



A. PROJECT INFORMATION

1. APPLICATION IS: Development Project Protest Appeal

2. STAFF REVIEW DATE:

3. SITE INFORMATION

Development Address: 6320 Shakespeare St

Parcel ID(s)/Lot-and-Block Number(s): 84-G-224,225,227,229,231,258,347

Project Description: Demolition of existing retail buildings and parking lot.

New construction of mixed use development, including ground level grocery store at 36,000 SF, ground level retail at 38,200 SF with five-story residential building atop the respective retail space, three-tier parking garage with 423 parking spaces, new site work and large open park at the south side of the site.

3. CONTACT INFORMATION

Applicant Name: Joseph Bevins

Applicant Contact (phone and email): 412-263-3800

B. ZBA HEARING INFORMATION

Zone Case # 204of 2020

Date of Hearing: [Click here to enter a date.](#) Oct 15, 2020

Time of Hearing: [Click here to enter text.](#) 10:00 a.m.

Zoning Designation: RP,UNC,RM-H,LNC

Neighborhood: Shadyside

Zoning Specialist: KR

C. ZBA REQUESTS

Type of Request: Variance

Code Section:

Description: 904.04.C.4 Special Exception for Height in UNC, up to 85 feet and 6 stories.

Variance to 904.04.C.4(ii) Site shall not be within 200 feet of any property zoned residential. Site across Aurelia Street from R2-M and across Way from RM-H.

Type of Request: Variance

Code Section:

Description:

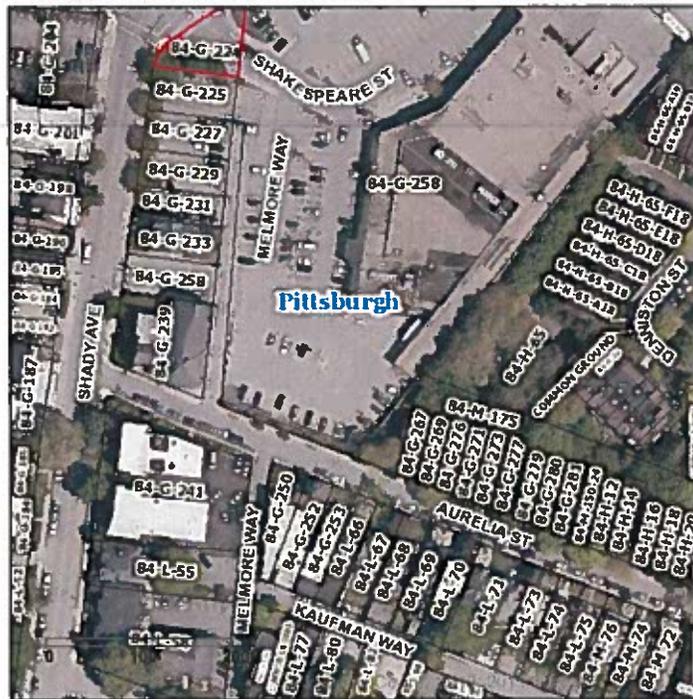
Parcel ID : 0084-G-00224-0000-00
Property Address : MELMORE WAY
PITTSBURGH, PA 15206

Municipality : 107 7th Ward - PITTSBURGH
Owner Name : SHAKESPEARE STREET
ASSOCIATES

Data displayed on this map is for informational purposes only. It is not survey accurate and is meant to only show a representation of property lines.

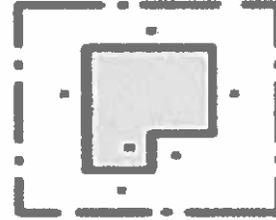
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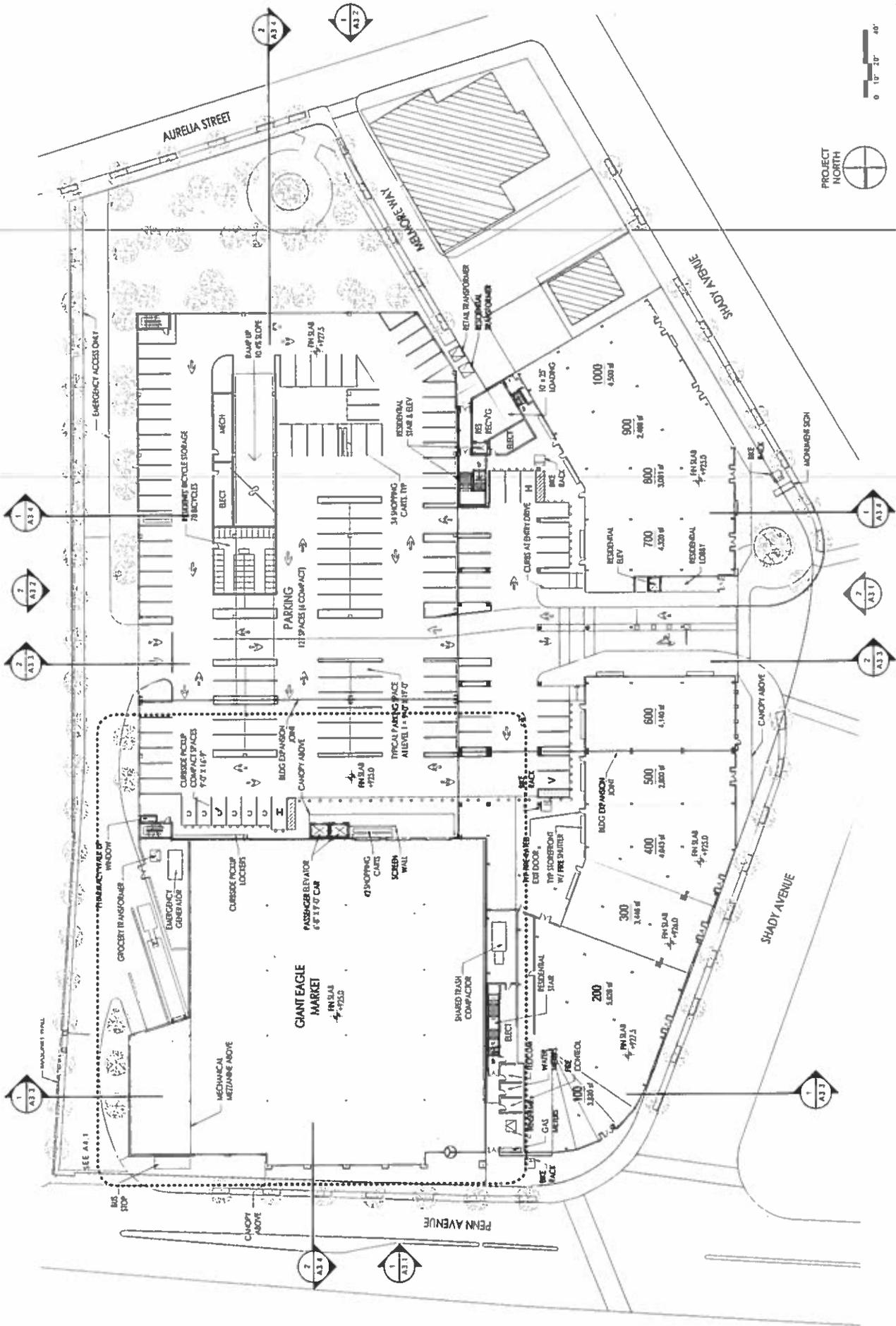


