012	0.012		0.008	0.008	0.008		0.016	0.016	0.016		0.008	0.008	0.008		
2020		165	300	26	490	70	572	47	689	38	243	62	343	36	107	98	241	1,763
Yrly Grth		0.012	0.012	0.012		0.008	0.008	0.008		0.016	0.016	0.016		0.008	0.008	0.008		
2030		185	336	29	549	75	615	50	741	44	281	72	397	38	115	106	259	1,946
2040		204	372	32	608	81	658	54	793	50	320	82	452	41	123	113	277	2,130

EXHIBIT 4

WORKSHEET FOR 2020, 2030 & 2040 PM PEAK HOURS (NOT SMOOTHED)

Year	Start Time	Southbound				Westbound				Northbound				Eastbound				Inter Total
		Right	Thru	Left	Appr Total	Right	Thru	Left	Appr Total	Right	Thru	Left	Appr Total	Right	Thru	Left	Appr Total	
GROVEPORT ROAD & BIXBY ROAD																		
2020 Raw	4:30 PM	88	16	20	124	19	413	4	436	8	37	16	61	10	501	130	641	1,262
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		88	16	20	124	19	413	4	436	8	37	16	61	10	501	130	641	1,262
Yrly Grth		0.017	0.017	0.017		0.010	0.010	0.010		0.018	0.018	0.018		0.010	0.010	0.010		
2030 ST		103	19	23	145	21	454	4	480	9	44	19	72	11	551	143	705	1,402
Dev		14		6		16		21		13		17		31		18		
2030 FULL		117	19	29	165	37	454	25	517	23	44	36	102	42	551	161	754	1,539
2040 ST		132	21	33	186	39	496	26	560	24	50	39	113	43	601	174	819	1,679
Dev		14		6		16		21		13		17		31		18		
2040 FULL		147	21	38	207	55	496	46	597	37	50	56	144	74	601	192	868	1,816
GROVEPORT ROAD & KNIGHT STREET																		
2020 Raw	7:00 AM	0	0	0	0	0	421	20	442	11	0	15	26	24	505	0	529	997
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		0	0	0	0	0	421	20	442	11	0	15	26	24	505	0	529	997
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.010	0.010	0.010		
2030		0	0	0	0	0	463	22	486	11	0	15	26	26	556	0	582	1,094
2040		0	0	0	0	0	505	24	530	11	0	15	26	29	606	0	635	1,191
GROVEPORT ROAD & GOBEL DRIVE																		
2020 Raw	7:00 AM	0	0	0	0	0	434	10	444	5	0	7	13	12	505	0	516	973
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		0	0	0	0	0	434	10	444	5	0	7	13	12	505	0	516	973
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.010	0.010	0.010		
2030		0	0	0	0	0	478	11	489	5	0	7	13	13	555	0	568	1,069
2040		0	0	0	0	0	521	12	533	5	0	7	13	14	606	0	620	1,165
GROVEPORT ROAD & PRATER DRIVE/EDINBURGH DRIVE																		
2020 Raw	4:30 PM	5	0	2	7	8	421	18	447	12	0	16	28	21	447	9	477	959
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		5	0	2	7	8	421	18	447	12	0	16	28	21	447	9	477	959
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.010	0.010	0.010		
2030 ST		5	0	2	7	9	463	20	492	12	0	16	28	23	492	10	525	1,051
Dev		49		20		55		24		13		17		28		62		
2030 FULL		54	0	22	76	64	463	44	571	25	0	33	58	51	492	72	615	1,320
2040 ST		54	0	22	76	65	505	45	616	25	0	33	58	53	536	73	662	1,412
Dev																		
2040 FULL		54	0	22	76	65	505	45	616	25	0	33	58	53	536	73	662	1,412
GROVEPORT ROAD & SWISHER ROAD																		
2020 Raw	4:30 PM	0	0	0	0	0	440	9	449	14	0	7	21	7	459	0	466	936
Yrly Grth		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		
2020		0	0	0	0	0	440	9	449	14	0	7	21	7	459	0	466	936
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.033	0.033	0.033		0.010	0.010	0.010		
2030 ST		0	0	0	0	0	484	10	494	19	0	9	28	8	505	0	513	1,034
Dev																		
2030 FULL		0	0	0	0	0	484	10	494	19	0	9	28	8	505	0	513	1,034
2040 ST		0	0	0	0	0	528	11	539	23	0	12	35	8	551	0	559	1,133
Dev																		
2040 FULL		0	0	0	0	0	528	11	539	23	0	12	35	8	551	0	559	1,133
GROVEPORT ROAD & SALTZGABER ROAD																		
2018 Raw	4:30 PM	2	0	2	4	3	397	27	427	104	0	1	105	2	564	5	571	1,107
Yrly Grth		0.005	0.005	0.005		0.010	0.010	0.010		0.015	0.015	0.015		0.010	0.010	0.010		
2020		2	0	2	4	3	405	28	436	107	0	1	108	2	575	5	582	1,130
Yrly Grth		0.005	0.005	0.005		0.010	0.010	0.010		0.015	0.015	0.015		0.010	0.010	0.010		
2030 ST		2	0	2	4	3	445	30	479	123	0	1	124	2	633	6	641	1,248
TIS+Dev								95		51		112		100				
2030 FULL		2	0	2	4	3	445	125	574	175	0	113	288	102	633	6	741	1,607
2040 ST		2	0	2	4	4	486	128	617	191	0	114	304	102	690	6	799	1,725
TIS																		
2040 FULL		2	0	2	4	4	486	128	617	191	0	114	304	102	690	6	799	1,725
GROVEPORT ROAD & GREENPOINTE DRIVE																		
2018 Raw	4:30 PM	54	9	140	203	63	283	65	411	234	12	95	341	22	584	44	650	1,605
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.008	0.008	0.008		
2020		54	9	140	203	64	289	66	419	234	12	95	341	22	593	45	660	1,623
Yrly Grth		0.000	0.000	0.000		0.010	0.010	0.010		0.000	0.000	0.000		0.008	0.008	0.008		
2030 ST		54	9	140	203	71	318	73	461	234	12	95	341	24	637	48	709	1,714
Dev		3		9		6										4		
2030 FULL		57	9	149	215	77	318	73	467	234	12	95	341	24	637	52	713	1,737
2040 ST		57	9	149	215	83	346	80	509	234	12	95	341	26	682	55	763	1,828
Dev																		
2040 FULL		57	9	149	215	83	346	80	509	234	12	95	341	26	682	55	763	1,828
GROVEPORT ROAD & LONDON GROVEPORT ROAD (SR 317)																		
2018 Raw	4:30 PM	174	332	115	621	106	242	73	421	112	324	42	478	40	589	322	951	2,471
Yrly Grth		0.012	0.012	0.012		0.008	0.008	0.008		0.016	0.016	0.016		0.008	0.008	0.008		
2020		178	340	118	636	108	246	74	427	116	334	43	493	41	598	327	965	2,522
Yrly Grth		0.012	0.012	0.012		0.008	0.008	0.008		0.016	0.016	0.016		0.008	0.008	0.008		
2030		200	381	132	712	116	264	80	459	134	388	50	572	44	643	351	1,038	2,781
2040		221	422	146	789	124	282	85	491	153	441	57	651	47	688	376	1,110	3,041

