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January 2020

Proposed Redevelopment of 27 51st Street

27 51st Street
Upper Lawrenceville Neighborhood
City of Pittsburgh
Allegheny County, PA

PREPARED FOR

Spear Street Capital
600 Grant Street, Suite 4800
Pittsburgh, PA 15219



SUBMITTED BY

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EXECUTIVE SUMMARY

Project Description

The proposed redevelopment of 27 51st Street in the Upper Lawrenceville Neighborhood of the City of Pittsburgh. The redevelopment will provide a total of 260,000 square feet of space. The space will be utilized as office space and research and development (R&D) space. Those space is *estimated* to broken down as follows: 195,000 square feet (s.f.) of office space and 65,000 s.f. of R&D space.

The site is in the City of Pittsburgh's 10th Ward and is within the Riverfront Industrial Mixed-Use (RIV-IMU) zoning district.

Existing and Future Without Development Conditions

Turning movement counts were performed to determine the Existing Year 2018 morning (AM) and evening (PM) peak hour traffic volumes at the study intersections.

A linear growth rate of 1.20% was obtained from a representative of the Southwestern Pennsylvania Commission (SPC). This rate was applied to the Existing Year 2018 peak hour traffic volumes to develop the Analyses Year Conditions Without Development traffic volumes.

Trip Generation and Distribution

Trip Generation

The Institute of Transportation Engineers' (ITE) *Trip Generation*, 10th Edition, was used to determine the trip generation rates for the proposed development effort. Specifically, Land Use (LU) Code 710 (*General Office*) and LU Code 760 (*Research and Development Center*) were utilized.

These rates were then utilized to determine the additional trips to be generated by the proposed development. The additional vehicle trips estimated during a typical weekday during the AM and PM peak hours are as follows¹:

- 2,618 average daily trips (1,309 entering and exiting)
- 209 vehicular trips during the AM peak hour (178 entering and 31 exiting)
- 228 vehicular trips during the PM peak hour (47 entering and 182 exiting)

¹ The total trips (including transit trips, walking trips, bicycle trips, and vehicular trips) can be seen on Table 1 at the end of this report and is discussed in more detail in Section 9.0 of this report.

Trip Distribution

The trip generation data, the existing directional distribution of traffic at the study intersections, the site layout and access, and observed field conditions were all used to assign the site-generated trips to the study area roadway network. Engineering judgement and proposed access locations and restrictions were used to distribute the traffic to and from each of the proposed access points for the redeveloped site.

List of Study Intersections

The study area for the proposed development includes the following intersections:

- Butler Street and 48th Street / Plummer Street
- Butler Street and 51st Street / Stanton Avenue
- Butler Street and 52nd Street

Summary and Conclusions

As has been demonstrated in this report, the proposed redevelopment of 27 51st Street is not anticipated to significantly impact the study area.

Capacity analyses show that all of the study intersections currently operate at acceptable Levels of Service (LOS) and are projected to continue to operate at acceptable Levels of Service upon occupancy of the proposed redevelopment. While there are certain approaches that will operate at reduced LOS, the overall intersections are projected to operate at no worse than LOS D during either the AM or PM peak hour.

Similarly, queue analyses show that while some increases in queues are expected as a result of the additional site-generated traffic, and while some queues may extend back through an adjacent intersection, those queues are expected to dissipate (i.e. the v/c ratio is less than 1.0). This is not unexpected in a developed urban area during peak times.

In an effort to reduce impacts to queues and to delays during peak times, the developer is proposing Transportation Demand Management (TDM) measures to incentivize non-vehicular trips and assist in reducing the vehicular demands of the site. The following TDM measures are intended to be implemented and maintained by the developer as a part of the redevelopment of 27 51st Street:

- Set mode split goals consistent with Upper Lawrenceville plans and goals.
- Property owner will make potential tenants aware of TDM requirements and the requirement to maintain multi-modal facilities.

- Encourage through lease documents for tenants to provide transit passes or subsidies to employees.
- Offer employees or residents free or discount bikeshare membership through the Healthy Ride Corporate Membership Program.
- Provide infrastructure within the facility for real time transportation displays (i.e. wifi for access to traffic mapping apps, etc.).

In addition to these programmatic TDM measures, the following site plan strategies are proposed to be implemented:

- Provide adequate sidewalk widths and ADA ramps along the building frontage.
- Provide bicycle parking required by code (in this case, bicycle parking will exceed code), which will include convenient short-term parking and secure, covered accessible parking from the ground floor for long-term parking or storage.
- Provide a Bikeshare station on site to encourage tenants to use these bikes for short trips along the Butler Street corridor and neighboring sections of the City.
- Provide shower rooms or shower passes for employees who bike to work.
- Provide priority carpool parking spaces through leases with tenants.
- Encourage through lease documents sponsored car share or bikeshare memberships for employees.

In conclusion, the proposed redevelopment of 27 51st Street in the Upper Lawrenceville Neighborhood of the City of Pittsburgh is not anticipated to have a significant impact to traffic operations at the study intersections. The developer is committed to implementing TDM measures to reduce the vehicular demands of the site.

1.0 NAME OF PROJECT

Name of Project: Redevelopment of 27 51st Street

Developer / Applicant: Spear Street Capital

Anticipated Development Date: Year 2020

Date Filed: January 9, 2020

Prepared By: The Gateway Engineers, Inc.

2.0 PROJECT LOCATION

The proposed redevelopment of 27 51st Street in the Upper Lawrenceville Neighborhood of the City of Pittsburgh. The site location can be seen on **Figure 1** in the Figures Section at the end of this report. A City Neighborhood Map of the area has also been provided as **Figure 2**.

The site is located in the City of Pittsburgh's 10th Ward and is within the Riverfront Industrial Mixed-Use (RIV-IMU) zoning district as is shown on **Figure 3** at the end of this report.

3.0 PROJECT COMPONENTS

3.1 *Development Description*

The subject site is located at 27 51st Street. The property currently contains an existing warehouse / manufacturing / retail facility with two (2) full access driveways to 51st Street.

The redevelopment will provide a total of 260,000 square feet of space. The space will be utilized as office space and research and development (R&D) space. Those spaces are estimated to broken down as follows: 195,000 square feet (s.f.) of office space and 65,000 s.f. of R&D space.

The proposed site reconstruction will provide 520 off-street vehicular parking spaces (508 standard stalls and 12 ADA spaces) and 150 bicycle parking spaces.

3.2 *Project Phasing*

Phased construction of the proposed development is not planned. Construction is anticipated to be completed in year 2020.

4.0 ZONING

4.1 Area of Influence

The area of influence was developed based on a review of the site location and the location of the proposed development access. The area of influence was discussed and approved by City Planning through discussions that occurred at a Scoping Meeting that was held on August 9, 2018. The Scoping Form has been provided in **Appendix A** for reference. The determined area of influence for the proposed site are as follows:

- Butler Street to the south,
- Allegheny River to the north,
- Plummer Street to the west, and
- 52nd Street to the east.

4.2 Zoning Code Designation of Site

The proposed development is within the Riverfront Industrial Mixed-Use (RIV-IMU) zoning district located on the south side of the Allegheny River.

4.3 Zoning Code Designation of Adjacent Sites

The areas immediately adjacent to the proposed development locations are also zoned RIV-IMU. The adjacent zoning districts are Riverfront Mixed-Use (RIV-MU) and Riverfront General Industrial (RIV-GI). South of the proposed development is a Local Neighborhood Commercial (LNC) zoning district along Butler Street. South of the LNC zoning district is a Hillside (H) zoning district, Parks (P) zoning district, and Single-Attached Residential (R1A-VH) zoning districts.

5.0 TRAFFIC ANALYSIS

5.1 Area of Significant Traffic and Parking Impact

The area of focus for traffic and parking impacts were discussed and agreed upon with the City of Pittsburgh during a formal scoping meeting on August 9, 2018. The area includes 51st Street between the Allegheny River and Butler Street and Butler Street between Plummer Street and 52nd Street.

5.2 *Study Intersections*

As was discussed at the Scoping Meeting with the City, traffic analyses of the study area will be conducted during typical weekday operations (AM and PM).

Traffic analyses were conducted at the three (3) intersections in the vicinity of the proposed development for typical weekday morning (AM) and evening (PM) peak conditions. The study intersections are as follows:

1. Butler Street & 48th Street / Plummer Street
2. Butler Street & 51st Street / Stanton Avenue
3. Butler Street & 52nd Street

Figure 4 shows the proposed site and study intersection locations.

A complete photo log of each approach to the study intersections as well as field measurements at the study intersections can be found in **Appendix B** at the end of this report. Also included is a copy of the latest signal permit plans and timings for the intersections.

5.3 *Development Access*

Access to the redeveloped 27 51st Street includes two (2) full access points located at the existing access locations on 51st Street. The redeveloped site is proposed to provide 520 off-street vehicular parking spaces (508 standard spaces and 12 ADA spaces) as well as 150 bicycle parking spaces.

The conceptual site plan for the redevelopment is shown on **Figure 5** at the end of this report.

6.0 DATA COLLECTION

6.1 *Study Intersections*

Turning movement counts were conducted at the study intersections listed in Section 5.2. The counts included the identification of passenger vehicles, heavy vehicles, bicyclists, and pedestrians.

6.2 Study Periods

Turning movement counts were performed at the study intersections on a typical weekday between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. These times were chosen because they typically reflect the morning (AM) and evening (PM) peak hours for vehicular traffic. The resulting Existing Year 2018 Conditions peak hour vehicular volumes are as shown on **Figure 6a**.

Summaries of the turning movement counts have been included in **Appendix C** at the end of this report.

6.3 Automatic Traffic Recorder (ATR) Counts

ATR counts were not conducted as part of this study.

6.4 Type ATR Count

Not applicable.

7.0 MULTI-MODAL ANALYSIS

7.1 Bicycle Parking

There are currently numerous bicycle racks in the vicinity of the site. Additionally, there are nearby “Healthy Ride” bike sharing stations along Butler Street at 48th Street and at 51st Street providing up to 12 bicycles for rent. The bicycle facilities in the area are depicted on **Figure 7** at the end of this report.

In addition to the existing bicycle facilities, the proposed development is proposed to include 150 bicycle parking spaces.

7.2 Bicycle Routes

Butler Street is currently a “Cautionary Bike Route” within the study area as is indicated on the bike infrastructure map on <http://bikepgh.org/> which has been provided as **Figure 8** at the end of this report. Butler Street also has a bike lane on the east side of the road starting at 46th Street and ending at 50th Street as well as “Sharrows” on both sides of the street within the study area. Plummer Street is shown as an “On Street Bike Route” as is Stanton Avenue south of Butler Street.

In addition to the existing bicycle infrastructure, the proposed redevelopment of 27 51st Street is to include a bike path between 51st Street and the neighboring site to the east – a future green boulevard connection – along the river.

7.3 *Transit Routes*

The Port Authority has multiple bus routes that provide service near the study area with multiple stops along Butler Street. The bus routes that provide service along Butler Street are Route 87 (Friendship), Route 91 (Butler Street), and Route 93 (Lawrenceville – Oakland – Hazelwood). Route 87 (Friendship) also provides service along Stanton Avenue. These alternative transportation options can be viewed on **Figure 7** at the end of this report.

7.4 *Pedestrian Access, Circulation & Safety*

Currently, pedestrian access to the site is primarily provided along 51st Street. Sidewalks line the east side of 51st Street between Butler Street and the site and segments of sidewalk line the west side of 51st Street predominantly in the vicinity of Butler Street.

8.0 FUTURE YEAR CONDITIONS

8.1 *Annual Base Traffic Growth per year*

The Southwestern Pennsylvania Commission (SPC) was contacted on May 29, 2018 to obtain a background traffic growth rate for the Central and Upper Lawrenceville Neighborhoods. A linear growth rate of 1.20% per year was provided and was used to estimate the Opening Year 2020 Base Conditions.

8.2 *Trip Removals*

No trips were removed from the study area network as part of this study.

8.3 *New Project to be Added to base Traffic*

As was indicated during the Scoping Meeting with the City, no known developments within the Upper Lawrenceville Neighborhood are to be included as “Background Developments” within this study.

9.0 TRIP GENERATION

9.1 *Trip Generation Rate*

The Institute of Transportation Engineers' (ITE) *Trip Generation* 10th Edition, was used to determine the trip generation rate for the proposed development. Specifically, LU Codes 710 (*General Office Building*) and LU Code 760 (*Research and Development Center*) were utilized.

The proposed redevelopment of 27 51st Street is anticipated to generate 283 AM peak hour trips (241 inbound, 42 outbound) and 309 PM peak hour trips (64 inbound, 245 outbound). For more information on the breakdown of the types of trips (vehicular, pedestrian, transit, and bicycle), see Section 9.3 below.

A copy of the trip generation calculations for the proposed development is included in **Appendix D** at the end of this report. The anticipated weekday, AM and PM peak hour trips for the redevelopment are also summarized in **Table 1**.

9.2 *Trip Generation Adjustment Factors*

No trip adjustment factors were applied to the proposed development site trips in this study.