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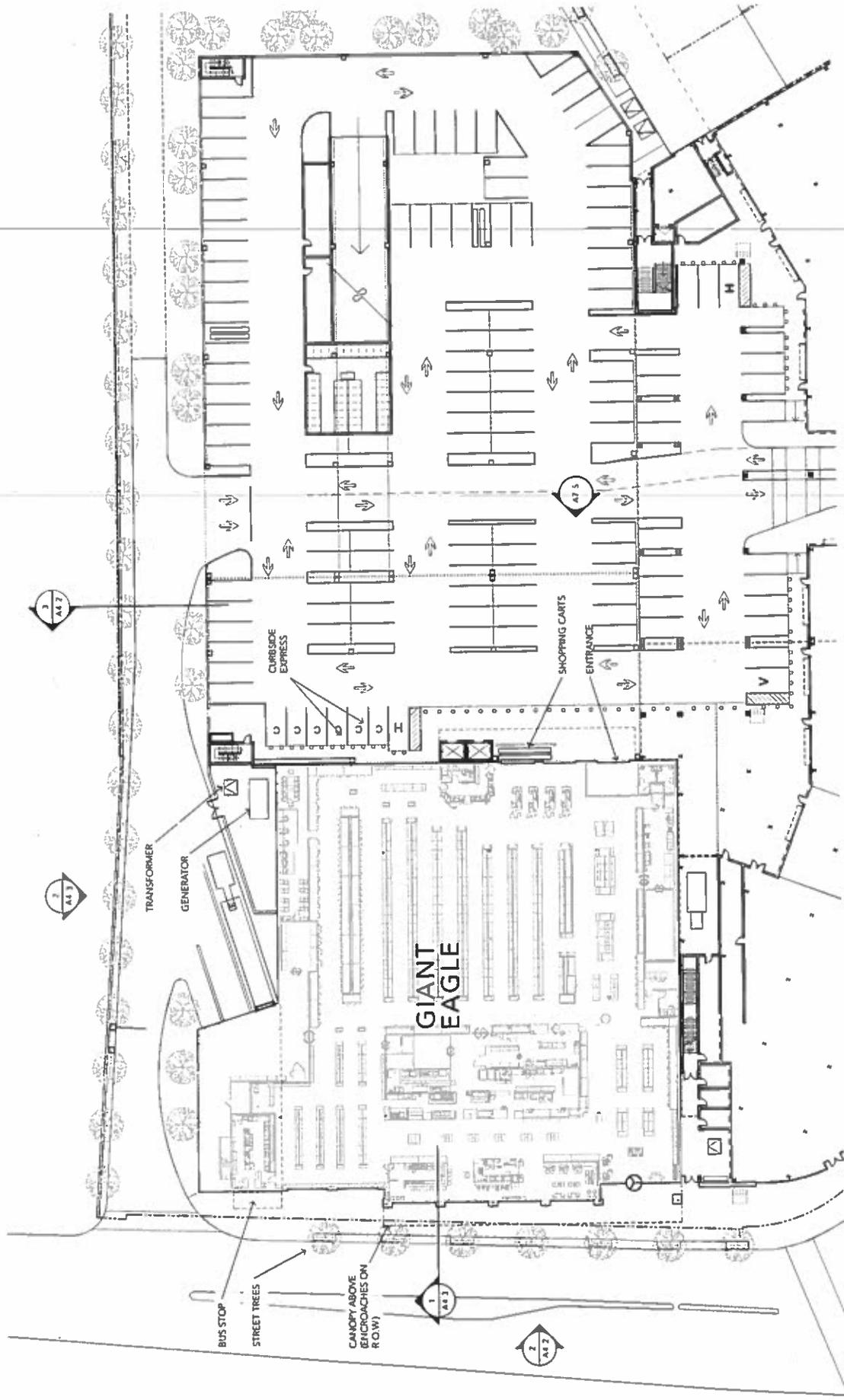
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FLOOR PLAN - LEVEL 1
SCALE: 1:20