Exhibit 5

2020 AM Peak Hour Traffic Volumes

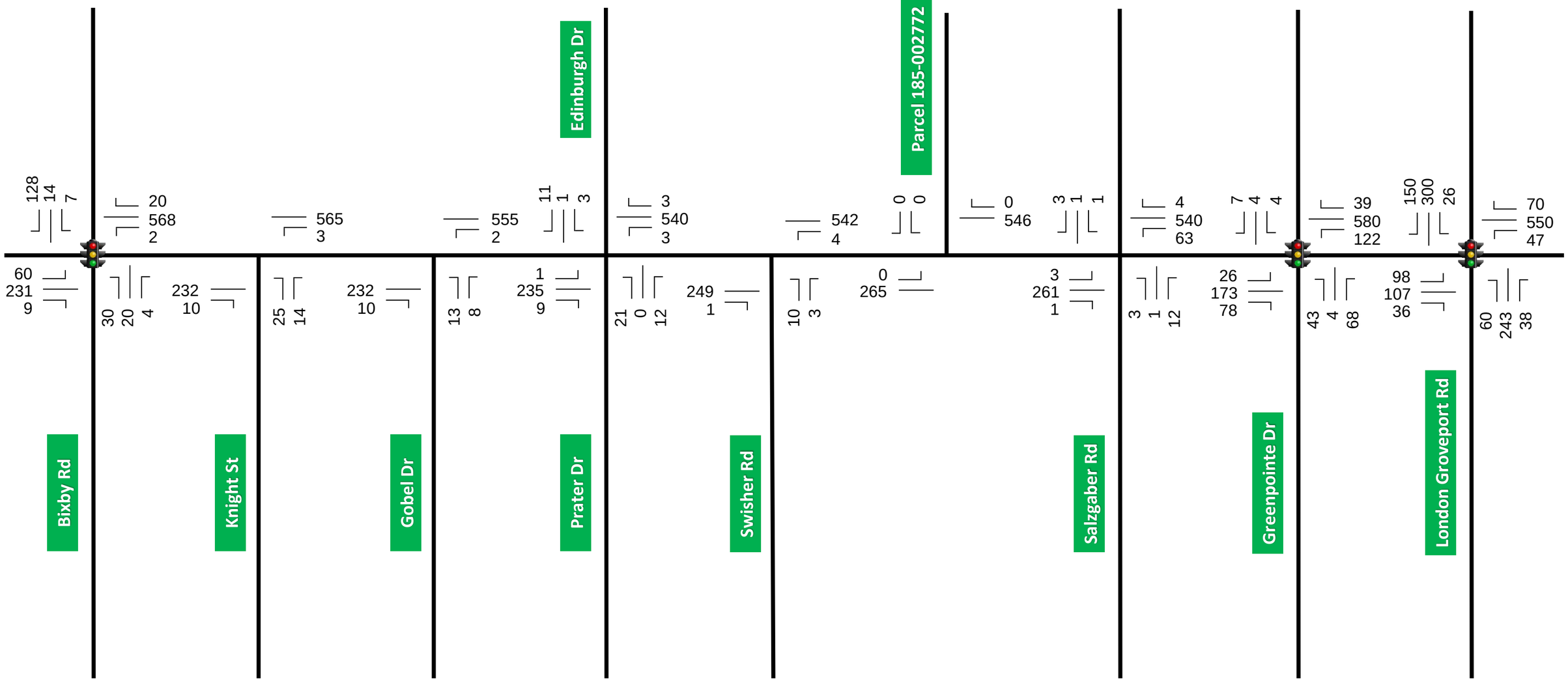


Exhibit 6

2020 PM Peak Hour Traffic Volumes

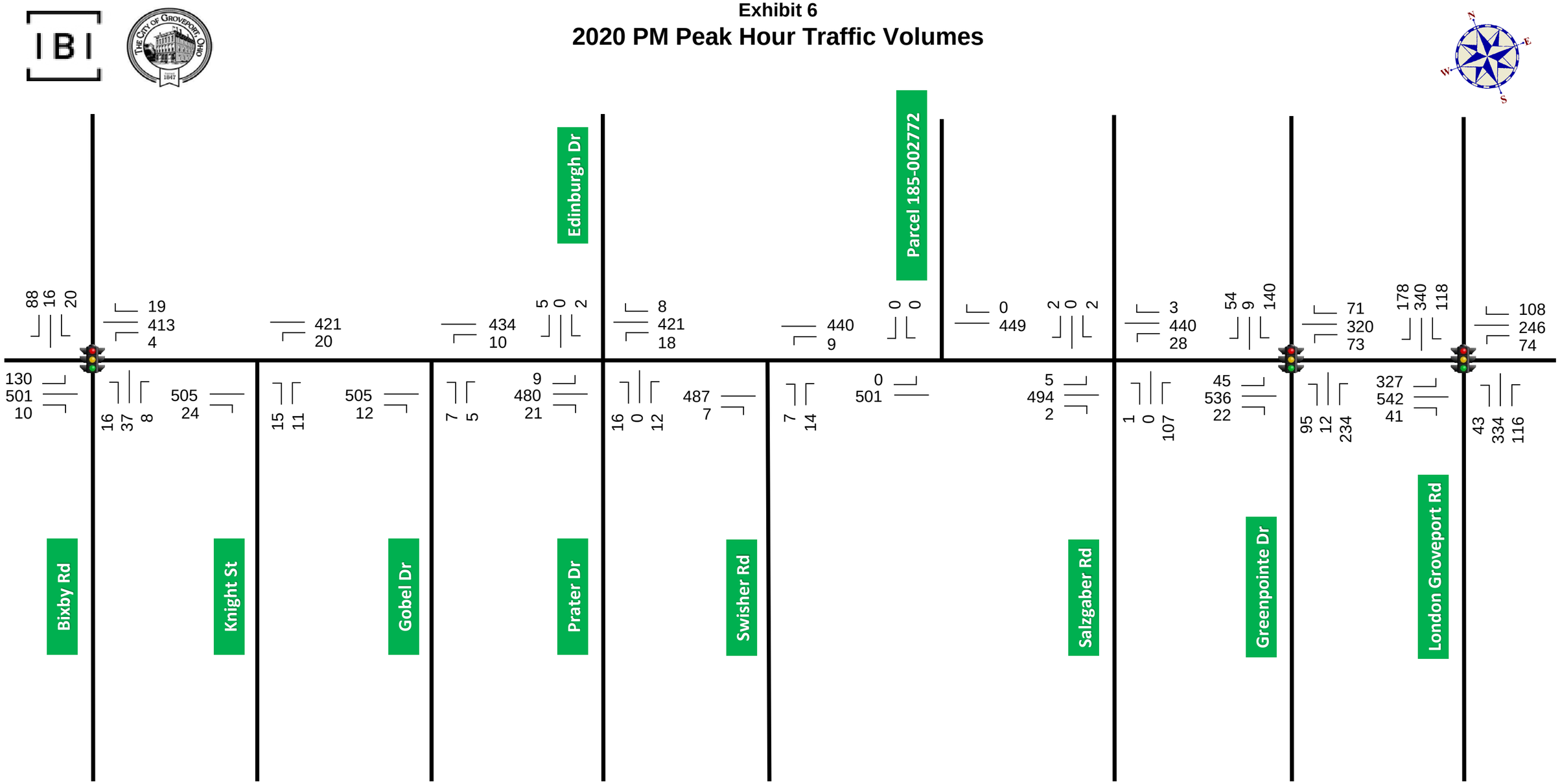