9.3 *Modal Split*

“Make My Trip Count” data collected in 2015 was utilized to estimate the commuter characteristics for the Upper and Central Lawrenceville Neighborhoods. The resulting distribution of trip types are as follows:

- Vehicle Trips – 74%
- Public Transportation Trips – 14%
- Bicycle Trips – 7%
- Pedestrian Trips – 5%

A summary of the data has been included as **Appendix D** at the end of this report.

9.4 *Trip Reduction based on Proximity to a Major Transit Facility*

No trip reductions were applied for the development due to the proximity of a T-station or busway as is indicated on the Scoping Form; however, as is indicated in Section 9.3, approximately fourteen (14) percent of area trips utilize public transportation for their commute.

10.0 TRIP DISTRIBUTION

The trip generation data, the existing directional distribution of traffic at the study intersections, and the location of the proposed development and the access were used to assign the additional site-generated traffic to and from the site. The existing volumes at the external nodes listed below were considered to determine the global distribution of traffic for the study area:

- Butler Street to/from the South
- Plummer Street to/from the West
- Stanton Avenue to/from the East
- Butler Street to/from the North

The resulting Global Study Area Trip Distribution Percentages are shown graphically on **Figure 9a**. The external node distribution percentages were then carried through the study intersections based on the existing traffic volumes and the location and the proposed site access points. The resulting Trip Distribution Percentages are shown graphically on **Figure 9b**.

The AM and PM peak hour trips (Table 1) for the development were then distributed through the study intersections using the trip distribution percentages (Figure 9b). The site-generated trips for the redevelopment are as depicted on **Figure 10**.

11.0 CAPACITY ANALYSIS

As was agreed upon during the Scoping Meeting, all analyses were conducted using Synchro Software Version 10 (Synchro). Using the traffic volumes developed for each scenario, the reports from Synchro assign a Level-of-Service (LOS) to each approach to the intersections. These LOS range from “A” to “F”, similar to a school’s grading system, with LOS “A” being the best possible traffic operation conditions and LOS “F” being the worst. A summary of these guidelines has been included in **Appendix E** at the end of this report.

11.1 Existing Conditions

Utilizing the information indicated on the field measurements performed at the study intersections (included as **Appendix B**), the signal permit plans, the existing intersections were analyzed using the Existing Year 2018 Condition Volumes (Figure 6a).

Existing Year 2018 Conditions analyses indicate that the study intersections currently operate at acceptable Levels-of-Service (LOS C or better). Additionally, each lane group

and approach are currently operating at an acceptable LOS (LOS D or better) with the exception of the westbound 51st Street approach to Butler Street, which operates at a LOS F during the AM peak hour.

The Existing Year 2018 Conditions capacity analyses results have been summarized in **Table 2a** through **Table 2c** and have been included as **Appendix F**. The results of the capacity analyses have also been shown graphically on **Figure 6b**.

11.2 Analysis Year Conditions Without Development

In order to determine the Opening Year 2020 Without Condition Volumes, the 1.20 percent per year linear growth rate provided by SPC was applied to the Existing Year 2018 Condition Volumes (Figure 6a). The resulting Opening Year 2020 Without Development Condition Volumes are as shown on **Figure 11a**.

The intersections were analyzed using the same geometry and traffic control as were included in the Existing Year 2018 Conditions.

The capacity analyses indicate the changes in capacity due to traffic growth are negligible with little to no change in the overall LOS anticipated at the intersections (LOS C or better). Each lane group and approach are anticipated to remain at an acceptable LOS (LOS D or better) with the exception of the westbound 51st Street approach to Butler Street during the AM peak.

The Opening Year 2020 Without Development Conditions capacity analyses results have been summarized in **Table 2a** through **Table 2c**. Copies of the capacity analyses have been included as **Appendix G** at the end of this report. The results of the capacity analyses have also been shown graphically on **Figure 11b**.

11.3 Analysis Year Conditions With Development

To develop the Opening Year 2020 Conditions with the proposed development, the site-generated trips (Figure 10) were added to the Opening Year 2020 Without Development Condition Volumes (Figure 11a). The resulting Opening Year 2020 With Development Condition Volumes can be seen graphically on **Figure 12a**.

The Opening Year 2020 With Development Conditions were analyzed using the same geometry and traffic control that was utilized to evaluate the Opening Year 2020 Without Development Conditions with the exception of optimizing the signal timing splits².

The capacity analyses indicate that the proposed redevelopment of 27 51st Street will not have a significant impact on peak hour traffic operations at the study intersections. Each

² The cycle lengths were unchanged to maintain the coordinated signal system along Butler Street.

of the study intersections are anticipated to remain operating at an acceptable LOS (LOS D or better). While increases in delay are anticipated, the increases are not significant and are not expected to result in the need for offsite traffic mitigation.

The Opening Year 2020 With Development Conditions capacity analyses results are summarized in **Table 2a** through **Table 2c**. Copies of the capacity analyses summaries have been included in **Appendix H**. The results of the capacity analyses have also been shown graphically on **Figure 12b**.

12.0 QUEUING ANALYSIS

12.1 Locations

Queuing analyses were conducted at the study intersections to determine if any issues are anticipated under Opening Year 2020 Conditions.

12.2 Queuing Method

To estimate the queues at the study intersections, the forecasted conditions with and without the proposed development were modeled in Synchro and transferred to SimTraffic. Five (5) separate 60-minute simulations were performed in SimTraffic for the two (2) peak periods.

Upon reviewing the queue summary tables, it becomes evident that the study area queues are anticipated to generally remain consistent with conditions without the proposed development and / or remain within the available storage lengths. The instance where the existing storage lengths are exceeded with the proposed development are as follows:

- During the AM and PM peak hours, the northbound through / left turn lane on Butler Street approaching 51st Street / Stanton Avenue is anticipated to experience a queue of 1,372 feet and 1,209 feet, respectively. The available storage for this movement is approximately 970 feet.
- During the AM and PM peak hours, the northbound right turn lane on Butler Street approaching 51st Street / Stanton Avenue is anticipated to experience a queue of 246 feet and 243 feet, respectively. The available storage for this movement is approximately 200 feet.
- During the AM peak hour, the southbound Butler Street approach to 51st Street / Stanton Avenue is anticipated to experience a queue of 800 feet. The available storage for this approach is approximately 735 feet.

- During the AM peak hour, the southbound Butler Street approach to 52nd Street is anticipated to experience a queue of 481 feet. The available storage for this approach is approximately 455 feet.

While some of these queues will extend back and through adjacent intersections, queues are expected to dissipate with each signal cycle (i.e. the v/c ratio is less than 1.0).

The results of the queue analyses are summarized in **Table 3a** through **Table 3c**. The Opening Year 2020 Without Development Condition queue reports from SimTraffic have been included in **Appendix J** at the end of this report. The Opening Year 2020 With Development Condition queue reports from SimTraffic have been included in **Appendix K** at the end of this report.

13.0 WARRANT ANALYSIS

13.1 Signal Warrant Analysis

Signal warrant analyses were not conducted for the study intersections as they are already signalized.

13.2 Left Turn Lane Warrant

Warrant analyses were conducted for the addition of a northbound left turn lane on Butler Street at 51st Street. The warrant analysis, included as **Appendix M** at the end of this report, indicates that a northbound left turn lane is warranted under existing, without, and with development conditions. With the turn lane warranted under existing conditions, the proposed development is not the catalyst for the warranted turn lane. Additionally, with the limited availability of right-of-way for widening in the study area, adding a left turn lane at this intersection without capacity issues is cost prohibitive and would result in only marginal improvements.

13.3 Right Turn Lane Warrant

Warrant analyses were conducted for the addition of a southbound right turn lane on Butler Street at 51st Street. The warrant analysis, included as **Appendix N**, was satisfied under the Opening Year 2020 With Development Condition during the AM peak hour. With the limited availability of right-of-way for widening in the study area, adding a right turn lane at this intersection without capacity issues is cost prohibitive and would result in only marginal improvements.

14.0 ACCIDENT ANALYSIS

14.1 Locations

Crash data for the most recent three (3) years of data were requested from PennDOT for the existing study intersections. The crash data is property of the Commonwealth of Pennsylvania Department of Transportation (PennDOT); therefore, a summary of the identified crashes and the corresponding crash reports are included in a separately bound appendix to this report.

14.2 Collision Diagram

As was agreed upon in the Scoping Meeting with the City, collision diagrams were not performed for this project.

15.0 SIGHT DISTANCE ANALYSIS

The proposed redevelopment of 27 51st Street is to maintain the two full accesses located at along the 51st Street. The existing access points currently provide adequate visibility for all movements and will maintain adequate visibility under proposed conditions.

16.0 PARKING DEMAND/SUPPLY CONDITIONS

16.1 Existing Conditions

There is no existing Parking Management Plan (PMP) for the existing site that should be taken into consideration with the proposed development.

The traffic and parking impact area does not contain any Residential Permit Parking Program (RPPP) areas.

16.2 Data Collection

The existing parking supply in the area was reviewed. Specifically, the following roadway sections were evaluated for the on-street parking conditions in the immediate site vicinity:

- Butler Street between 48th Street and 52nd Street
- 51st Street between Butler Street and the Allegheny River

In addition to the on-street spaces, there are also off-street parking options within the traffic and parking impact area. **Figure 13** at the end of this report shows the public and private off-street parking options in the vicinity of the site.

As was agreed upon in the Scoping Meeting with the City, parking accumulation counts were not conducted as part of this study.

16.3 Parking Conditions Supply and Demand Analysis

As was agreed upon in the Scoping Meeting with the City, parking demand analyses were not performed for this project.

16.4 Future Parking Demand

16.4.1 City of Pittsburgh Zoning Ordinance Requirements

The City of Pittsburgh Zoning Ordinance provides the minimum and maximum off-street parking requirements for the proposed development. The following requirements are from the City Zoning Ordinances:

- Office:
 - Minimum – One (1) space for every 500 s.f. above the first 2,400 s.f.
 - Maximum – None
- Laboratory / Research Service
 - Minimum – One (1) space for every 500 s.f. above the first 2,400 s.f.
 - Maximum – One (1) space for every 200 s.f.

Since the proposed development is within the RIV District, the minimum parking requirement is half of the ordinance minimum noted above and the maximum parking requirement is the ordinance minimum noted above. Based on these RIV requirements, the proposed development requires a minimum of 255 and a maximum of 520 vehicular parking spaces.

16.4.2 ITE Parking Generation, 5th Edition

In addition to the requirements set forth in the City Ordinances, national data from ITE's Parking Generation, 5th Edition was utilized to determine the anticipated peak parking demand for the proposed redevelopment. Specifically, LU Code 710 (*General Office Building*) was utilized to determine the peak parking demand. Based on national data, the estimated peak parking demand is based upon the equation

$$P = 1.44x + 47.42$$

where 'x' is 1,000 s.f. of gross floor area. Based on this equation, the proposed office space would experience a peak parking demand of 328 spaces.

LU Code 760 (*Research and Development Center*) was utilized to determine the peak parking demand. Based on national data, the estimated peak parking demand is based upon the equation

$$P = 2.73x - 13.44$$

where 'x' is 1,000 s.f. of gross floor area. Based on this equation, the proposed office space would experience a peak parking demand of 164 spaces.

Consistent with industry standards, a 10-15% vacancy factor should be added to the peak demand to account for daily fluctuations and to avoid having motorists having to circulate the parking lots to find a vacant space. Applying a 15% factor to the peak demand results in a desired parking supply of 566 spaces.

16.4.3 Proposed Parking Supply

The proposed redevelopment of 27 51st Street is planned to include 520 off-street parking spaces.

16.5 Parking Mitigation

At this time, parking mitigation is not proposed; however, the Developer will continue to coordinate with the City with regards to off-street parking for the proposed development.

16.6 Bicycle Parking

The City of Pittsburgh Zoning Ordinance requires one (1) bicycle parking space for every 10,000 square feet. The 260,000 s.f. redevelopment of 27 51st Street therefore requires twenty-six (26) bicycle spaces. The development is proposed to include 150 covered bicycle spaces internal to the site as well as additional bike racks external to the building.

16.7 ADA Parking Requirements

Based upon the minimum parking requirements of the site, the City Zoning Ordinance requires ten (10) ADA accessible parking spaces. The redevelopment plan includes twelve (12) ADA accessible parking spaces. Details regarding the total number of accessible parking spaces will continue to be coordinated between the Developer and the City through the site plan review process.

16.8 On-Site Parking Circulation

The design will adequately service the ingress and egress of passenger vehicles to the development via the proposed access points and their associated movement restrictions.

16.9 Parking Management Plan

A Parking Management Plan (PMP) is not anticipated to be necessary at this time; however, the Developer will continue to coordinate with the City with regards to off-street parking for the proposed development.

17.0 TRUCK LOADING ANALYSIS

17.1 Loading Management

The loading operations for the redevelopment of 27 51st Street are proposed to occur at three (3) loading berths on the southern side of the building (closer to Butler Street). It is anticipated that deliveries will utilize the southwestern access drive and will back into the service bays along the southern side of the development. The location of the loading berths is shown on **Figure 5b** at the end of this report.