SHADY HILL CENTER
Pittsburgh, PA



FIELD PAOLI



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GIANT EAGLE - FLOOR PLAN
SCALE: 1/16" = 1'-0"

SHADY HILL CENTER
Pittsburgh, PA



FIELD
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EXISTING UTILITIES & ELEVATIONS

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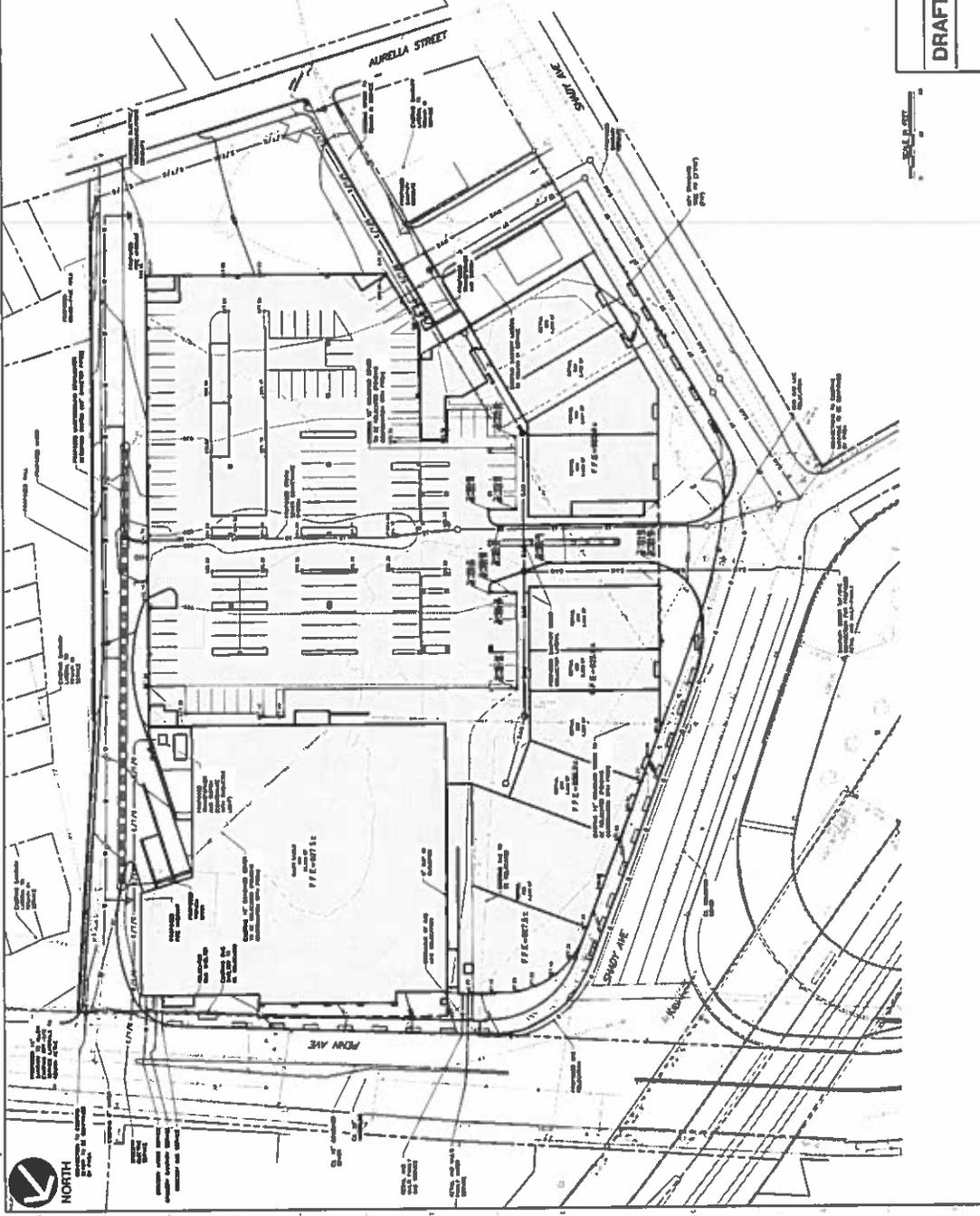
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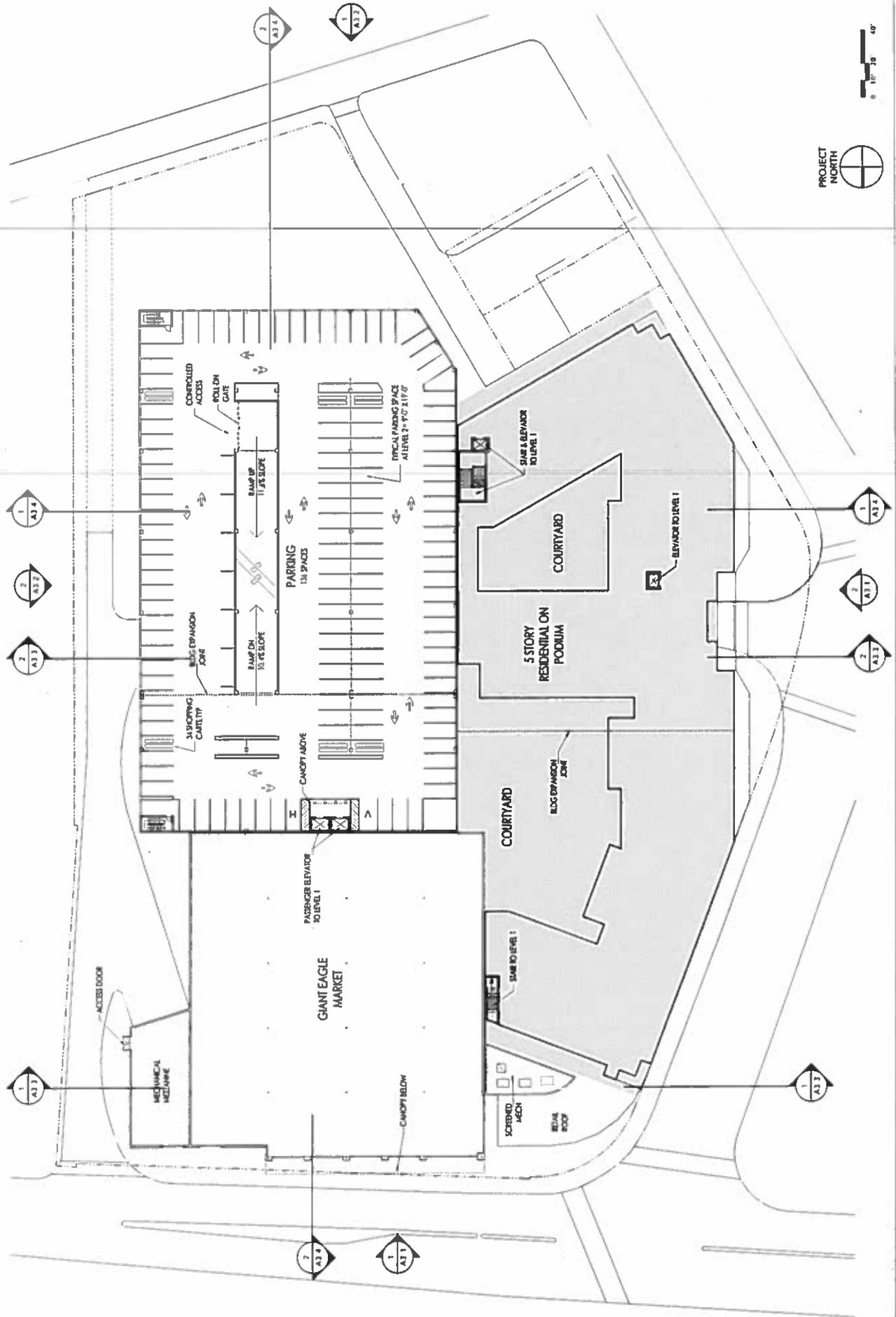
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 1000 North 10th Street, Suite 100
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 Tel: 412-681-1111
 Fax: 412-681-1112