Exhibit 7

2030 AM Peak Hour Traffic Volumes - Smoothed

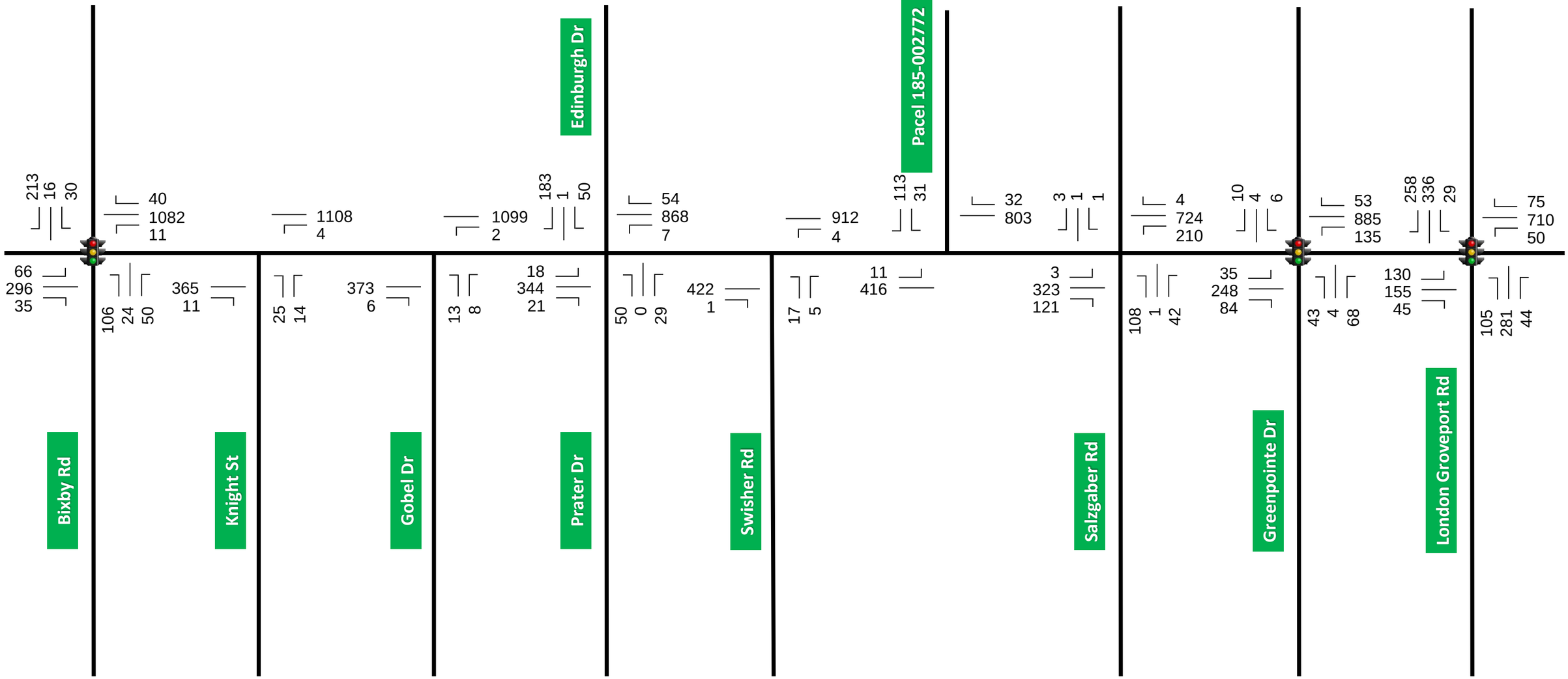


Exhibit 8

2030 PM Peak Hour Traffic Volumes - Smoothed