17.2 Exception for Loading Requirements

The City Zoning Ordinance requires three (3) loading bays plus (+) one (1) bay for every 15,000 s.f. beyond 250,000 s.f. for non-residential developments over 250,000 s.f. developments. The proposed redevelopment of 27 51st Street satisfies therefore requires three (3) loading bays, which is to be provided.

17.3 Truck Maneuverability

As discussed, loading operations will utilize the western access drive and will include backing into the loading bays. Further details regarding design vehicles and loading maneuvers will be included as part of the Site Plan review.

17.4 Refuse Storage / Pick-up Analysis

The site trash containers are currently proposed in the site service bay as is indicated on **Figure 5b**.

18.0 SITE PLAN REVIEW AND ANALYSIS

As was agreed upon in the Scoping Meeting with the City, a site plan analysis was not performed for this project. As is indicated in this report, certain elements of the proposed development will continue to be coordinated with the City as part of the site plan review. The conceptual site plan for the development has been included as **Figure 5a** and **Figure 5b** at the end of this report.

19.0 OTHER TRANSPORTATION

As was agreed upon in the Scoping Meeting with the City, other transportation options were not considered for this project.

20.0 CONSTRUCTION MANAGEMENT PLAN

A Construction Management Plan (CMP) will be developed in accordance with Chapter 917 of the City of Pittsburgh Zoning Code. The details of the CMP will be determined through the land development process for the development site.

21.0 SUBMISSION REQUIREMENTS

This report has been prepared for submission to the City of Pittsburgh. The contents of this report are as indicated on the City Scoping Form (attached as Appendix A).

22.0 CONCLUSION

As has been demonstrated in this report, the proposed redevelopment of 27 51st Street is not anticipated to significantly impact the study area.

Capacity analyses show that all of the study intersections currently operation at acceptable Levels of Service (LOS) and are projected to continue operate at acceptable Levels of Service upon occupancy of the proposed redevelopment. While there are certain approaches that will operate a poor LOS, the overall intersections are projected to operate at no worse than LOS D during either the AM or PM peak hour.

Similarly, queue analyses show that while some increases in queues are expected as a result of the additional site-generated traffic, and while some queues may extend back through an adjacent intersection, those queues are expected to dissipate (i.e. the v/c ratio is less than 1.0). This is not unexpected in a developed urban area during peak times.

In an effort to reduce impacts to queues and to delays during peak times, the developer is proposing Transportation Demand Management (TDM) measures to incentivize non-vehicular trips and assist in reducing the vehicular demands of the site. The following TDM measures are intended to be implemented and maintained by the developer as a part of the redevelopment of 27 51st Street:

- Set mode split goals consistent with Upper Lawrenceville plans and goals.
- Property owner will make potential tenants aware of TDM requirements and the requirement to maintain multi-modal facilities.
- Encourage through lease documents for tenants to provide transit passes or subsidies to employees.
- Offer employees or residents free or discount bikeshare membership through the Healthy Ride Corporate Membership Program.
- Provide infrastructure within the facility for real time transportation displays (i.e. wifi for access to traffic mapping apps, etc.).

In addition to these programmatic TDM measures, the following site plan strategies are proposed to be implemented:

- Provide adequate sidewalk widths and ADA ramps along the building frontage.
- Provide bicycle parking required by code (in this case, bicycle parking will exceed code), which will include convenient short-term parking and secure, covered accessible parking from the ground floor for long-term parking or storage.
- Provide a Bikeshare station on site to encourage tenants to use these bikes for short trips along the Butler Street corridor and neighboring sections of the City.
- Provide shower rooms or shower passes for employees who bike to work.
- Provide priority carpool parking spaces through leases with tenants.
- Encourage through lease documents sponsored car share or bikeshare memberships for employees.

In conclusion, the proposed redevelopment of 27 51st Street in the Upper Lawrenceville Neighborhood of the City of Pittsburgh is not anticipated to have a significant impact to traffic operations at the study intersections. The developer is committed to implementing TDM measures to reduce the vehicular demands of the site.

TABLES

Table 1
Redevelopment of 27 51st Street – Trip Generation Summary

TIME PERIOD	ANTICIPATED TRIP GENERATION		
	IN	OUT	TOTAL
Land Use Code #710, General Office Building – 195,000 square feet			
ADT	1,334	1,334	2,668
<i>Transit Trips (14%)*</i>	<i>187</i>	<i>187</i>	<i>374</i>
<i>Walking Trips (5%)*</i>	<i>67</i>	<i>67</i>	<i>134</i>
<i>Bicycle Trips (7%)*</i>	<i>93</i>	<i>93</i>	<i>186</i>
Vehicular Trips (74%)	987	987	1,974
AM Peak Hour	214	32	246
<i>Transit Trips (14%)*</i>	<i>30</i>	<i>4</i>	<i>34</i>
<i>Walking Trips (5%)*</i>	<i>11</i>	<i>2</i>	<i>13</i>
<i>Bicycle Trips (7%)*</i>	<i>15</i>	<i>2</i>	<i>17</i>
Vehicular Trips (74%)	158	24	182
PM Peak Hour	57	206	263
<i>Transit Trips (14%)*</i>	<i>8</i>	<i>29</i>	<i>37</i>
<i>Walking Trips (5%)*</i>	<i>3</i>	<i>10</i>	<i>13</i>
<i>Bicycle Trips (7%)*</i>	<i>4</i>	<i>14</i>	<i>18</i>
Vehicular Trips (74%)	42	153	194
Land Use Code #760, Research and Development Center – 65,000 square feet			
ADT	435	435	870
<i>Transit Trips (14%)*</i>	<i>61</i>	<i>61</i>	<i>122</i>
<i>Walking Trips (5%)*</i>	<i>22</i>	<i>22</i>	<i>44</i>
<i>Bicycle Trips (7%)*</i>	<i>30</i>	<i>30</i>	<i>60</i>
Vehicular Trips (74%)	322	322	644
AM Peak Hour	27	10	37
<i>Transit Trips (14%)*</i>	<i>4</i>	<i>1</i>	<i>5</i>
<i>Walking Trips (5%)*</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>Bicycle Trips (7%)*</i>	<i>2</i>	<i>1</i>	<i>3</i>
Vehicular Trips (74%)	20	7	27
PM Peak Hour	7	39	46
<i>Transit Trips (14%)*</i>	<i>1</i>	<i>5</i>	<i>6</i>
<i>Walking Trips (5%)*</i>	<i>0</i>	<i>2</i>	<i>2</i>
<i>Bicycle Trips (7%)*</i>	<i>0</i>	<i>3</i>	<i>3</i>
Vehicular Trips (74%)	5	29	34

* Based on “Make My Trip Count Data” collected in 2015 for the Upper and Central Lawrenceville Neighborhoods

Table 1 Continued
Redevelopment of 27 51st Street – Trip Generation Summary

Total Development Trips			
ADT	1,769	1,769	3,538
<i>Transit Trips (14%)*</i>	<i>248</i>	<i>248</i>	<i>496</i>
<i>Walking Trips (5%)*</i>	<i>89</i>	<i>89</i>	<i>178</i>
<i>Bicycle Trips (7%)*</i>	<i>123</i>	<i>123</i>	<i>246</i>
Vehicular Trips (74%)	1,309	1,309	2,618
AM Peak Hour	241	42	283
<i>Transit Trips (14%)*</i>	<i>34</i>	<i>5</i>	<i>39</i>
<i>Walking Trips (5%)*</i>	<i>12</i>	<i>3</i>	<i>15</i>
<i>Bicycle Trips (7%)*</i>	<i>17</i>	<i>3</i>	<i>20</i>
Vehicular Trips (74%)	178	31	209
PM Peak Hour	64	245	309
<i>Transit Trips (14%)*</i>	<i>9</i>	<i>34</i>	<i>43</i>
<i>Walking Trips (5%)*</i>	<i>3</i>	<i>12</i>	<i>15</i>
<i>Bicycle Trips (7%)*</i>	<i>4</i>	<i>17</i>	<i>21</i>
Vehicular Trips (74%)	47	182	228

* Based on “Make My Trip Count Data” collected in 2015 for the Upper and Central Lawrenceville Neighborhoods

Table 2a - Level-of-Service Summary

		AM Peak Hour			
Intersection		Butler Street & 48th Street / Plummer Street			
48th Street / Plummer Street		East/West Roadway			
Direction	Approach / Movement	Existing Year 2018 Conditions	Opening Year 2020 Without Development	Opening Year 2020 With Development	Opening Year 2020 With Development Mitigated
Eastbound	Hard Left Turn	C / 34.1	C / 34.2	C / 32.8	NM
	Bear Left Turn				
	Right Turn				
	Approach	C / 34.1	C / 34.2	C / 32.8	NM
Southwestbound	Left Turn	N/A	N/A	N/A	N/A
	Through				
	Right Turn				
	Approach	N/A	N/A	N/A	N/A
Butler Street		North/South Roadway			
Northbound	Left Turn	A / 7.5	A / 7.6	A / 9.0	NM
	Through				
	Right Turn	N/A	N/A	N/A	N/A
	Approach	A / 7.5	A / 7.6	A / 9.0	NM
Southbound	Left Turn	N/A	N/A	N/A	N/A
	Through	C / 20.0	C / 21.1	C / 22.0	NM
	Right Turn				
	Approach	C / 20.0	C / 21.1	C / 22.0	NM
Overall Intersection		B / 17.6	B / 18.3	B / 19.0	NM

A / 999.0 = LOS / Delay; N/A = Not Applicable; NM = No Mitigation

		PM Peak Hour			
Intersection		Butler Street & 48th Street / Plummer Street			
48th Street / Plummer Street		East/West Roadway			
Direction	Approach / Movement	Existing Year 2018 Conditions	Opening Year 2020 Without Development	Opening Year 2020 With Development	Opening Year 2020 With Development Mitigated
Eastbound	Hard Left Turn	D / 35.0	D / 35.2	D / 41.6	NM
	Bear Left Turn				
	Right Turn				
	Approach	D / 35.0	D / 35.2	D / 41.6	NM
Southwestbound	Left Turn	N/A	N/A	N/A	N/A
	Through				
	Right Turn				
	Approach	N/A	N/A	N/A	N/A
Butler Street		North/South Roadway			
Northbound	Left Turn	B / 13.9	B / 14.4	B / 11.8	NM
	Through				
	Right Turn	N/A	N/A	N/A	N/A
	Approach	B / 13.9	B / 14.4	B / 11.8	NM
Southbound	Left Turn	N/A	N/A	N/A	N/A
	Through	B / 12.2	B / 12.5	B / 15.8	NM
	Right Turn				
	Approach	B / 12.2	B / 12.5	B / 15.8	NM
Overall Intersection		B / 16.1	B / 16.4	B / 17.0	NM

Table 2b - Level-of-Service Summary

		AM Peak Hour			
Intersection		Butler Street & 51st Street / Stanton Avenue			
51st Street / Stanton Avenue		East/West Roadway			
Direction	Approach / Movement	Existing Year 2018 Conditions	Opening Year 2020 Without Development	Opening Year 2020 With Development	Opening Year 2020 With Development Mitigated
Eastbound	Left Turn	C / 27.6	C / 27.6	C / 25.0	NM
	Through				
	Right Turn				
	Approach	C / 27.6	C / 27.6	C / 25.0	NM
Westbound	Left Turn	F / 96.4	F / 103.6	F / 81.5	NM
	Through				
	Right Turn				
	Approach	F / 96.4	F / 103.6	F / 81.5	NM
Butler Street		North/South Roadway			
Northbound	Left Turn	B / 11.7	B / 12.1	C / 29.2	NM
	Through				
	Right Turn				
	Approach	B / 11.1	B / 11.5	C / 26.6	NM
Southbound	Left Turn	B / 10.1	B / 10.5	C / 25.0	NM
	Through				
	Right Turn				
	Approach	B / 10.1	B / 10.5	C / 25.0	NM
Overall Intersection		C / 30.2	C / 32.1	D / 38.0	NM

A / 999.0 = LOS / Delay; N/A = Not Applicable; NM = No Mitigation

		PM Peak Hour			
Intersection		Butler Street & 51st Street / Stanton Avenue			
51st Street / Stanton Avenue		East/West Roadway			
Direction	Approach / Movement	Existing Year 2018 Conditions	Opening Year 2020 Without Development	Opening Year 2020 With Development	Opening Year 2020 With Development Mitigated
Eastbound	Left Turn	C / 32.1	C / 32.3	D / 40.1	NM
	Through				
	Right Turn				
	Approach	C / 32.1	C / 32.3	D / 40.1	NM
Westbound	Left Turn	D / 38.2	D / 38.8	D / 36.9	NM
	Through				
	Right Turn				
	Approach	D / 38.2	D / 38.8	D / 36.9	NM
Butler Street		North/South Roadway			
Northbound	Left Turn	B / 11.5	B / 11.8	C / 23.2	NM
	Through				
	Right Turn				
	Approach	A / 9.5	A / 9.7	B / 18.8	NM
Southbound	Left Turn	A / 8.9	A / 9.0	B / 12.1	NM
	Through				
	Right Turn				
	Approach	A / 8.9	A / 9.0	B / 12.1	NM
Overall Intersection		B / 13.5	B / 13.7	C / 22.1	NM