ECHO REAL ESTATE COMPANY
 SHADY HILL CENTER
 SITE DEVELOPMENT
 PITTSBURGH, PENNSYLVANIA

CONCEPTUAL GRADING AND UTILITY PLAN
 SP-01

DRAFT





1" = 16' 4"

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05 / 22 / 2020

FLOOR PLAN - LEVEL 2
SCALE: 1:20

SHADY HILL CENTER
Pittsburgh, PA



FIELD PAOLI



DD-A1.1
05 / 22 / 2020

SITE PLAN
SCALE: 1:40

SHADY HILL CENTER
Pittsburgh, PA



FIELD
PAOLI



SHADY HILL DEVELOPMENT
TRANSPORTATION IMPACT STUDY
City of Pittsburgh, Allegheny County, Pennsylvania

Prepared for:
ECHO REALTY
Pittsburgh, Pennsylvania

Prepared by:
TRANS ASSOCIATES ENGINEERING CONSULTANTS, INC.
Pittsburgh, Pennsylvania

June 10, 2020

▶ **Trans** ASSOCIATES

SHADY HILL DEVELOPMENT
TRANSPORTATION IMPACT STUDY
City of Pittsburgh, Allegheny County, Pennsylvania

Prepared for:
ECHO REALTY
Pittsburgh, Pennsylvania

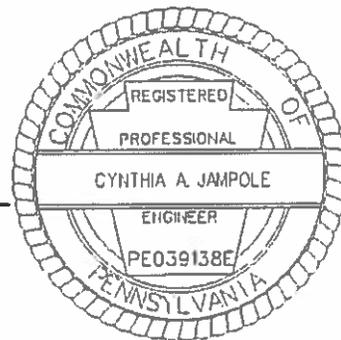
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TRANS ASSOCIATES ENGINEERING CONSULTANTS, INC.
Pittsburgh, Pennsylvania

Cynthia A. Jampole, P.E.


Principal

Ann M. Kline, E.I.T.


Associate Analyst



June 10, 2020

**SHADY HILL DEVELOPMENT
TRANSPORTATION IMPACT STUDY**

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Report

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Technical Appendix

1.1 Purpose of Report and Study Objectives

This report provides the results of the transportation study for the proposed Shady Hill development, the composition and location of which are detailed below. The study, as documented in this report, was performed in such a manner as to meet the study requirements established by the City of Pittsburgh's Department of Mobility and Infrastructure (DOMI) and Department of Public Works (DPW).