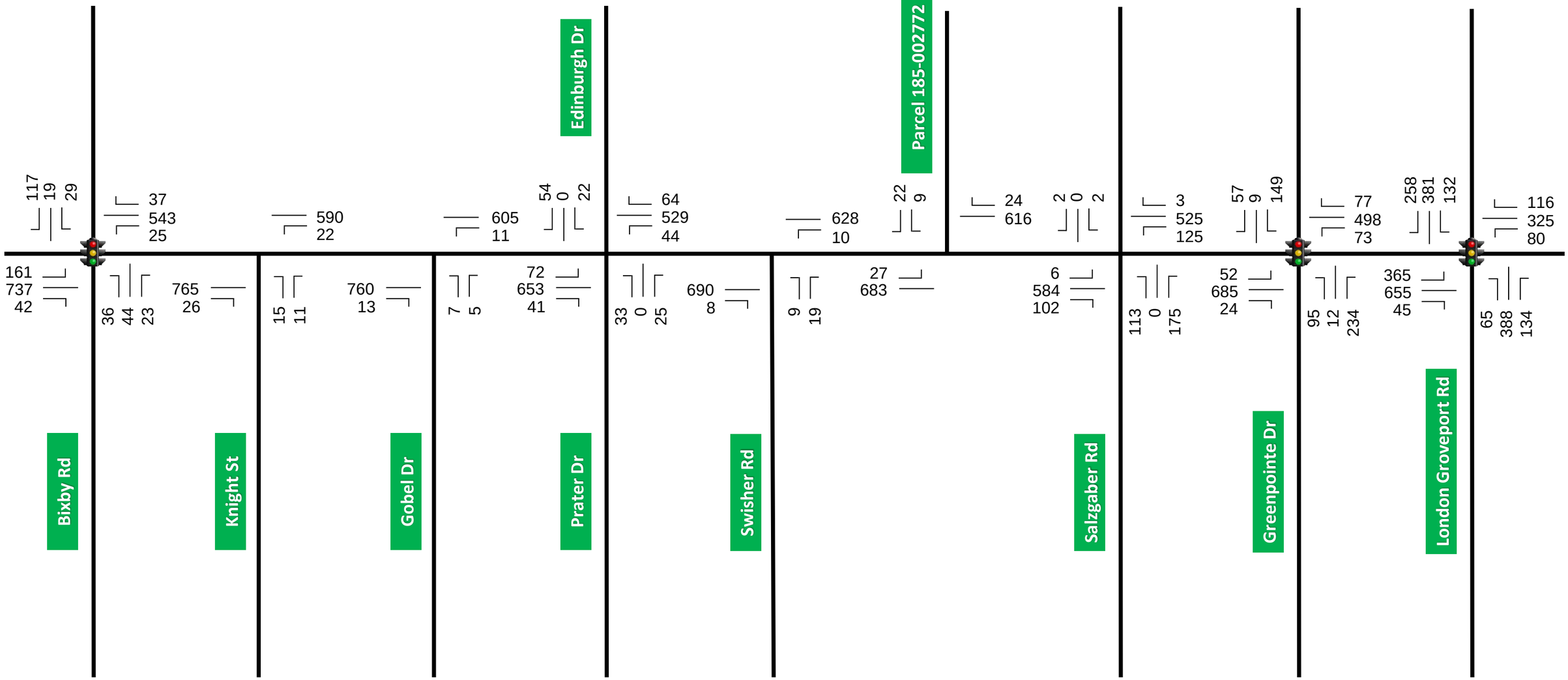


Exhibit 9

2040 AM Peak Hour Traffic Volumes - Smoothed

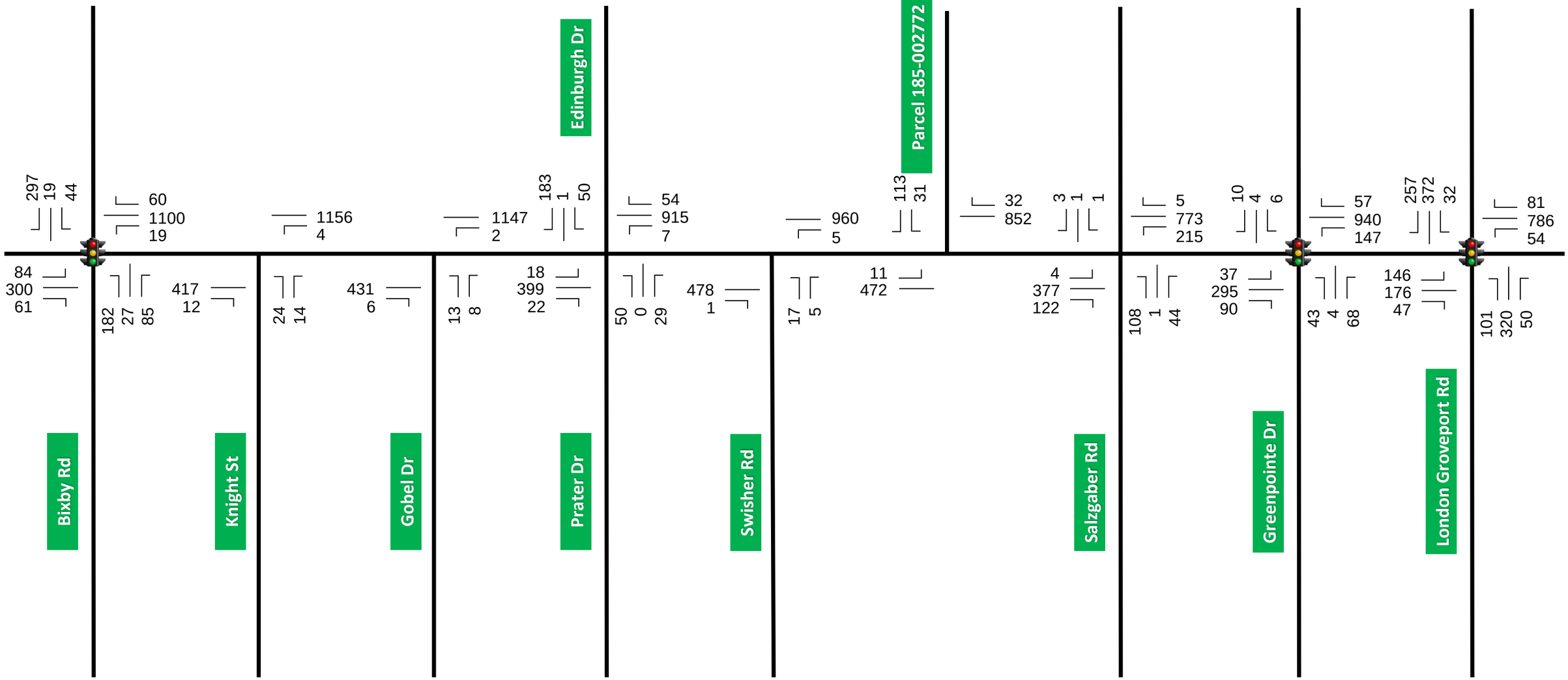
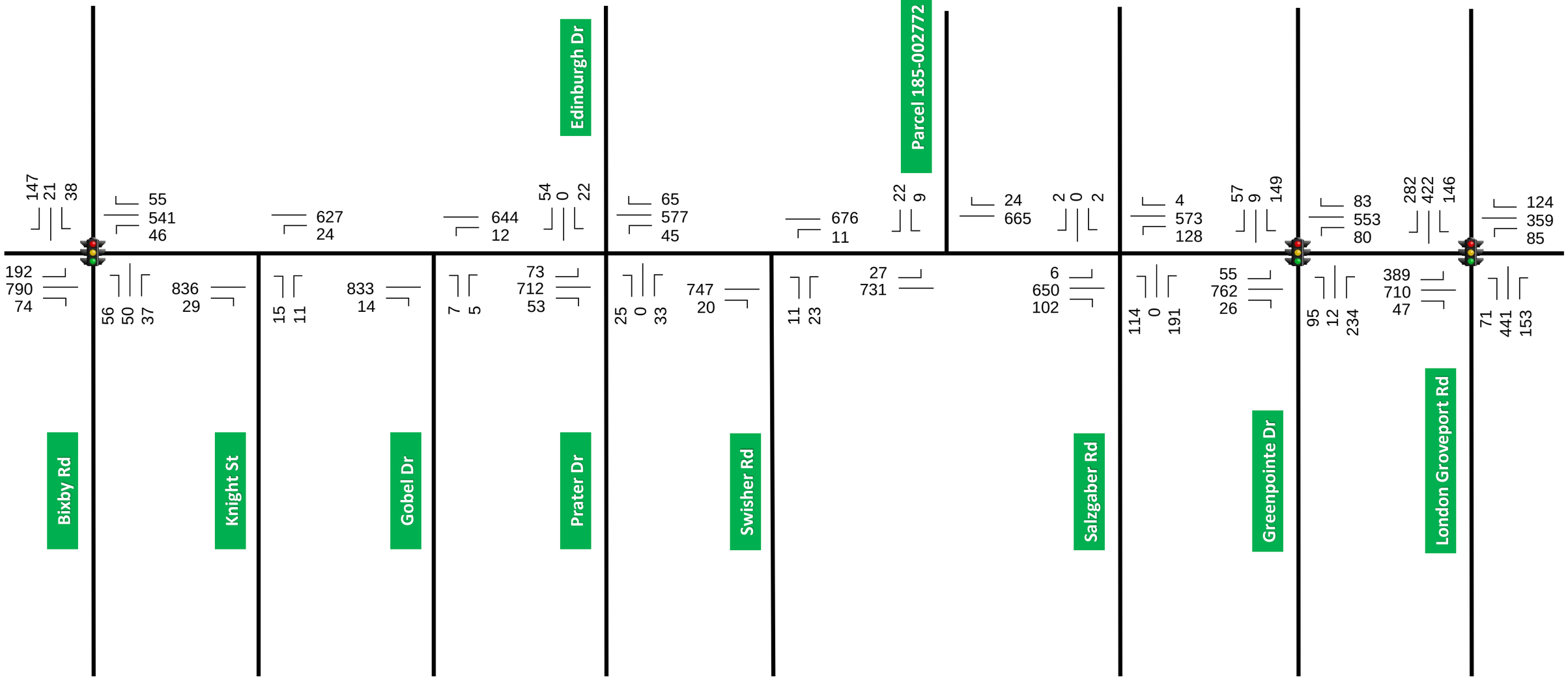