A / 999.0 = LOS / Delay; N/A = Not Applicable; NM = No Mitigation

Table 2c - Level-of-Service Summary

		AM Peak Hour			
Intersection		Butler Street & 52nd Street			
52nd Street		East/West Roadway			
Direction	Approach / Movement	Existing Year 2018 Conditions	Opening Year 2020 Without Development	Opening Year 2020 With Development	Opening Year 2020 With Development Mitigated
Eastbound	Left Turn	C / 32.8	C / 32.8	D / 40.2	NM
	Through				
	Right Turn				
	Approach	C / 32.8	C / 32.8	D / 40.2	NM
Westbound	Left Turn	D / 35.6	D / 35.7	D / 49.0	NM
	Through				
	Right Turn				
	Approach	D / 35.6	D / 35.7	D / 49.0	NM
Butler Street		North/South Roadway			
Northbound	Left Turn	A / 7.1	A / 7.2	A / 6.7	NM
	Through				
	Right Turn				
	Approach	A / 7.1	A / 7.2	A / 6.7	NM
Southbound	Left Turn	B / 11.7	B / 12.0	A / 8.4	NM
	Through				
	Right Turn				
	Approach	B / 11.7	B / 12.0	A / 8.4	NM
Overall Intersection		B / 12.2	B / 12.5	B / 11.0	NM

A / 999.0 = LOS / Delay; N/A = Not Applicable; NM = No Mitigation

		PM Peak Hour			
Intersection		Butler Street & 52nd Street			
52nd Street		East/West Roadway			
Direction	Approach / Movement	Existing Year 2018 Conditions	Opening Year 2020 Without Development	Opening Year 2020 With Development	Opening Year 2020 With Development Mitigated
Eastbound	Left Turn	D / 35.3	D / 35.4	D / 50.5	NM
	Through				
	Right Turn				
	Approach	D / 35.3	D / 35.4	D / 50.5	NM
Westbound	Left Turn	C / 33.7	C / 33.8	D / 45.2	NM
	Through				
	Right Turn				
	Approach	C / 33.7	C / 33.8	D / 45.2	NM
Butler Street		North/South Roadway			
Northbound	Left Turn	A / 4.8	A / 4.9	A / 3.7	NM
	Through				
	Right Turn				
	Approach	A / 4.8	A / 4.9	A / 3.7	NM
Southbound	Left Turn	A / 7.6	A / 7.7	A / 4.2	NM
	Through				
	Right Turn				
	Approach	A / 7.6	A / 7.7	A / 4.2	NM
Overall Intersection		A / 9.3	A / 9.4	A / 8.8	NM

A / 999.0 = LOS / Delay; N/A = Not Applicable; NM = No Mitigation

Table 3a - Queue Summary

		AM Peak Hour				
Intersection		Butler Street & 48th Street / Plummer Street				
48th Street / Plummer Street		East/West Roadway				
Direction	Approach / Movement	Existing Available Storage	Opening Year 2020 Without Development 95th %ile Queue	Opening Year 2020 With Development 95th %ile Queue	Increase / Decrease in Queue	Adequate Storage?
Eastbound	Hard Left Turn	470'	124	280	156	Y
	Bear Left Turn					
	Right Turn					
Southwestbound	Left Turn	N/A	N/A	N/A	N/A	N/A
	Through					
	Right Turn					
Butler Street		North/South Roadway				
Northbound	Left Turn	>1,000'	614	522	-92	Y
	Through					
	Right Turn					
Southbound	Through	970'	958	696	-262	Y
	Bear Right Turn					
	Hard Right Turn					

		PM Peak Hour				
Intersection		Butler Street & 48th Street / Plummer Street				
48th Street / Plummer Street		East/West Roadway				
Direction	Approach / Movement	Existing Available Storage	Opening Year 2020 Without Development 95th %ile Queue	Opening Year 2020 With Development 95th %ile Queue	Increase / Decrease in Queue	Adequate Storage?
Eastbound	Hard Left Turn	470'	142	244	102	Y
	Bear Left Turn					
	Right Turn					
Southwestbound	Left Turn	N/A	N/A	N/A	N/A	N/A
	Through					
	Right Turn					
Butler Street		North/South Roadway				
Northbound	Left Turn	>1,000'	530	547	17	Y
	Through					
	Right Turn					
Southbound	Through	970'	364	385	21	Y
	Bear Right Turn					
	Hard Right Turn					

Table 3b - Queue Summary

		AM Peak Hour				
Intersection		Butler Street & 51st Street / Stanton Avenue				
51st Street / Stanton Avenue		East/West Roadway				
Direction	Approach / Movement	Existing Available Storage	Opening Year 2020 Without Development 95th %ile Queue	Opening Year 2020 With Development 95th %ile Queue	Increase / Decrease in Queue	Adequate Storage?
Eastbound	Left Turn	800'	48	91	43	Y
	Through					
	Right Turn					
Westbound	Left Turn	>1,000'	331	272	-59	Y
	Through					
	Right Turn					
Butler Street		North/South Roadway				
Northbound	Left Turn	970'	718	1,372	654	N
	Through					
	Right Turn					
Southbound	Left Turn	735'	351	800	449	N
	Through					
	Right Turn					

		PM Peak Hour				
Intersection		Butler Street & 51st Street / Stanton Avenue				
51st Street / Stanton Avenue		East/West Roadway				
Direction	Approach / Movement	Existing Available Storage	Opening Year 2020 Without Development 95th %ile Queue	Opening Year 2020 With Development 95th %ile Queue	Increase / Decrease in Queue	Adequate Storage?
Eastbound	Left Turn	800'	103	219	116	Y
	Through					
	Right Turn					
Westbound	Left Turn	>1,000'	148	165	17	Y
	Through					
	Right Turn					
Butler Street		North/South Roadway				
Northbound	Left Turn	970'	714	1,209	495	N
	Through					
	Right Turn					
Southbound	Left Turn	735'	411	346	-65	Y
	Through					
	Right Turn					

Table 3c - Queue Summary

		AM Peak Hour				
Intersection		Butler Street & 52nd Street				
52nd Street		East/West Roadway				
Direction	Approach / Movement	Existing Available Storage	Opening Year 2020 Without Development 95th %ile Queue	Opening Year 2020 With Development 95th %ile Queue	Increase / Decrease in Queue	Adequate Storage?
Eastbound	Left Turn	220'	56	60	4	Y
	Through					
	Right Turn					
Westbound	Left Turn	>1,000'	80	66	-14	Y
	Through					
	Right Turn					
Butler Street		North/South Roadway				
Northbound	Left Turn	735'	273	189	-84	Y
	Through					
	Right Turn					
Southbound	Left Turn	455'	305	481	176	N
	Through					
	Right Turn					

		PM Peak Hour				
Intersection		Butler Street & 52nd Street				
52nd Street		East/West Roadway				
Direction	Approach / Movement	Existing Available Storage	Opening Year 2020 Without Development 95th %ile Queue	Opening Year 2020 With Development 95th %ile Queue	Increase / Decrease in Queue	Adequate Storage?
Eastbound	Left Turn	220'	84	100	16	Y
	Through					
	Right Turn					
Westbound	Left Turn	>1,000'	59	53	-6	Y
	Through					
	Right Turn					
Butler Street		North/South Roadway				
Northbound	Left Turn	735'	187	217	30	Y
	Through					
	Right Turn					
Southbound	Left Turn	455'	186	142	-44	Y
	Through					
	Right Turn					

FIGURES



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 Date Issued=JAN 2020
 Drawn By=JTS
 Checked By=KLB
 Project Manager=MAH

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Redevelopment of 21 51st Street

Upper Lawrenceville Neighborhood, City of Pittsburgh, Allegheny County, PA

Site Location

Transportation Impact Study

Project Number: C-39021-8000

Drawing Scale: N.T.S.

Date Issued: JAN 2020

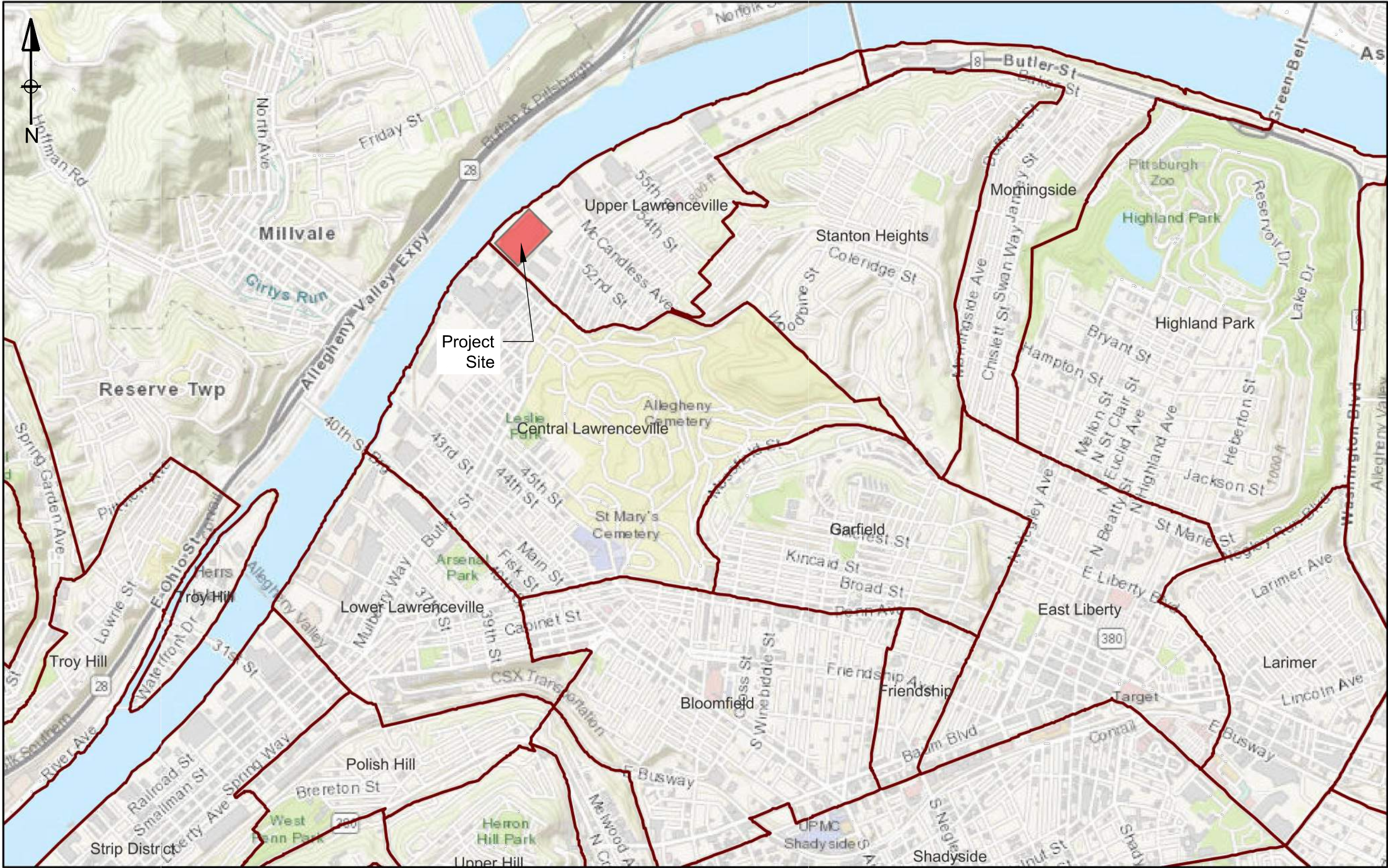
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Checked By: KLB