The considerations studied in detail include the traffic, parking, loading, site access, pedestrian access, and safety aspects of the proposed project.

The study objectives were to identify impacts upon the considerations listed above, and to develop appropriate mitigation strategies as necessary. These objectives were accomplished through performance of the following tasks:

- Performance of traffic, pedestrian, heavy vehicle, and bicycle counts and analysis of existing traffic conditions (year 2019) to identify existing conditions.
- Projection of future 2022 full occupancy year no build traffic volumes by projecting area-wide traffic growth.
- Assessment of traffic operations under 2022 no build conditions.
- Projection of future 2022 build traffic volumes (full occupancy year).
- Assessment of traffic operations under 2022 build conditions and determination of mitigating actions required to address the impacts of the proposed development.
- Assessment of parking demand and supply.
- Assessment of pedestrian access and safety.
- Assessment of crash history at the study intersections.
- Assessment of bicycle facilities.
- Assessment of loading facilities' access and operation.
- Assessment of bicycle requirements based on the City of Pittsburgh Urban Zoning Code.

The study, as documented in this report, was performed in order to determine the traffic, parking, bicycling and pedestrian impacts of the proposed Shady Hill development.

1.2 Executive Summary

An overview of the project description, principal findings resulting from the analysis, and recommended mitigation strategies is presented in this summary.

1.2.1 Site Location and Study Area

The proposed Shady Hill development is located in the City of Pittsburgh. The site is bounded by Shady Avenue, Penn Avenue, Aurelia Street and adjacent properties, with the main driveway located on Shady Avenue opposite Ellsworth Avenue, controlled by an existing traffic signal. A second right-turn in only

driveway limited to delivery vehicles only will be located on Penn Avenue, adjacent to the main Giant Eagle store loading docks. The site is currently occupied by a Giant Eagle grocery store, a shopping center (not fully occupied) and a parking lot. The proposed development includes Giant Eagle grocery store, retail space, restaurants and apartments.

The study area as mandated by DOMI investigated the following intersections, as shown in Figure S-1:

- Penn Avenue and Centre Avenue (signalized)
- Penn Avenue and Shady Avenue (signalized);
- Shady Avenue/Ellsworth Avenue/Site Driveway (signalized);
- Penn Avenue and Site Driveway;
- Shady Avenue and Aurelia Street;
- Site Driveway and Aurelia Street;
- Shady Avenue and Marchand Street;
- Shady Avenue and Alder Street;
- Shady Avenue and Walnut Street (signalized); and
- Penn Avenue and Station Street (signalized).

1.2.2 Development Description

The proposed Shady Hill development is anticipated to include the following development components:

- 36,260 GSF grocery store;
- 232 apartments;
- 25,246 GSF retail space;
- 8,443 SF restaurant space;
- 4,500 SF medical office space;
- 423 space parking garage;
- 78 bicycle parking spaces in a bike room; and
- 8 bicycle spaces (minimum) in outdoor bike racks.

Access to the site will be provided via two site driveways. The main driveway will be located (as it is today) on Shady Avenue opposite Ellsworth Avenue, and is signal controlled. The secondary driveway is located on Penn Avenue at the eastern edge of the site and will accommodate right turn in delivery vehicles only.

Details of the proposed development and its access are presented in Figure S-2.

1.2.3 Principal Findings

Parking Analysis

The parking requirement analysis was determined for the proposed development using the methodologies presented in the City of Pittsburgh Urban Zoning Code: Chapter 914: Parking Loading and Access. The detailed parking calculations are shown in the report.

The CODE allows for reduction in the number of required automobile parking spaces depending upon the amount of bicycle parking spaces provided. When the minimum bicycle reduction is used then a total of 425 vehicle parking spaces, including 10 ADA spaces, of which two (2) must be van spaces, is required, along. When the maximum bicycle reduction is used (150 spaces), then 359 automobile parking spaces, including 10 ADA spaces, of which two (2) must be van spaces, are required.

Proposed Parking Supply

The site plan provides 423 automobile parking spaces, 86 bicycle spaces (78 in a bike room, and 8 in outdoor bike racks). The site plan provides (423 + 78 + 8 =) 509 spaces and meets the requirements of the Zoning Code. The number of ADA spaces provided on the site plan is 9, which meets the requirements of the Zoning Code.

Further details of the parking analysis are presented in Section 3.4 of this report.

Loading Requirements

The loading space requirement per Section 914.10.A of the City of Pittsburgh Zoning Code for the development is for 9 off-street loading spaces. The proposed development is anticipated to provide four (4) loading spaces. Therefore, a request for an Administrator Exception for reduction of loading spaces from 9 to 4 will be completed and submitted to the Zoning Administrator in a separate document.

Access for delivery vehicles/garbage trucks will be via the right in only driveway on Penn Avenue and via the main driveway on Shady Avenue. All tractor trailers will enter as rights into the Penn Avenue driveway, with all exiting via the Shady Avenue driveway. All truck maneuvering will occur on the site.

Further details of the loading requirements are presented in Section 5.4 of this report.

Trip Generation

Vehicular trip generation for the proposed Shady Hill development was projected based upon the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017. Multi-modal trip reductions for the land uses were estimated by Trans Associates, with PGHSNAP data used for the

apartments. The multi-modal trip reductions were previously submitted to and approved by DOMI as shown in Table 4A.