Exhibit 10

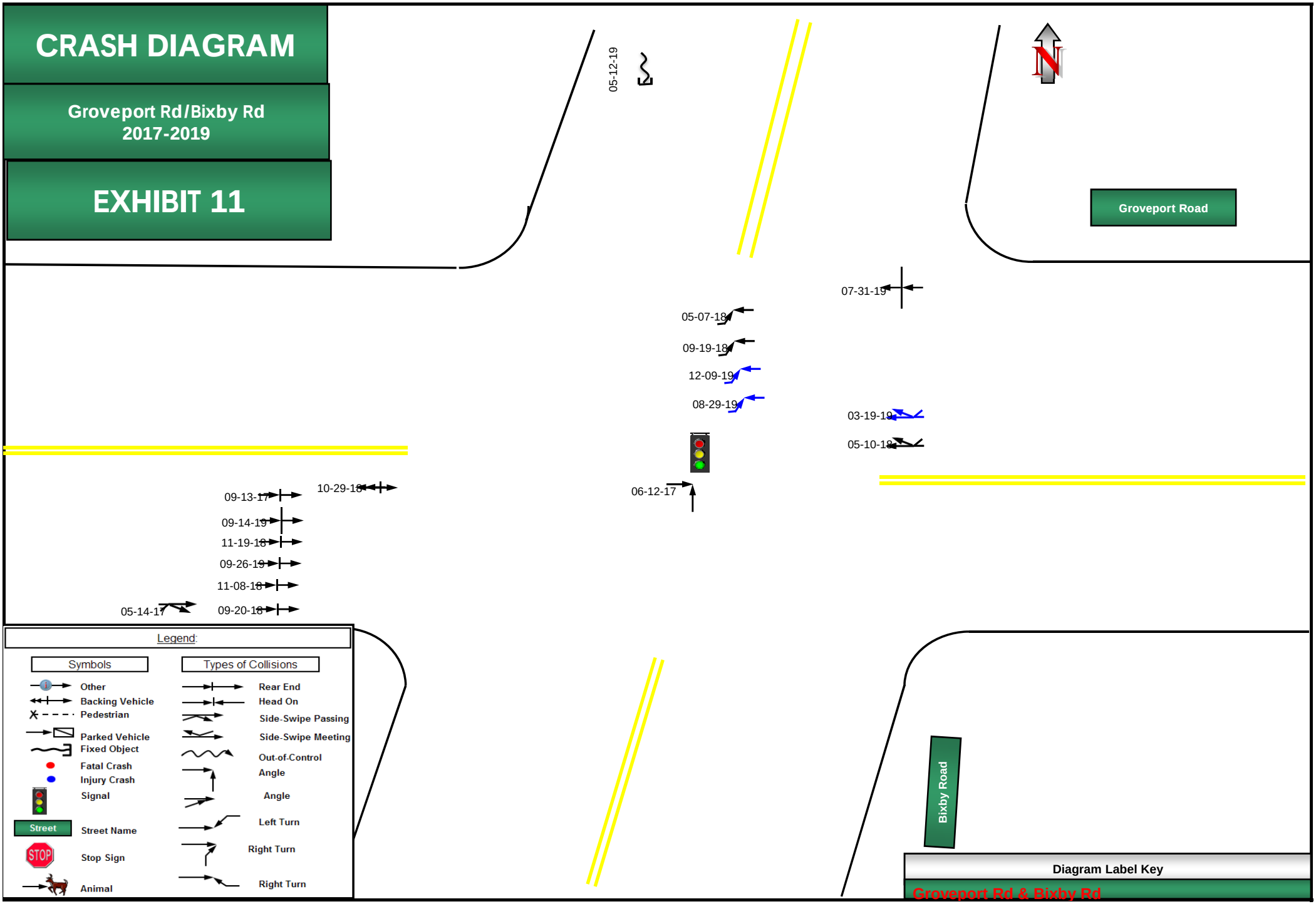
2040 PM Peak Hour Traffic Volumes - Smoothed



CRASH DIAGRAM

Groveport Rd/Bixby Rd
2017-2019

EXHIBIT 11



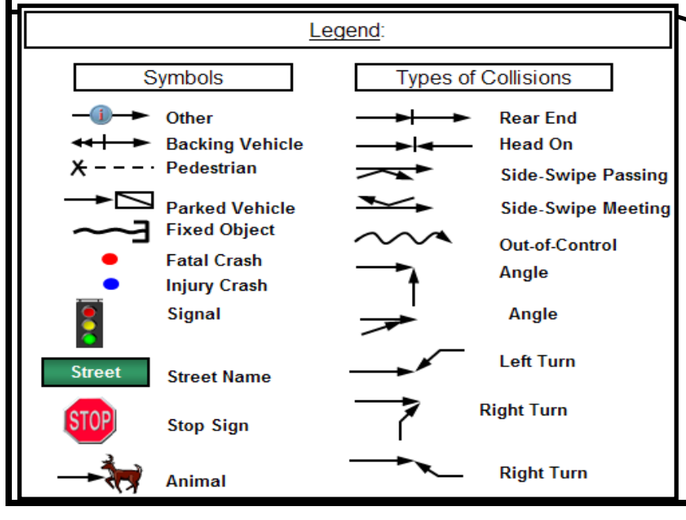
CRASH DIAGRAM

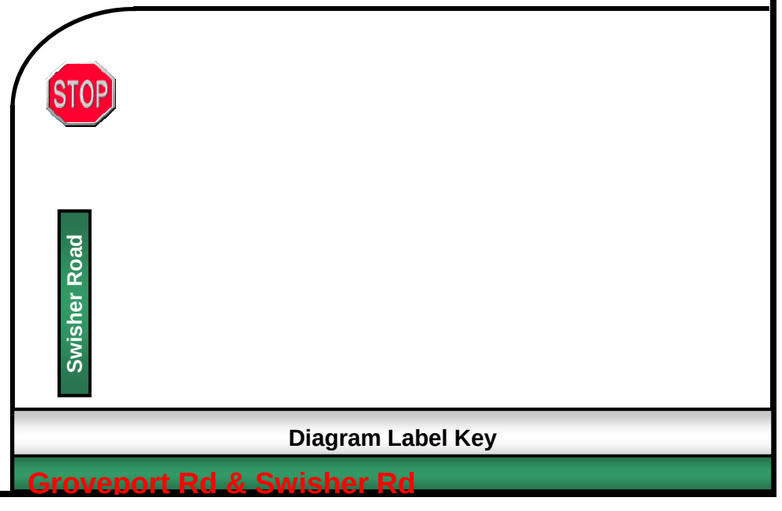
Groveport Rd/Swisher Rd
2017-2019

EXHIBIT 12

Groveport Road

11-17-18





CRASH DIAGRAM

Groveport Rd/Saltzgaber Rd
2017-2019

EXHIBIT 13

Groveport Road

09-04-19

10-22-19

08-28-19

10-24-19

04-09-19

08-15-17

01-23-19

11-17-19

10-29-17

06-06-17

10-01-18

03-14-17

11-11-18

Legend:

Symbols	Types of Collisions
Other	Rear End
Backing Vehicle	Head On
Pedestrian	Side-Swipe Passing
Parked Vehicle	Side-Swipe Meeting
Fixed Object	Out-of-Control
Fatal Crash	Angle
Injury Crash	Angle
Signal	Left Turn
Street — Street Name	Right Turn
STOP — Stop Sign	Right Turn
Animal	

STOP

Saltzgaber Road

Diagram Label Key

#REF!