Project Manager: MAH

Figure 1

Pittsburgh Neighborhoods

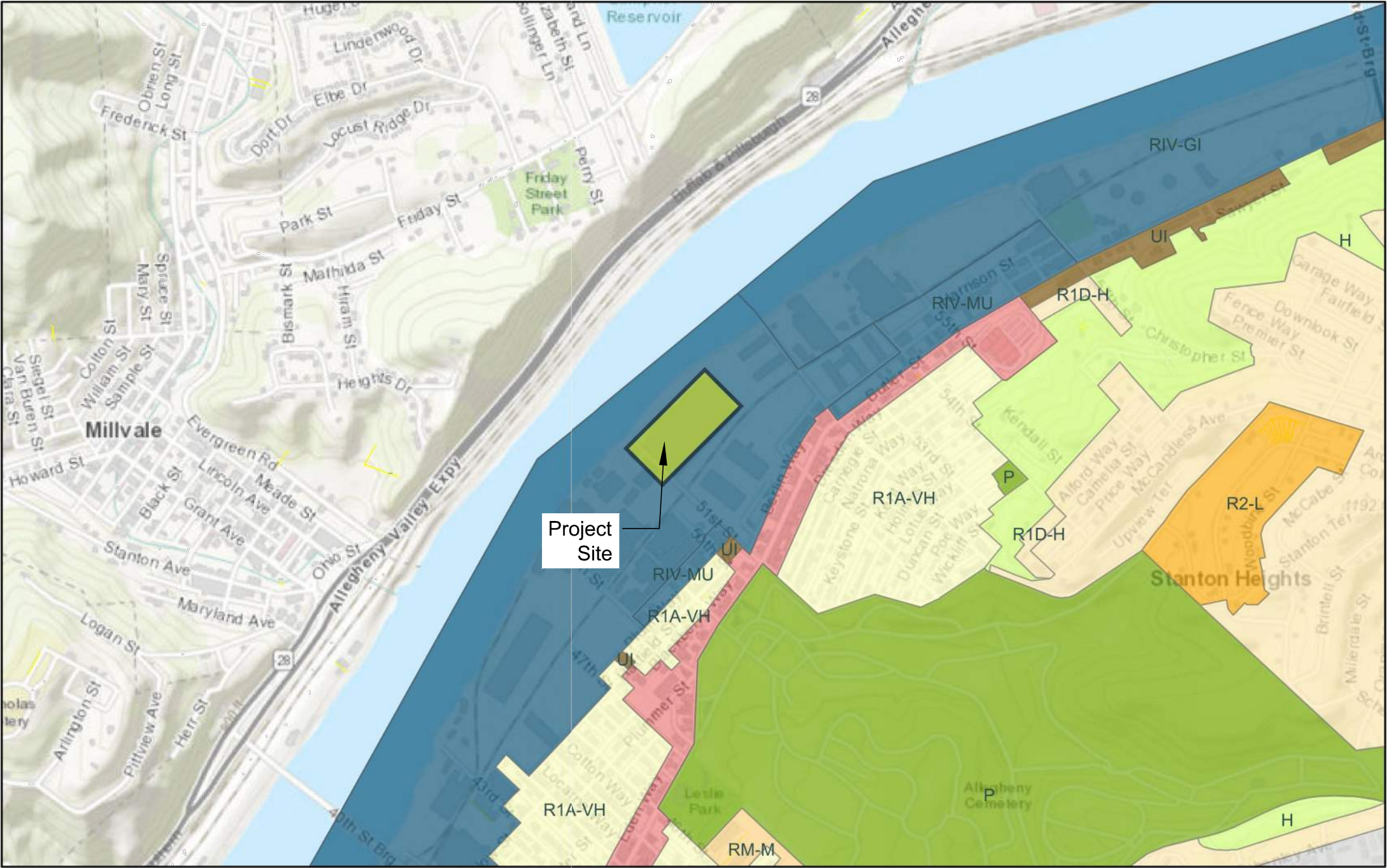


Pittsburgh Neighborhoods Map obtained from <http://pittsburghpa.gov/dcp/gis-webmaps>

Redevelopment of 21 51st Street
Upper Lawrenceville Neighborhood, City of Pittsburgh, Allegheny County, PA

Pittsburgh Neighborhood Map

Pittsburgh Zoning



September 11, 2018

PGHWebZoning_3633

Riverfront

Planned Unit Development

Site Location

Parks

Hillside

Urban Industrial

Local Neighborhood Commercial

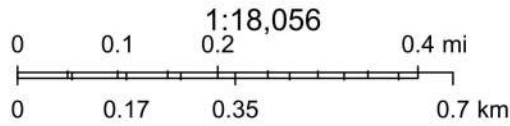
Single-Unit Attached Residential

Single-Unit Detached Residential

Two-Unit Residential

Multi-Unit Residential

PGHWebZoning_3633_9289



Allegheny County 2012; 2010 Imagery, County of Allegheny, West Virginia
GIS, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA

Pittsburgh Zoning Map obtained from <http://pittsburghpa.gov/dcp/gis-webmaps>



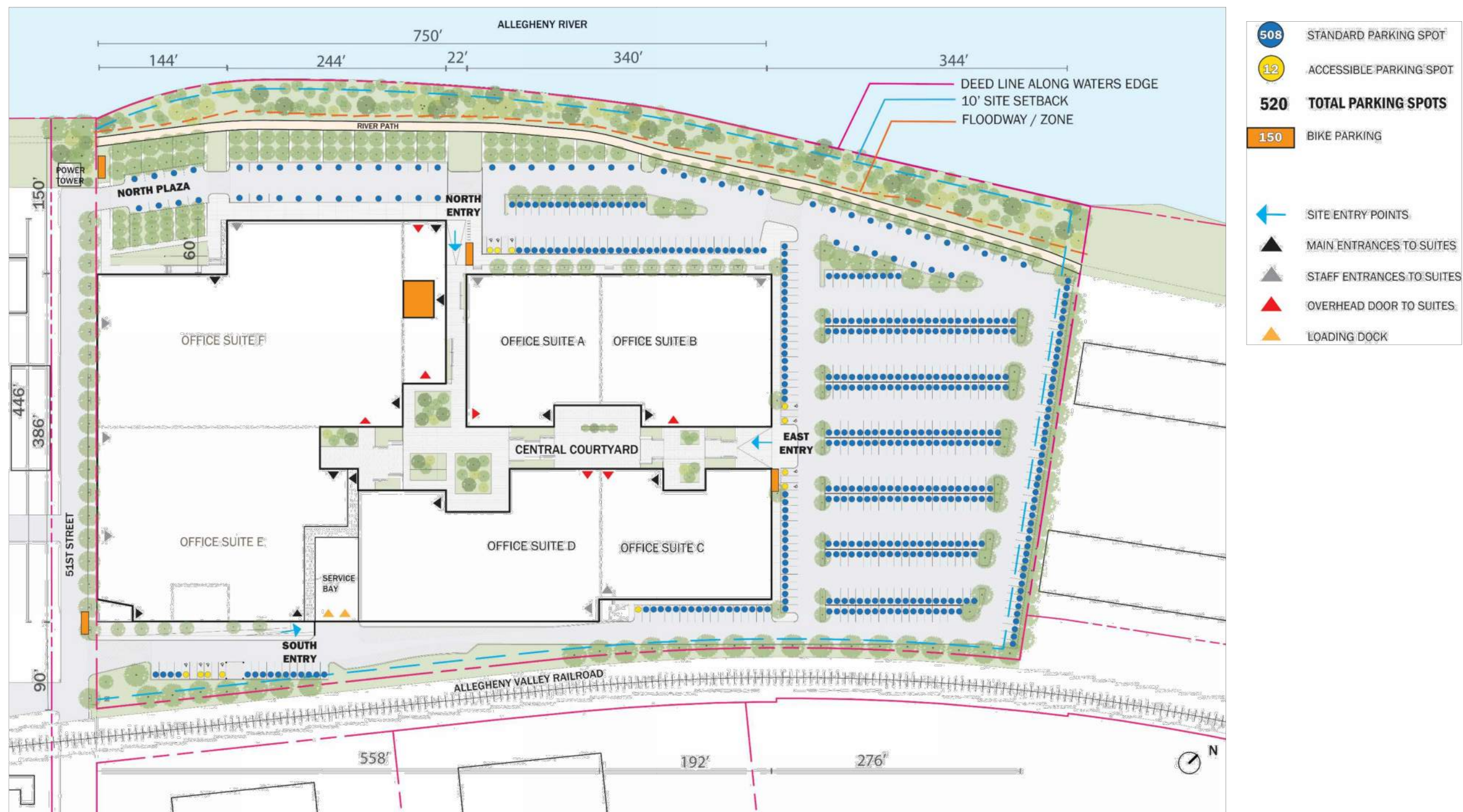
LEGEND:

- Signalized Study Intersection

Study Intersections	
#	Intersection
1	Butler Street & 48th Street / Plummer Street
2	Butler Street & 51st Street / Stanton Avenue
3	Butler Street & 52nd Street