Using this methodology, the proposed development is anticipated to generate a total of 242 vehicle trips during the AM peak hour (131 trips entering and 111 trips exiting), 385 vehicle trips during the PM peak hour (203 trips entering and 182-trips-exiting), and 435 trips during the Saturday peak hour (222 trips entering and 213 trips exiting).

Further details of the traffic analysis are presented in Section 4.1 of this report.

Traffic Analysis

2022 Build Conditions (Full Occupancy Year)

Traffic analyses were performed using methodologies published in the *Highway Capacity Manual 2010*, by the Transportation Research Board using Synchro, Version 10 traffic analysis and simulation software. The traffic analysis of the study intersections under 2022 build conditions utilized optimized traffic signal timings and existing roadway configurations. The capacity analyses performed resulted in determination of overall acceptable intersection levels of service D or above for all study intersections. The site driveway intersections were projected to operate acceptably, with signalized control on the main site driveway at Shady Avenue.

Further details of the traffic analysis are presented in Section 4.1 of this report.

Queuing Analysis

For dense urban conditions, queuing analyses provide a far more accurate representation of traffic flow than level of service designations. The 95th percentile queue lengths for the study intersections under existing, 2022 no build, and 2022 build conditions were evaluated. Analyses were performed using methodologies published in the *Highway Capacity Manual 2010*, by the Transportation Research Board using Synchro, Version 10 traffic analysis and simulation software.

Under 2022 build conditions, peak hour 95th percentile queue lengths were calculated, resulting in no significant increases in queue lengths compared to the 2022 no-build (without development) conditions. In both build and no-build scenarios queues exceeding available storage areas are projected at the following intersections:

- Penn Avenue/Centre Avenue
 - Northbound Centre Avenue right turn lane, all three peak periods. Only the AM peak period represents a new condition of queue extending past turn bay length.
 - Southbound Centre Avenue left turn lane, occurring during all three peak periods under both 2022 no build and 2022 build conditions.

- Southbound Centre Avenue through/right turn lane during the AM peak hour under both 2022 no build and 2022 build conditions.
- Penn Avenue and Shady Avenue
 - Westbound Penn Avenue left turns during all three peak periods under both 2022 no build and 2022 build conditions.
 - Northbound Shady Avenue left turn lane during all three peak periods under both 2022 no build and 2022 build conditions.

Further details of the queue analysis are presented in Section 5.0 of this report.

1.2.4 Recommendations

In order to provide the best possible levels of service and traffic flow for the study intersections, the following mitigation measures for the driveway, roadways, and traffic control are recommended, as shown in Figures S-3, S-4 and S-5:

Penn Avenue and Site Driveway

- Construct right turn in only driveway.
- Post "DO NOT ENTER" sign inside the site on the driveway.

Shady Avenue mid-block between Ellsworth Avenue and Penn Avenue, near busway pedestrian path

- Install "No Pedestrian Crossing" signs on both sides of the street near the walkway from the Busway.

Penn Avenue/Ellsworth Avenue/Site Driveway

- Reconfigure driveway approach to decrease pedestrian crossing distances as shown in Figure S-4.
- Reduce site driveway from three lanes to two lanes (one enter/one exit).
- Remove driveway island.
- Apply new crosswalks.
- Apply new stop bar on southbound Shady Avenue approach.
- Modify the traffic signal and signal poles as necessary.

Penn Avenue Bus Stop

- Construct an enhanced Penn Avenue bus stop adjacent to the site, as shown in Figure S-5.

1.2.5 Transportation Demand Management (TDM) Actions

Echo Realty is currently evaluating a comprehensive suite of TDM initiatives to reduce the amount of single-occupancy vehicle traffic to the Shady Hill Development. Echo Realty is reviewing best practices,