CRASH DIAGRAM

Groveport Rd/Greenpointe Dr
2017-2019

EXHIBIT 14

Groveport Rd

SR 317

Legend:

Symbols	Types of Collisions
Other	Rear End
Backing Vehicle	Head On
Pedestrian	Side-Swipe Passing
Parked Vehicle	Side-Swipe Meeting
Fixed Object	Out-of-Control
Fatal Crash	Angle
Injury Crash	Angle
Signal	Left Turn
Street Name	Right Turn
Stop Sign	Right Turn
Animal	

CRASH DIAGRAM

Groveport Rd/London-Groveport 2017-2019

EXHIBIT 15

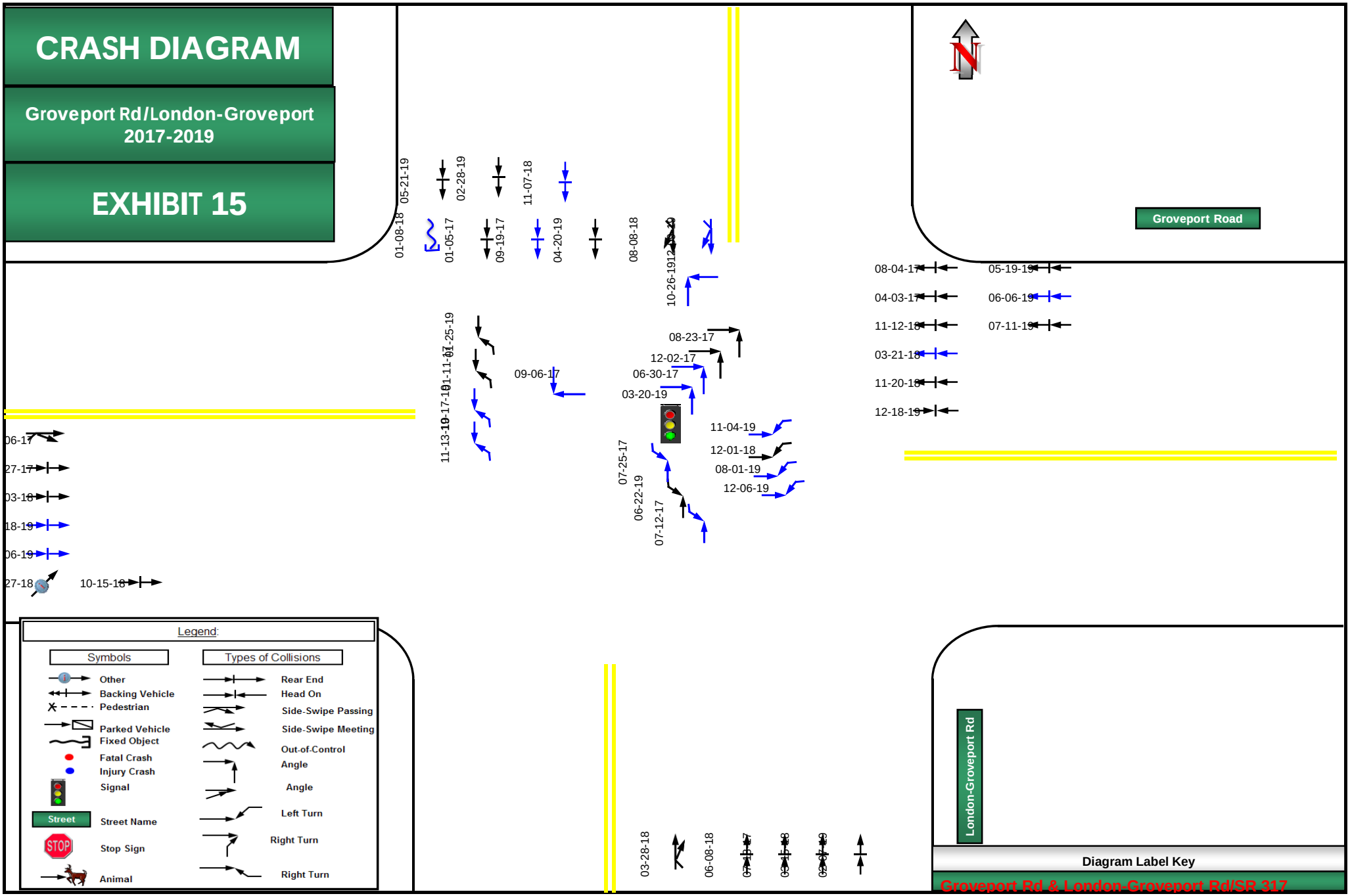


Exhibit 16

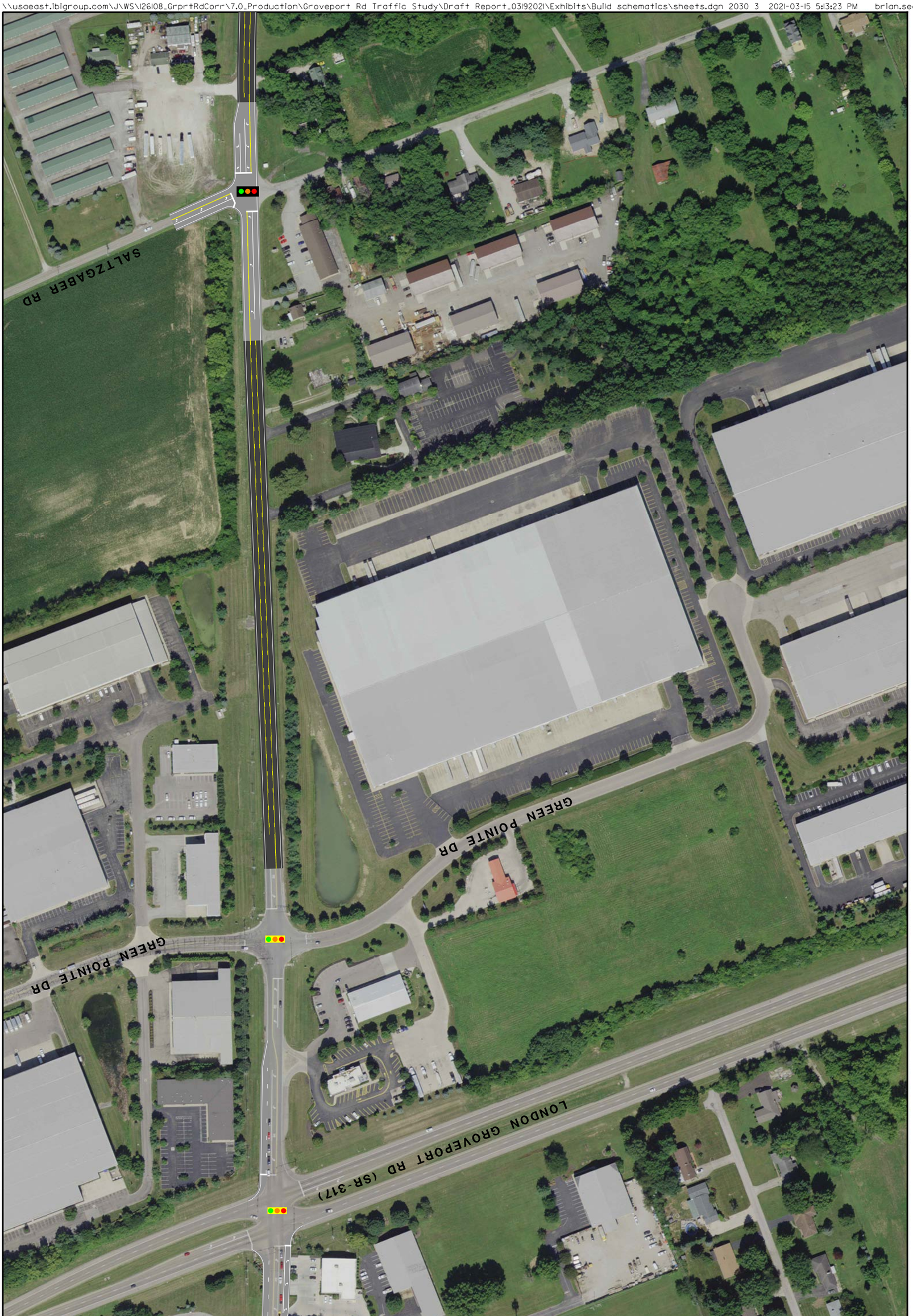
Level of Service Results

		Existing + Committed Network							Recommended Build			
		AM			PM				AM		PM	
		2020	2030	2040	2020	2030	2040		2030	2040	2030	2040
Bixby	EB	A 10	A 9	B 15	B 15	B 17	B 19	EB	A 9	B 20	B 17	C 25
	WB	B 14	C 31	F 82	A 10	B 11	B 10	WB	C 31	D 37	B 11	C 22
	NB	B 13	C 28	F 81	B 15	B 16	B 18	NB	C 28	D 37	B 16	C 23
	SB	B 14	C 32	C 31	B 15	B 17	B 19	SB	C 32	D 37	B 17	C 25
	ALL	B 13	C 27	E 61	B 13	B 15	B 16	ALL	C 27	C 34	B 15	C 24
Knight	NB	C 15	E 36	E 42	C 18	D 31	E 37	NB	E 36	A 10	D 31	B 12
Gobel	NB	B 14	D 30	E 35	C 17	D 27	D 32	NB	D 30	C 19	D 27	C 23
Prater/ Edinburgh	EB	A 0	A 1	A 0	A 0	A 1	A 1	EB	A 8	B 12	B 15	B 15
	WB	A 0	A 0	A 0	A 0	A 1	A 1	WB	B 20	B 14	B 11	A 10