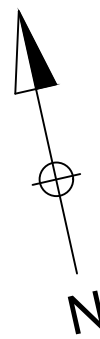
SITE PLAN



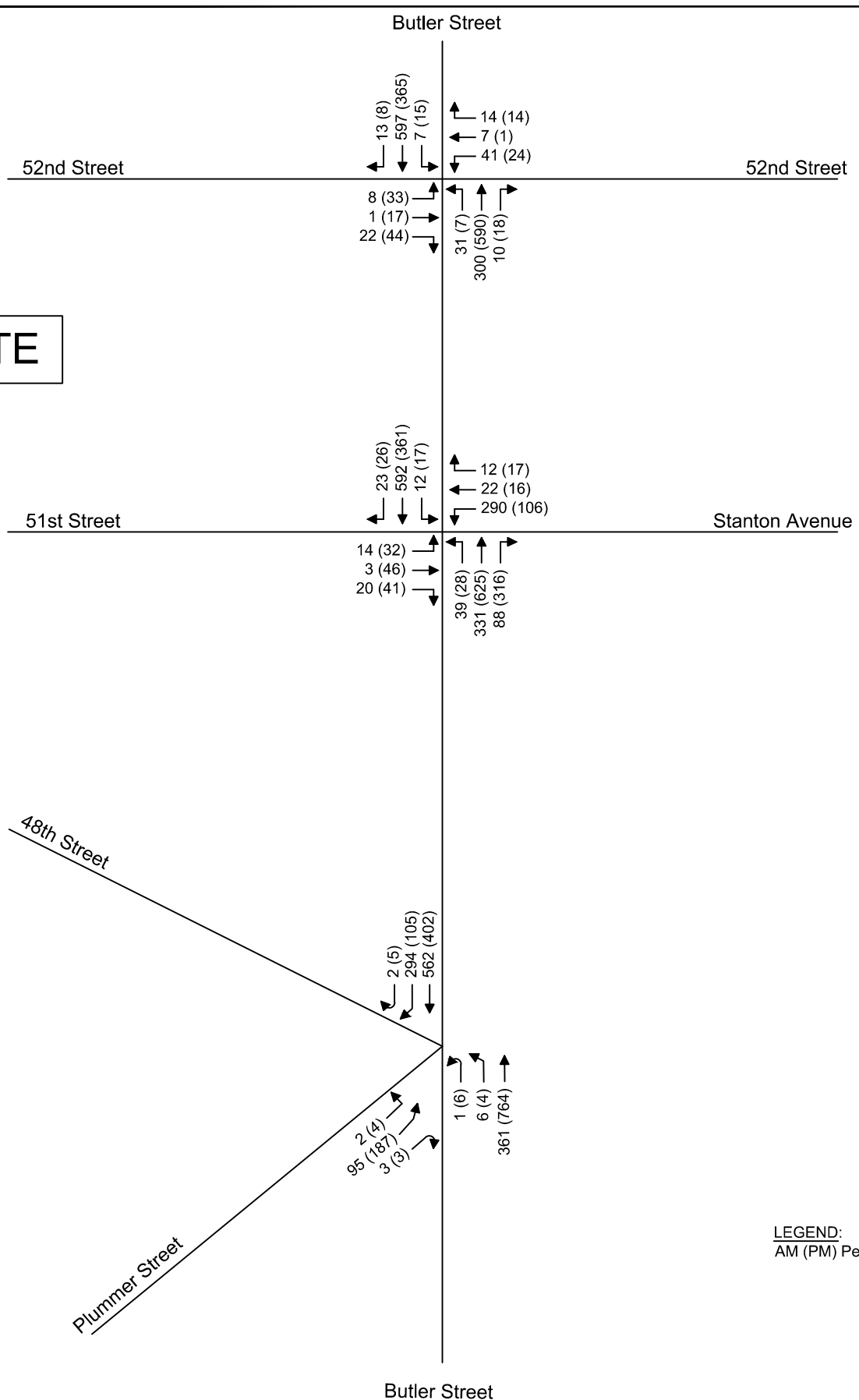
27 51ST STREET - PERKINS EASTMAN

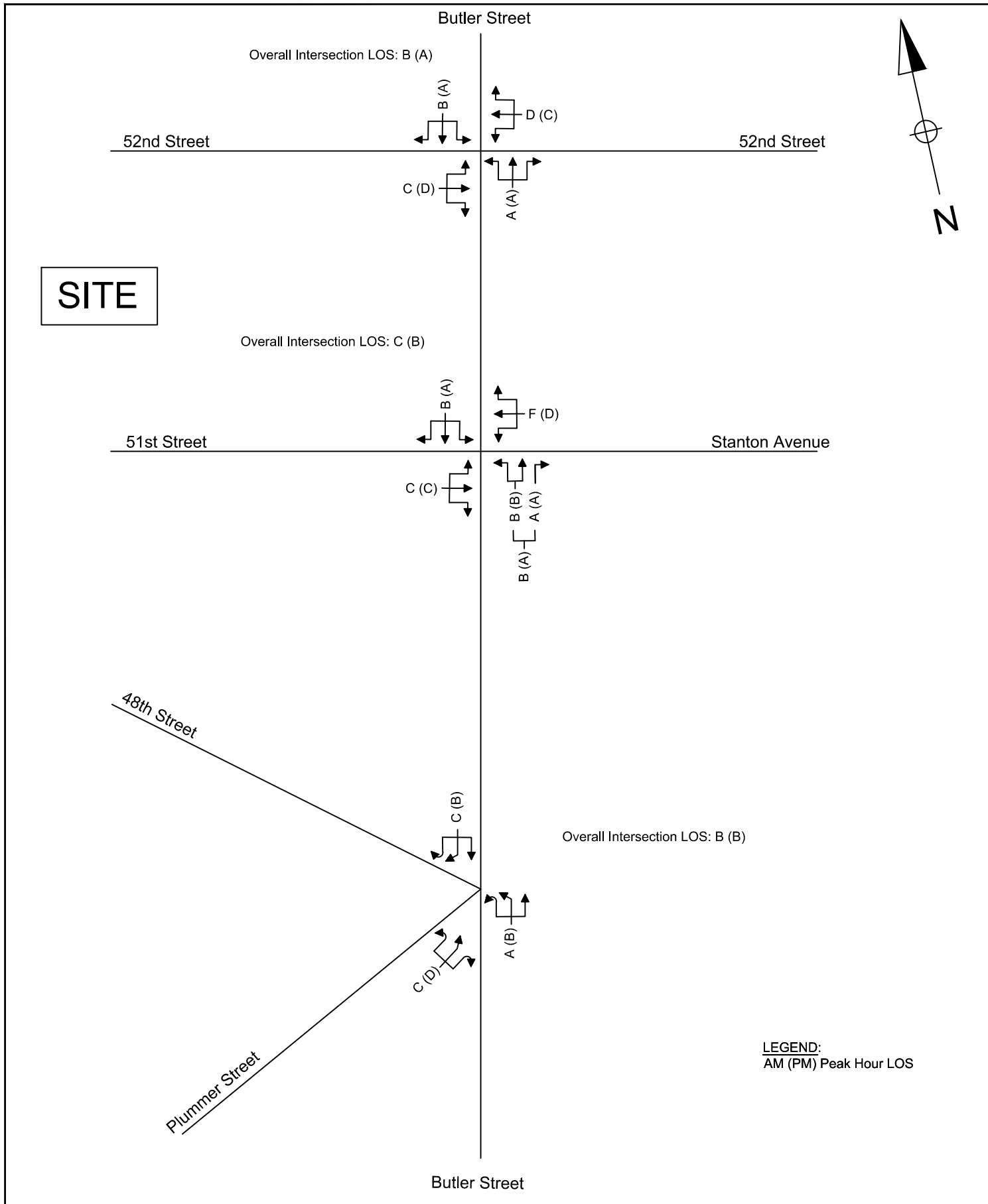
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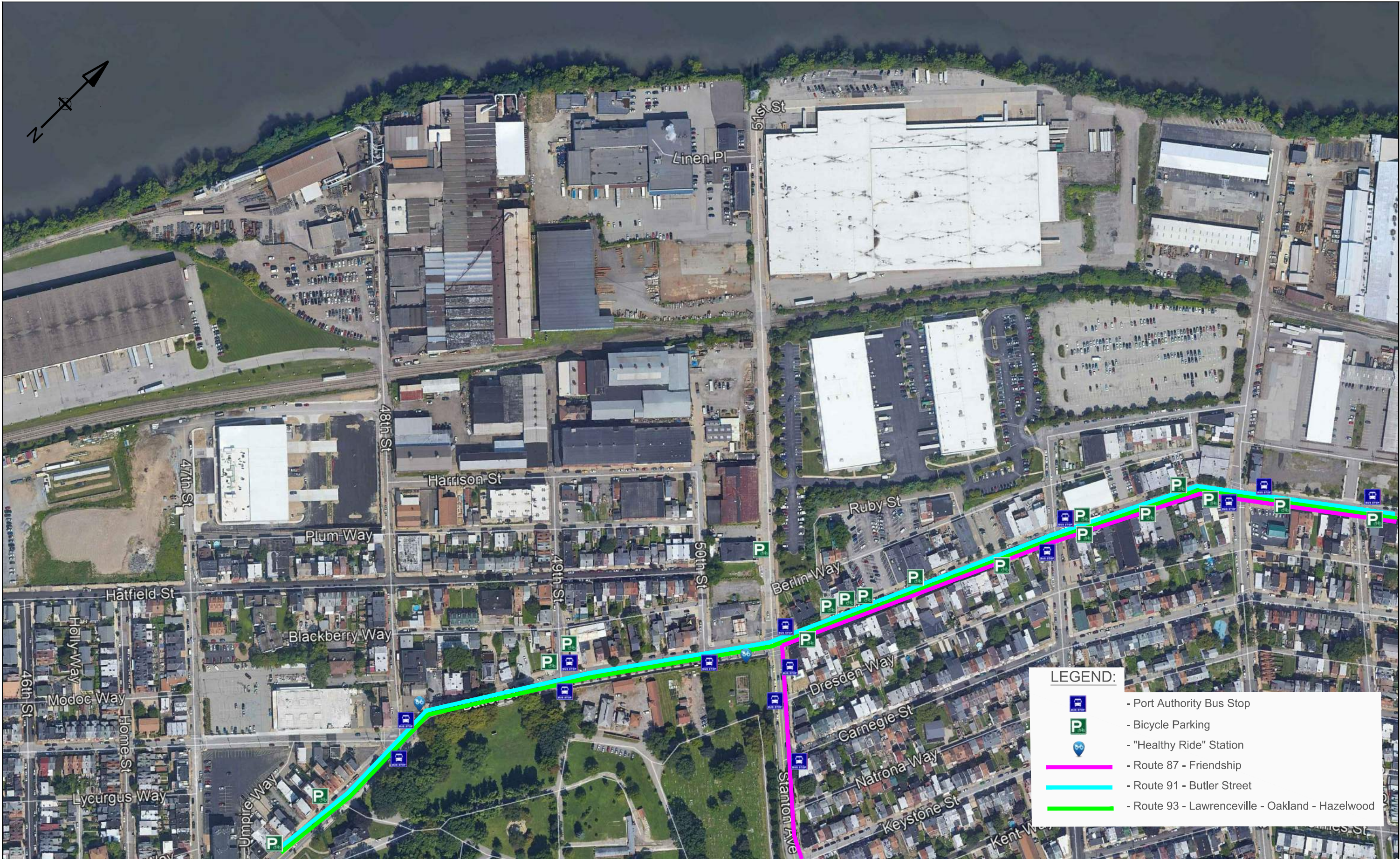


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 Thomas J. Stronck
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LEGEND:

- Port Authority Bus Stop
- Bicycle Parking
- "Healthy Ride" Station
- Route 87 - Friendship
- Route 91 - Butler Street
- Route 93 - Lawrenceville - Oakland - Hazelwood

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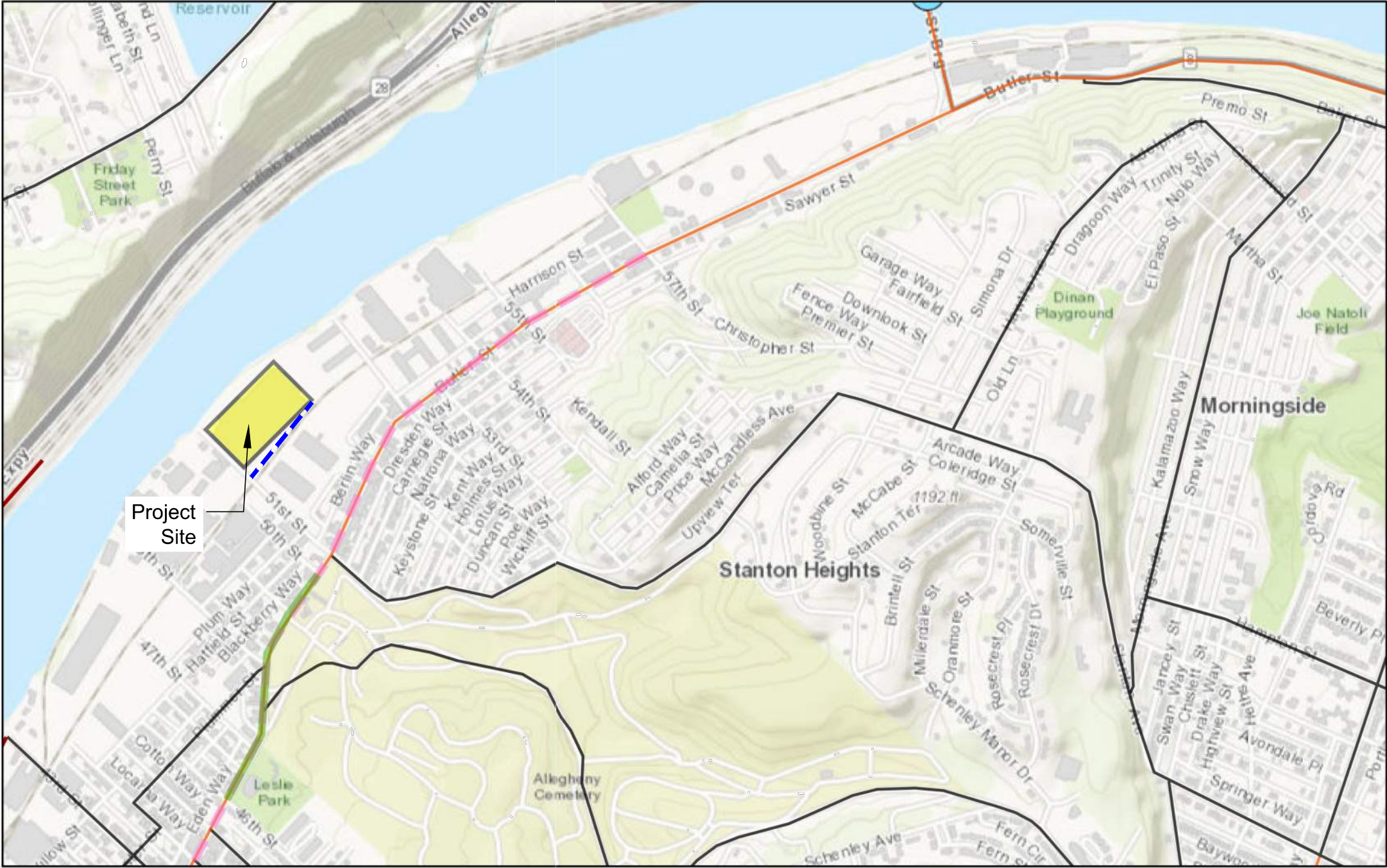
Redevelopment of 21 51st Street
Upper Lawrenceville Neighborhood, City of Pittsburgh, Allegheny County, PA

Alternative Transportation Modes

Transportation Impact Study
Project Number: C-39021-R000
Drawing Scale: N.T.S.
Date Issued: JAN, 2020
Drawn By: TJS
Checked By: KLB
Project Manager: MJH

Figure 7

Pittsburgh Bike Infrastructure



August 1, 2018

- | | |
|--|---|
|  Site Location |  Cautionary Bike Route |
|  On Street Bike Route |  Sharrows |
|  Bike Lanes |  Proposed Bike Path |
|  Trails | |

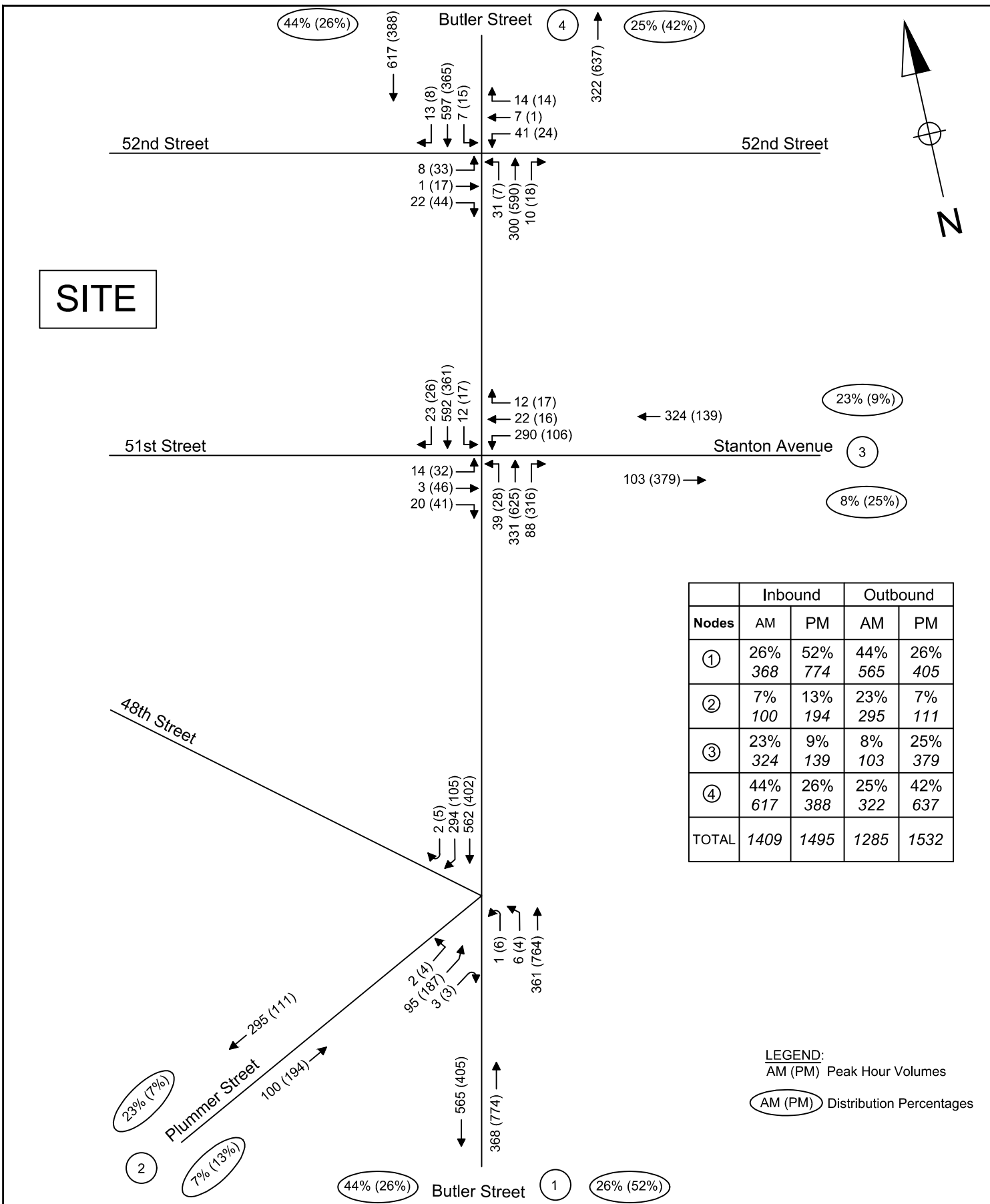
Bicycle Route Map obtained from <http://bikepg.org>