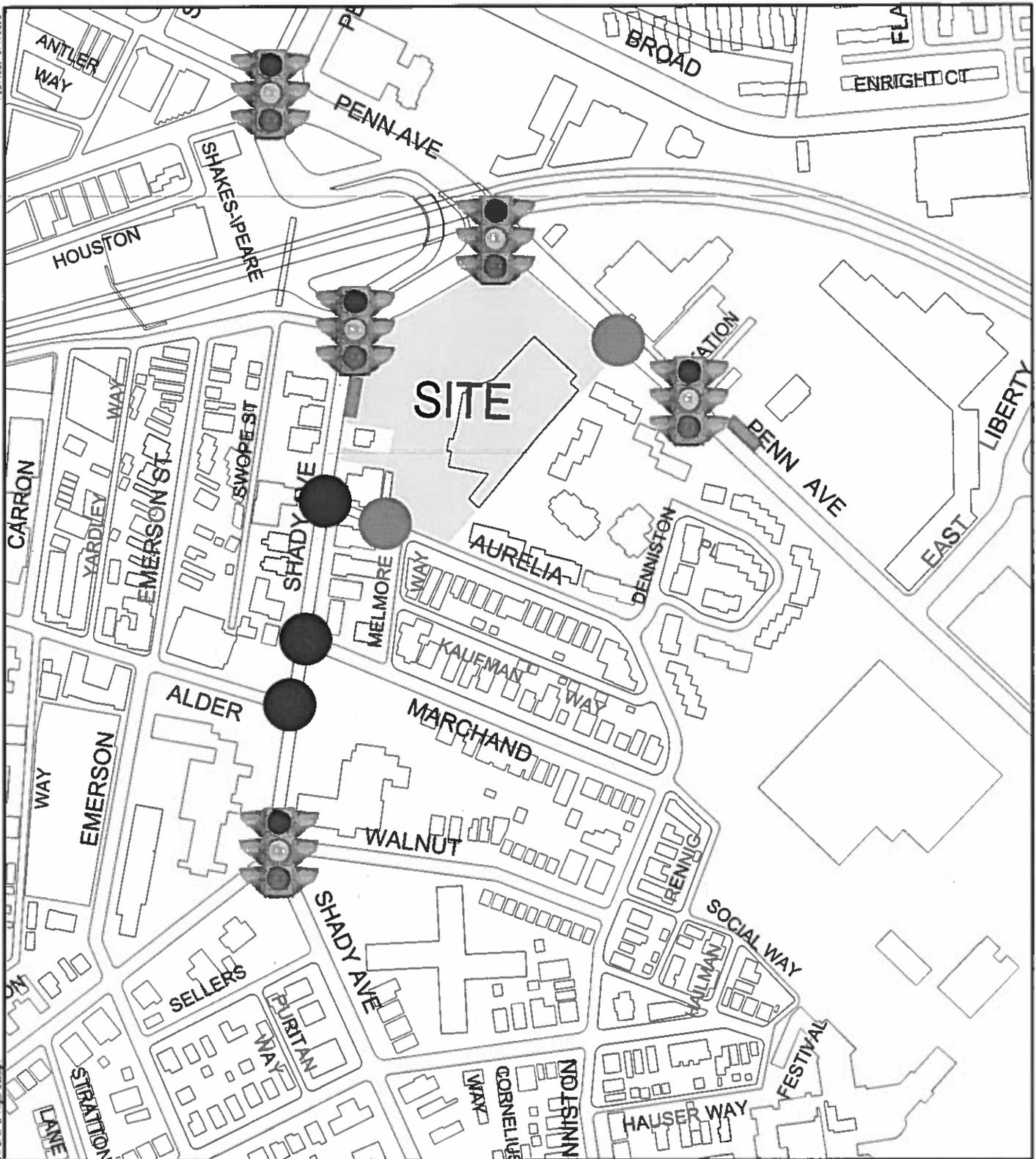
analyzing alternatives, and developing a comprehensive TDM strategy. The specific TDM initiatives selected for pilot programs and/or permanent implementation will be determined prior to submission of the final transportation report for the Shady Hill Development.

Potential initiatives include:

-
- Controlled access bike room with a workbench and a few tools/air pump.
 - Outdoor public bike racks.
 - Support the surrounding residential community if they petition the City for new or expanded Residential Permit Parking areas.
 - These tenants will likely not all work during standard business hours, decreasing the numbers of persons present at one time. Encourage tenants to permit flexible work hours.
 - Provide an informational kiosk in the building lobby, which would provide information on public transit and institutional shuttle service, as well as locations of Healthy Ride bikes and scoobis stations.
-
- Offer Uber/Lyft discounts.
 - Encourage tenants to recommend ride-matching services to employees, such as SPC's ride-share matching program.
 - Encourage tenants to offer parking cash out programs, offering employees who do not drive the value of a parking space as cash.
 - Provide priority parking for carpools and vanpools.
 - Provide follow-up on TDM strategies to DOMI as required.
 - Provide rideshare matches as an amenity to residents.
 - Provide TDM informational packet/website to residential tenants at move-in.
 - Per previously stated commitments, establish a fund of \$50,000 for the purchase of transit passes to be used by the tenants of the multi-family units.

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PROJECT NO.	ECHOR00 - 18131
PROJECT:	Shady Hill Center
TITLE:	Study Intersections

FIGURE	S-1
O.B. AMK 2020-05-07	
C.B. CAJ	
REV.	

3.1 Study Area

The study area for the project was fixed by DOMI and was determined based upon the area of influence and the area of significant traffic impact. The study area, study intersections and study methodology were been approved by the City of Pittsburgh Department of Mobility and Infrastructure (DOMI) as part of the TIS Scoping Form approval process. The approved City of Pittsburgh TIS Scoping Form is included in the Technical Appendix to this report.

3.1.1 Area of Influence

The area of influence for the Shady Hill development is shown in Figure 1.

3.1.2 Area of Significant Traffic Impact

The area of significant traffic impact will be on the streets immediately surrounding the development. Based upon discussions with representatives of DPW and DOMI, as contained in the approved TIS Scoping Form, the City required intersection capacity analysis and queue analysis at the following intersections, shown in Figure 1:

- Penn Avenue and Centre Avenue (signalized)
- Penn Avenue and Shady Avenue (signalized);
- Shady Avenue/Ellsworth Avenue/Site Driveway (signalized);
- Penn Avenue and Site Driveway;
- Shady Avenue and Aurelia Street;
- Site Driveway and Aurelia Street;
- Shady Avenue and Marchand Street;
- Shady Avenue and Alder Street;
- Shady Avenue and Walnut Street (signalized); and
- Penn Avenue and Station Street (signalized).

3.2 Study Area Land Use

3.2.1 Existing Land Use

The existing site is currently occupied by a Giant Eagle grocery store, a shopping center (not fully occupied) and a parking lot.

3.2.2 Anticipated Future Development

See Section 2.1.2.

3.2.3 Public Transit Service, Existing Travel Mode Splits, and Bicycle Routes

The urban location of the site provides numerous opportunities for a variety of transportation modes including pedestrian travel on existing sidewalks, bicycle travel on existing roadway infrastructure and existing Port Authority of Allegheny County (PAAC) public transit. The East Liberty station on the Martin Luther King, Jr. East Busway is located across Shady Avenue from the site.