	NB	C 16	F 373	F 597	C 19	F 72	F 67	NB	B 20	B 14	B 15	B 15
	SB	B 14	E 45	F 55	B 15	D 33	E 43	SB	B 18	B 13	B 15	B 15
	ALL	-	-	-	-	-	-	ALL	B 17	B 13	B 13	B 13
Swisher	NB	C 15	D 30	D 35	B 15	C 21	C 25	NB	D 30	D 35	C 21	C 25
Saltzgaber	EB	A 0	A 0	A 0	A 0	A 0	A 0	EB	B 15	B 16	C 21	C 23
	WB	A 1	A 2	A 2	A 1	A 2	A 2	WB	B 14	B 15	A 8	A 8
	NB	B 13	F 340	F 484	B 14	F 136	F 197	NB	B 16	B 16	C 22	C 24
	SB	C 17	E 35	E 42	C 22	F 54	F 78	SB	B 15	B 15	B 17	B 18
	ALL	-	-	-	-	-	-	ALL	B 15	B 16	B 16	B 17
Green Pointe	EB	A 10	A 8	A 7	B 16	B 19	C 22	EB	A 8	A 7	B 19	C 22
	WB	B 14	B 19	B 20	B 14	B 15	B 15	WB	B 19	B 20	B 15	B 15
	NB	B 14	B 19	B 20	B 14	B 16	B 17	NB	B 19	B 20	B 16	B 17
	SB	B 14	B 18	B 20	B 17	B 20	C 21	SB	B 18	B 20	B 20	C 21
	ALL	B 13	B 16	B 17	B 15	B 17	B 19	ALL	B 16	B 17	B 17	B 19
SR-317	EB	C 22	C 25	C 29	C 34	C 32	C 35	EB	C 25	C 27	C 32	C 33
	WB	C 34	D 39	D 45*	C 29	C 32	C 35	WB	D 39	D 38	C 32	C 33
	NB	C 32	C 33	D 36	C 33	C 31	C 32	NB	C 33	D 38	C 31	C 33
	SB	C 35	D 39	D 46	C 33	C 32	C 35	SB	D 39	D 38	C 32	C 28
	ALL	C 32	D 36	D 41	C 33	C 32	C 34	ALL	D 36	D 36	C 32	C 32

* WB thru v/c = 0.955

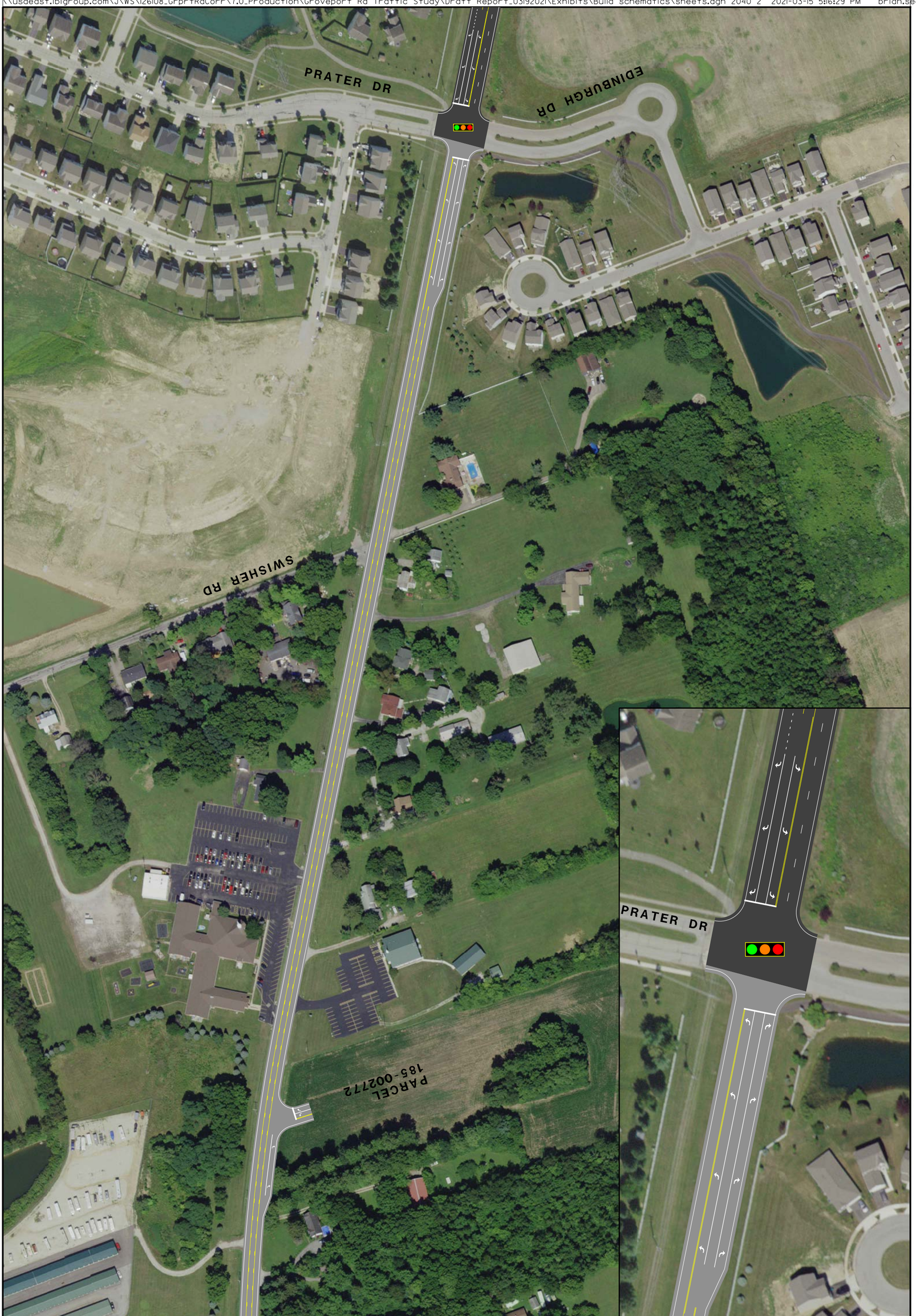
3	**EXHIBIT 17**	**2030 RECOMMENDED BUILD**	CALCULATED BSS / CHECKED JEB	0 50 100 200 HORIZONTAL SCALE IN FEET