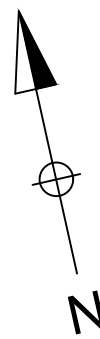
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Global Trip Distribution Percentages

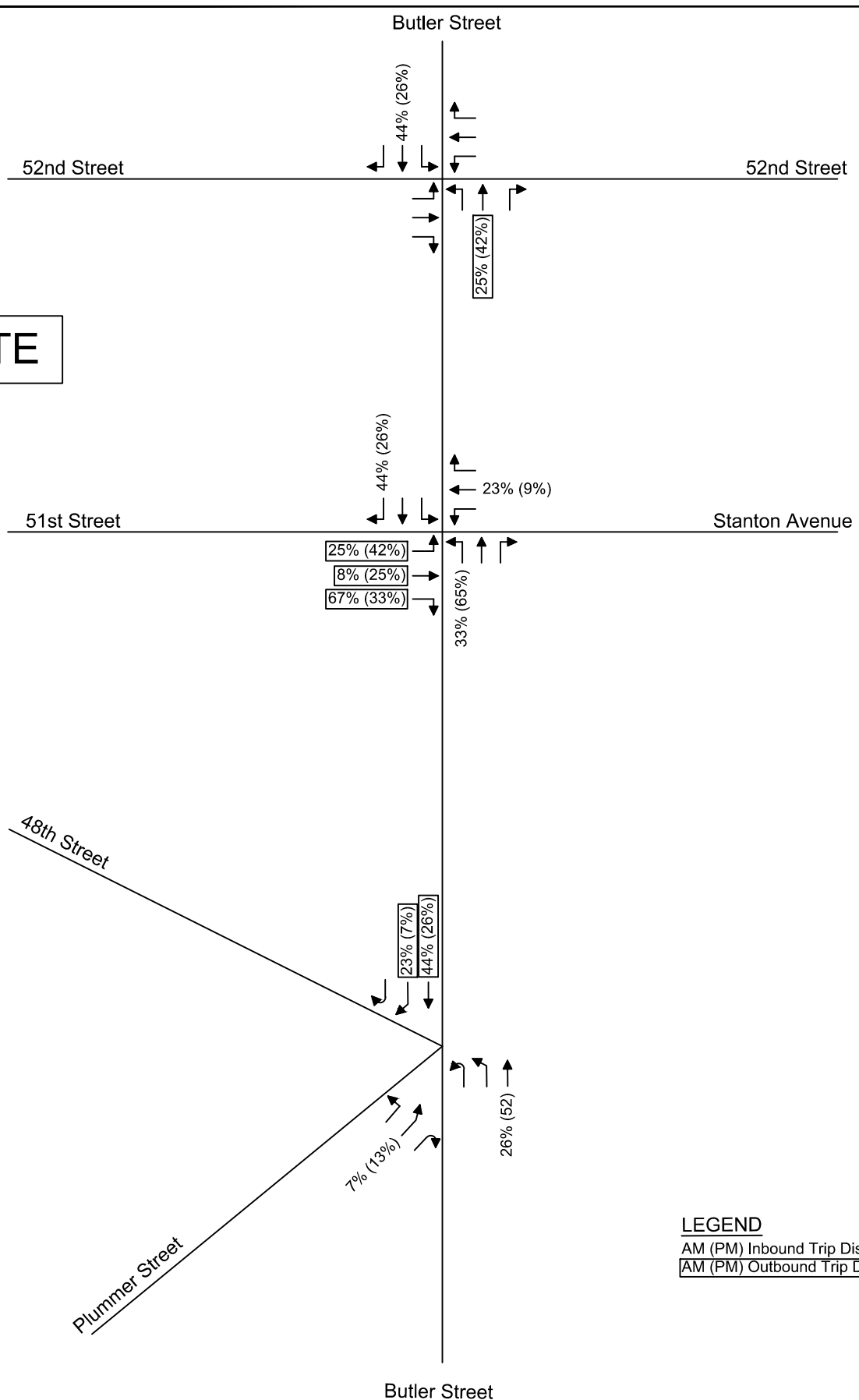
Transportation Impact Study
 Project Number: C-39021-R000
 Drawing Scale: N.T.S.
 Date Issued: JAN. 2020
 Drawn By: TJS
 Checked By: KLB
 Project Manager: MJB

Figure 9a

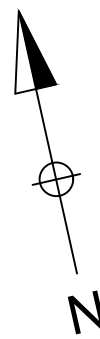




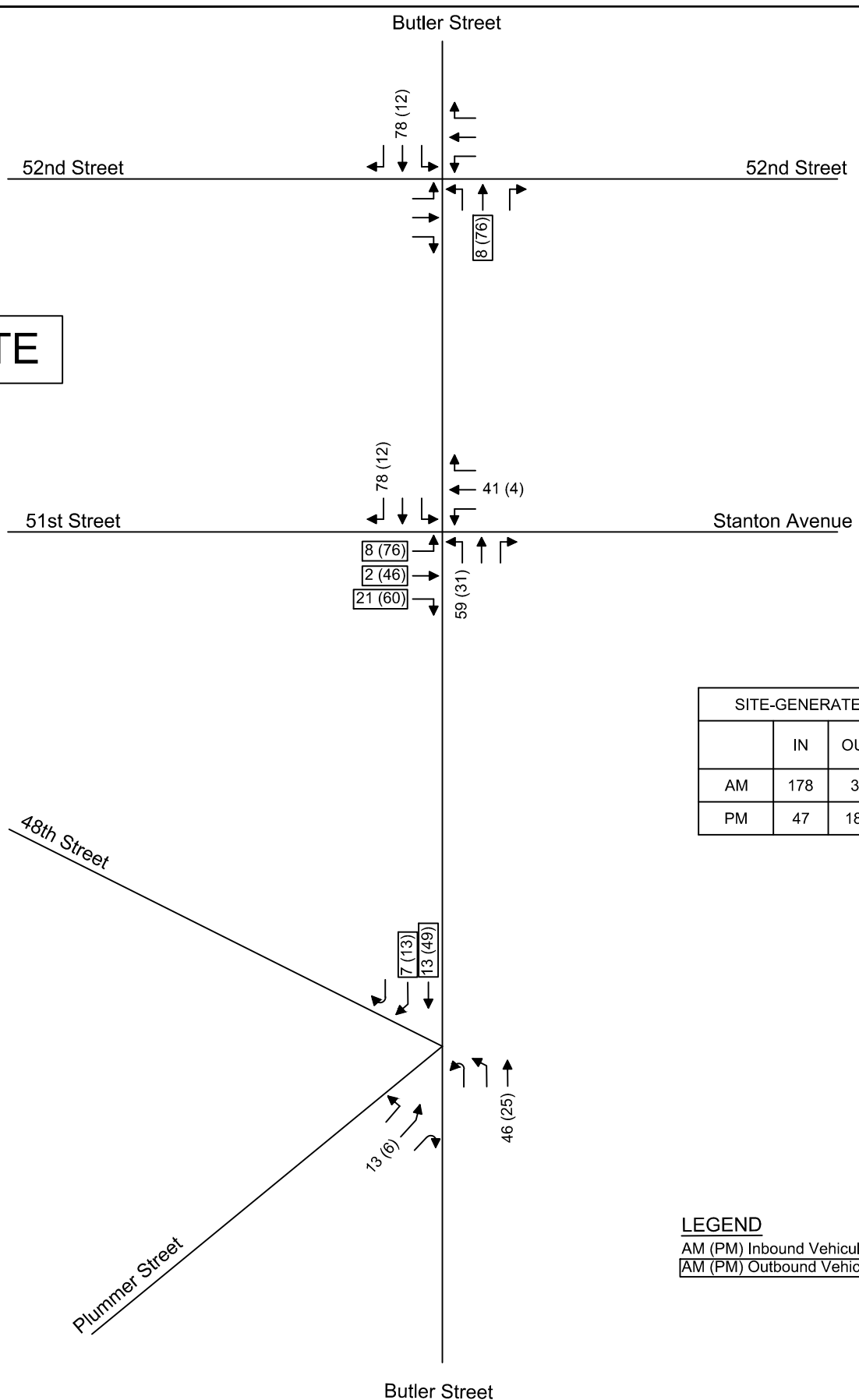
SITE



LEGEND
AM (PM) Inbound Trip Distribution Percentage
AM (PM) Outbound Trip Distribution Percentage



SITE



SITE-GENERATED TRIPS			
	IN	OUT	TOTAL
AM	178	31	209
PM	47	182	228

LEGEND
AM (PM) Inbound Vehicular Site Trips
AM (PM) Outbound Vehicular Site Trips

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Plot Date: 1/6/2020 1:55 PM
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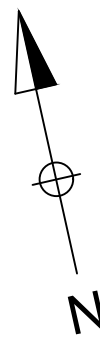
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Site-Generated Vehicular Trips

Transportation Impact Study
Project Number: C-39021-R000
Drawing Scale: N.T.S.
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Project Manager: MJH

Figure 10

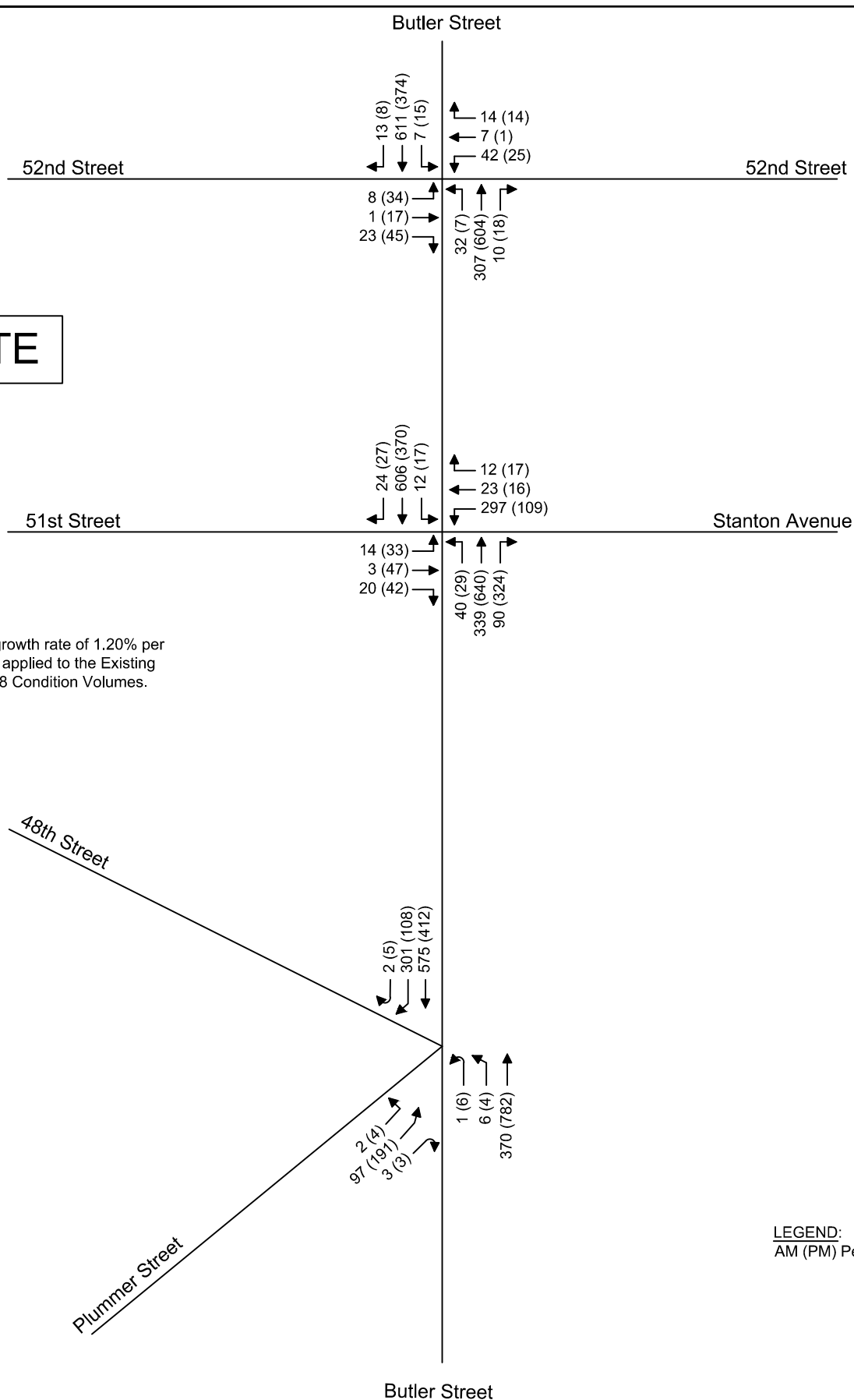
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SITE

NOTE:

A linear growth rate of 1.20% per year was applied to the Existing Year 2018 Condition Volumes.