3 of 2	**EXHIBIT 17**	**2030 RECOMMENDED BUILD**	CALCULATED BSS CHECKED JEB	0 100 50 200 HORIZONTAL SCALE IN FEET

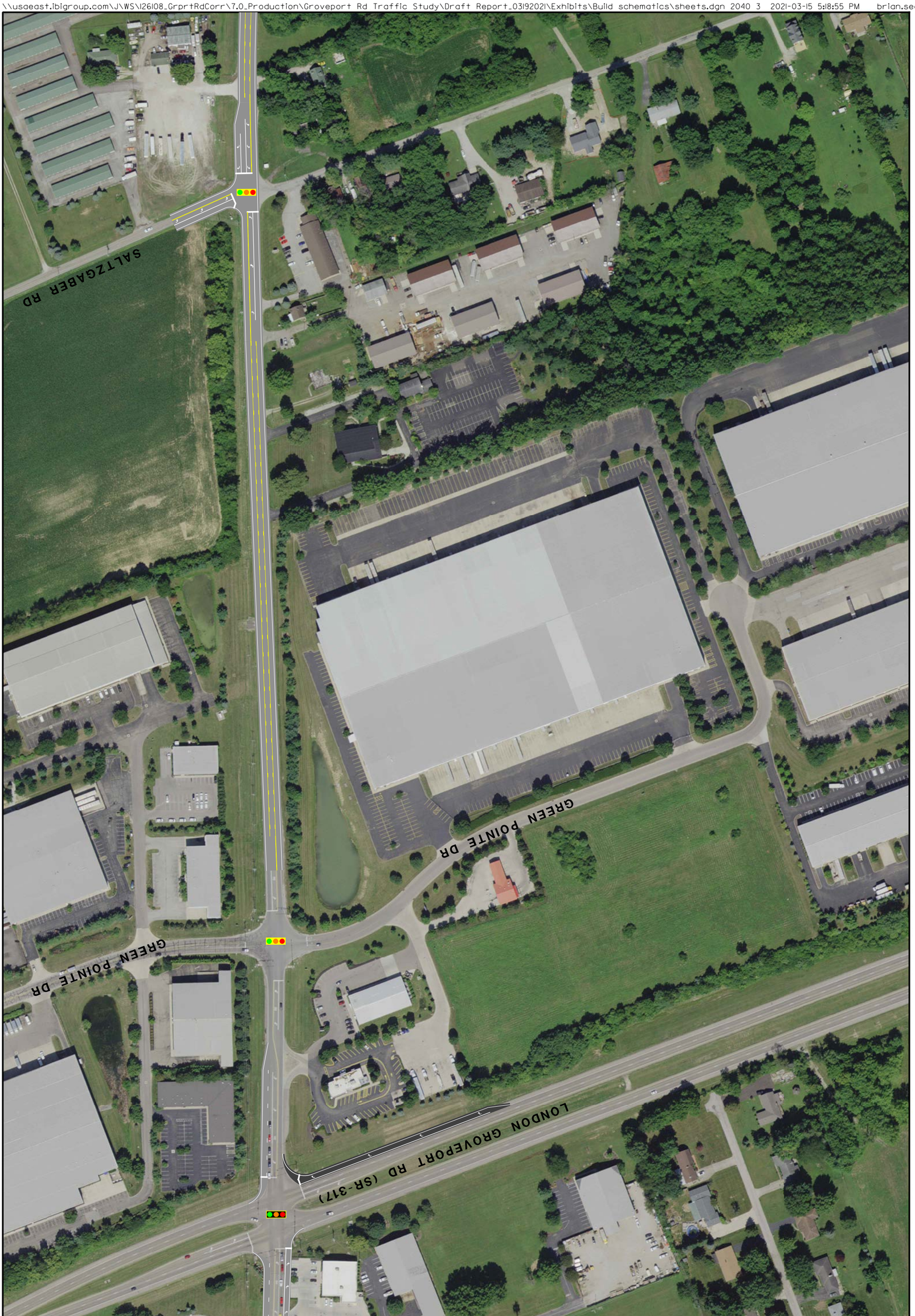


3 / 3	**EXHIBIT 17**	**2030 RECOMMENDED BUILD**	CALCULATED BSS CHECKED JEB	0 50 100 200 HORIZONTAL SCALE IN FEET

3	**EXHIBIT 18**	**2040 RECOMMENDED BUILD**	CALCULATED BSS / CHECKED JEB	0 50 100 200 HORIZONTAL SCALE IN FEET



3 of 2	**EXHIBIT 18**	**2040 RECOMMENDED BUILD**	CALCULATED BSS CHECKED JEB	0 100 50 200 HORIZONTAL SCALE IN FEET



3 / 3	**EXHIBIT 18**	**2040 RECOMMENDED BUILD**	CALCULATED BSS / CHECKED JEB	0 50 100 200 HORIZONTAL SCALE IN FEET

\\usaeast.ibigroup.com\J\WS\126108_GrprtRdCorr\7.0_Production\Groveport Rd Traffic Study\Draft Report_03192021\Exhibits\Build schematics\sheets.dgn Roundabouts I 2021-03-15 5:19:51 PM brian.s

3

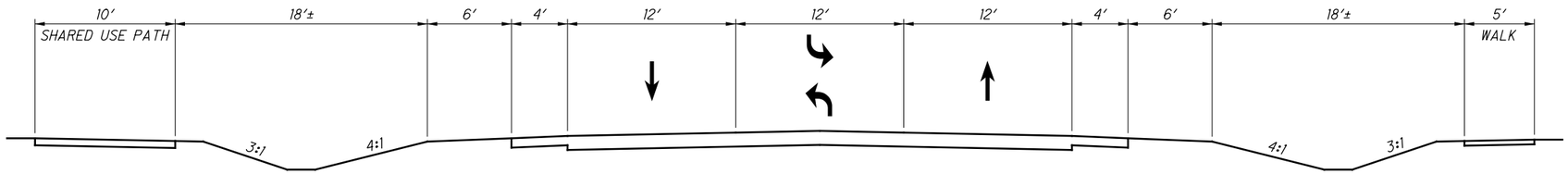
EXHIBIT 19

ROUNDABOUT INTERSECTION CONCEPTUAL DESIGN

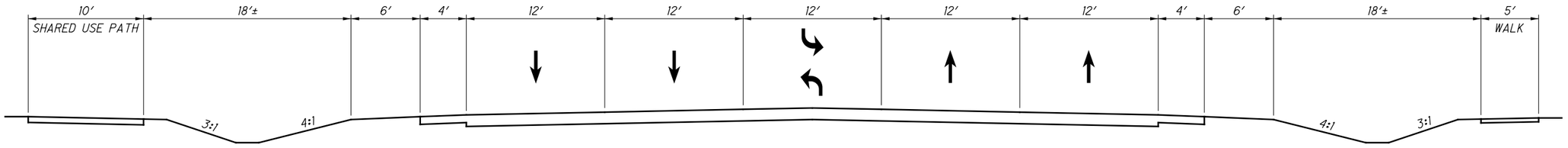
CALCULATED BSS
CHECKED JEB

0 50 100 200
HORIZONTAL SCALE IN FEET

3 of 2	**EXHIBIT 19**	**ROUNDABOUT INTERSECTION CONCEPTUAL DESIGN**	CALCULATED BSS CHECKED JEB	0 100 50 200 HORIZONTAL SCALE IN FEET



3 LANE SECTION - GROVEPORT ROAD



5 LANE SECTION - GROVEPORT ROAD

CALCULATED BSS
CHECKED JEB

TYPICAL SECTIONS

EXHIBIT 20

1/1