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Opening Year 2020 Without Development Condition Traffic Volumes

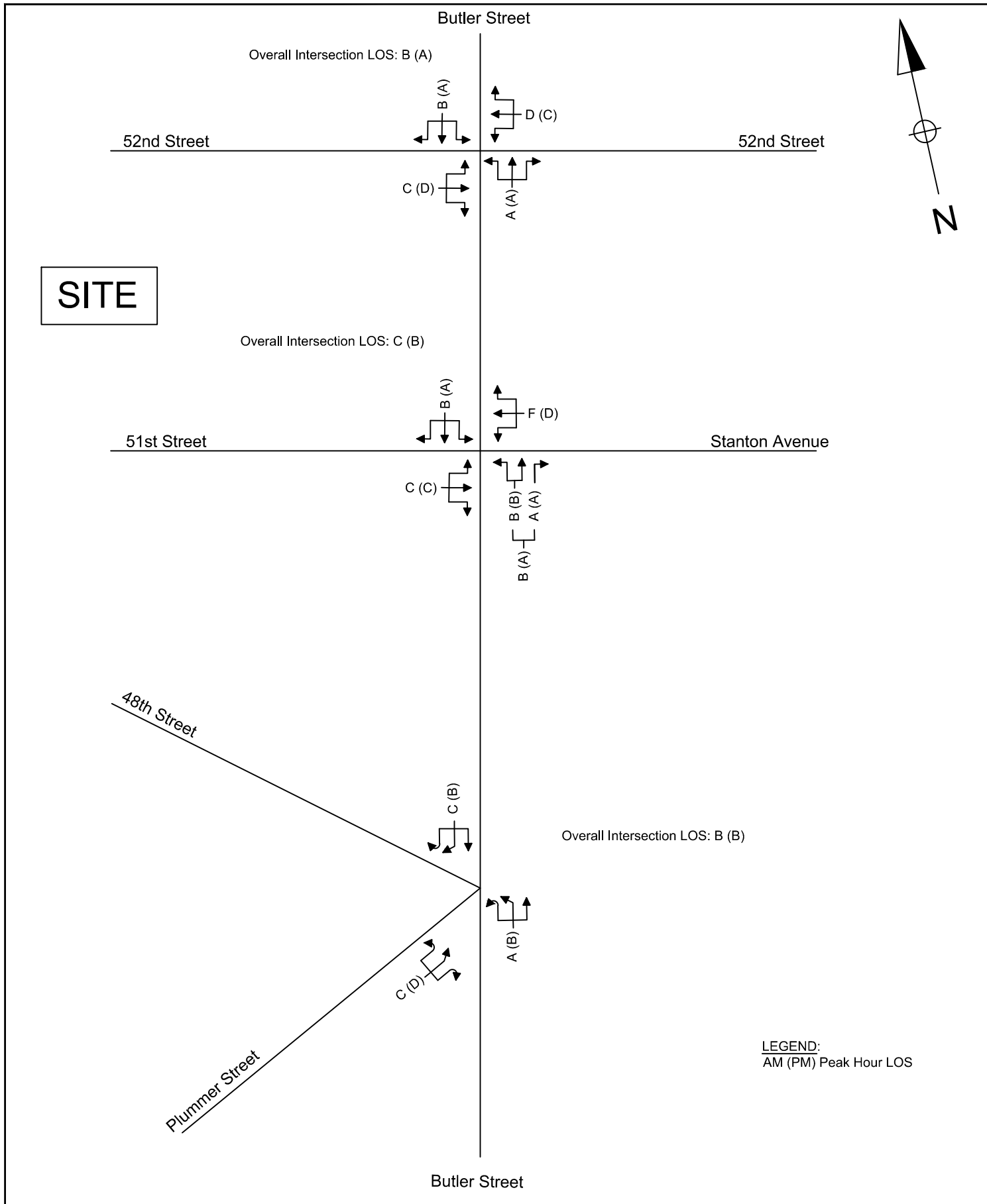


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Figure 11a



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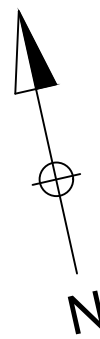
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Opening Year 2020 Without Development Condition LOS

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 Project Manager: MJB

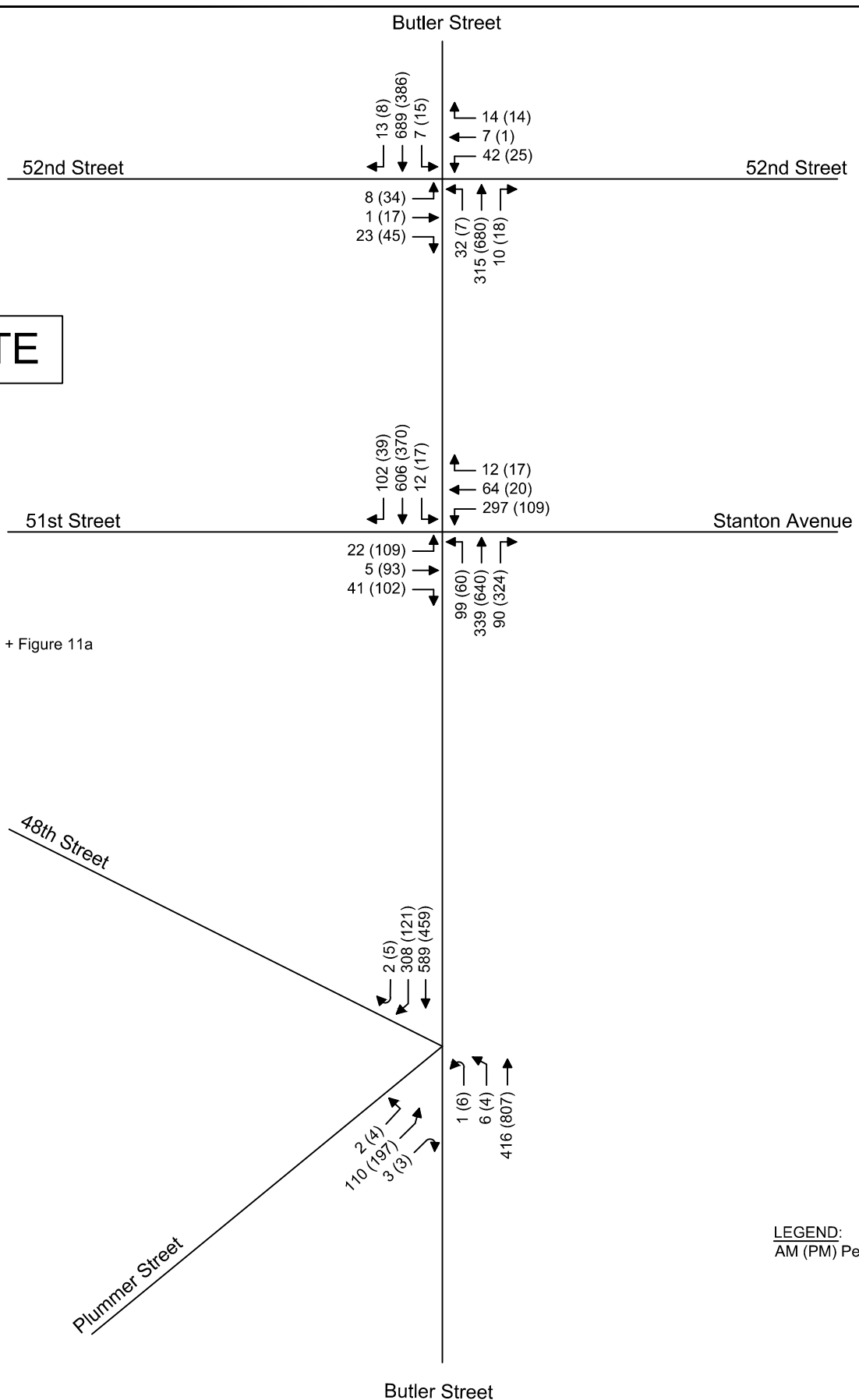
Figure 11b

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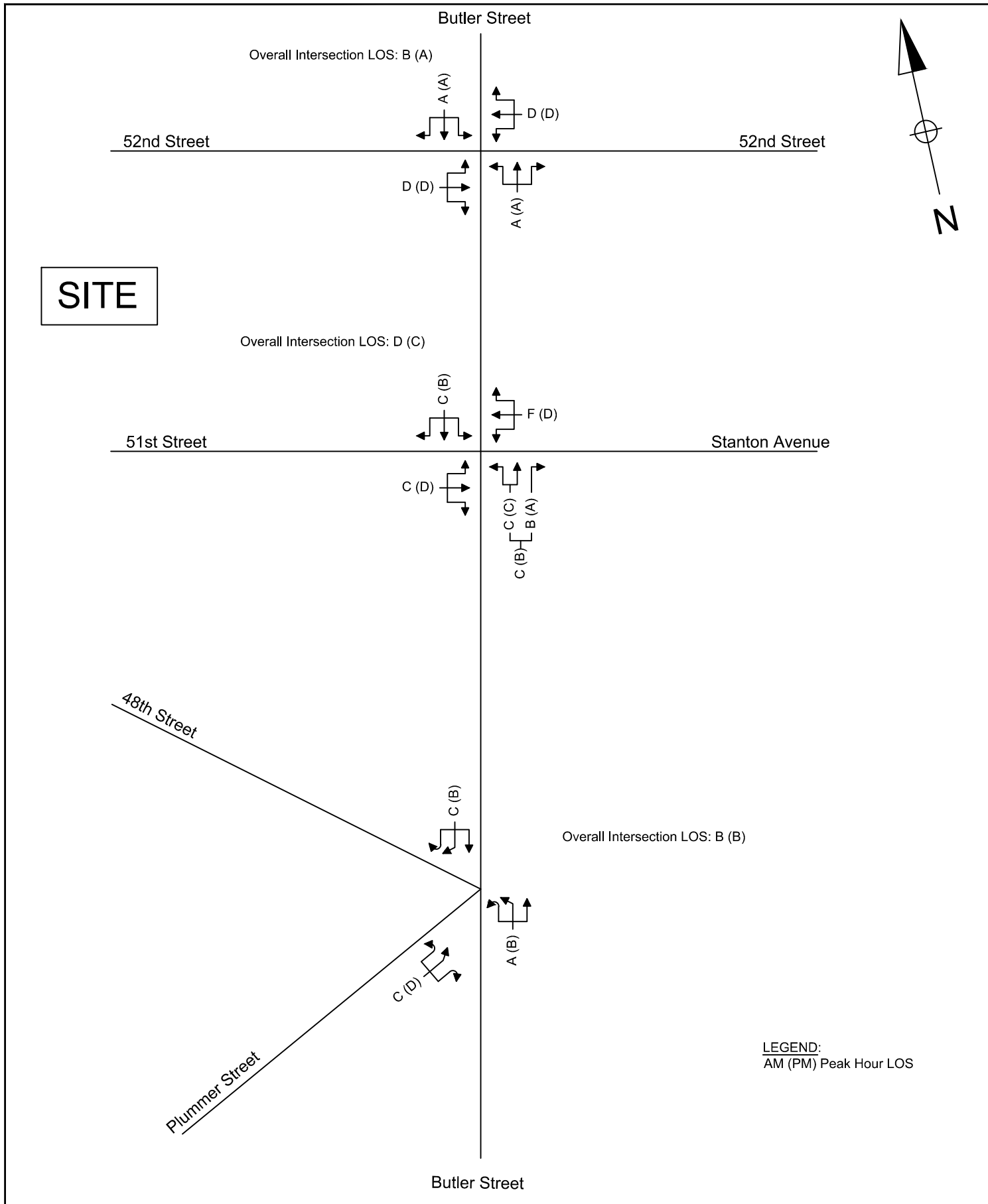


SITE

NOTE:
Figure 10 + Figure 11a



LEGEND:
AM (PM) Peak Hour Volumes



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Opening Year 2020 With Development LOS

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Figure 12b



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