Port Authority of Allegheny County bus routes frequently traverse the immediate project area as presented in Figure 3.

Multi-modal trip reductions for the land uses were estimated by Trans Associates (TA) and through use of the City's PGHSNAP data for the apartments. The multi-modal trip reductions were previously submitted to and approved by DOMI.

Bicycle Routes in the area are shown in Figure 4.

3.3 Site Accessibility

3.3.1 Public and Private Roadway Systems

Site accessibility is greatly influenced by the roadway system adjacent to the site and within the study area. The existing roadway system, including traffic control devices, is documented in this section.

3.3.1.1 Existing Area Roadway Systems

The existing area roadway system is presented in Figure 1. Eight intersections and three current or future site driveways are contained within the study area.

Signal timing plans and intersection field notes are included in the Technical Appendix.

3.3.1.2 Future Area Transportation Systems

No changes in the traffic flow directions and intersection controls on public roadways within the study area are currently planned.

3.3.1.3 Residential Permit Parking

Residential permit parking areas in the vicinity of the site are shown in Figure 5.

3.3.2 Traffic Volumes and Conditions

Documentation of existing traffic volumes and conditions in the study area includes descriptions of the data collection effort and documentation of existing pedestrian, bicycle and vehicular traffic patterns.

3.3.2.1 Data Collection

A data collection effort was organized and conducted by TA in April 2019. The data collection included the following items:

- Field reconnaissance of the study area, including roadway geometry, crosswalk locations, and existing traffic control;
- Acquisition of intersection as-built drawings, signal permit drawings and signal phasing and timing information from the City of Pittsburgh Department of Public Works;
- Performance of vehicle turning movement counts for the study intersections during the following peak periods:
 - Weekday AM peak period – 7:00 AM to 9:00 AM
 - Weekday PM peak period – 4:00 PM to 6:00 PM
 - Saturday peak period – 12:00 PM to 4:00 PM
- Performance of pedestrian, bicycle and heavy vehicle (truck) counts at all study intersections;
- Acquisition of crash data for the study intersections; and
- Identification of PAAC bus routes and East Busway station adjacent to the site.

3.3.2.2 Automatic Traffic Recorder Counts

Not applicable.

3.3.2.3 Peak Hours

Turning movement counts were performed by TA from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM on weekdays during April 2019 and on Saturdays from 12:00 PM to 4:00 PM also during April 2019. The overall peak hours determined from these counts are as follows:

- AM Peak Hour – 7:45 AM to 8:45 AM
- PM Peak Hour – 4:30 PM to 5:30 PM
- Saturday Peak Hour – 1:15 PM to 2:15 PM

Summaries of the data collected during the turning movement counts at each of the study intersections have been included in the Technical Appendix.

3.3.2.4 Peak Hour Traffic Volumes and Pedestrian Volumes

The results of the manual turning movement counts performed were plotted on schematic diagrams of the study intersections. The 2019 existing peak hour traffic volumes are presented in Figure 6.

Summaries of the data collected during the turning movement counts at each of the study intersections have been included in the Technical Appendix.

The results of the pedestrian counts were plotted on schematic diagrams. The existing peak hour pedestrian volumes are presented in Figure 7. Summaries of the data collected during the pedestrian, bicycle, and heavy vehicle counts at each of the study intersections have been included in the Technical Appendix.

3.3.2.5 2019 Existing Conditions – Intersection Levels of Service

Levels of service at each of the study intersections have been determined for the peak hours. These levels of service (LOS) were determined through implementation of signalized intersection capacity analysis methodologies presented in the 2010 Highway Capacity Manual, published by the Transportation Research Board. This methodology determines how well an intersection, approach to an intersection, or movement at an intersection operates, and assigns to it a Level of Service (LOS) A through F, with LOS A representing the best operating conditions and LOS F, the worst. Detailed definitions of LOS have been included in the Appendix.

Existing signal timings and operations were obtained from DPW and were utilized in the 2019 existing conditions capacity analysis. The results of the capacity calculations performed using existing 2019 traffic volumes and existing signal timings are presented in Figure 8 and Table 1 for the AM, PM, and Saturday peak hours.

As shown in the table, all overall intersections currently operate at levels of service (LOS) C or better, with the exception of the intersection of Penn Avenue and Centre Avenue that operates at a level of service of E for all peak hours.

Detailed capacity and levels of service printouts are provided in the Technical Appendix.

3.3.3 Transit Routes and Service

See Section 3.2.4.

3.3.4 Existing Relevant Transportation Systems Management (TSM) Programs

Not applicable.

3.3.5 Other Considerations

Not applicable.

3.4 Parking Analysis

3.4.1 Parking Calculations

Parking Analysis

The parking requirement analysis was determined for the proposed development using the methodologies presented in the *City of Pittsburgh Urban Zoning Code: Chapter 914: Parking Loading and Access*. The detailed parking calculations are shown in Table 2.

When the maximum bicycle reduction is used (150 spaces), 359 parking spaces, including 10 ADA spaces, of which two (2) must be van spaces, are required. The total number of parking and bicycle spaces required is (150 + 359 =) 509 spaces.

3.4.2 Parking Supply – Future Conditions

Proposed Parking Supply

The site plan provides 423 parking spaces, 78 bicycle spaces in a bike room, and outdoor bike racks with a capacity of at least 8 bicycle spaces. The site plan provides (423 + 78 + 8 =) 509 spaces and meets the requirements of the Zoning Code. The number of ADA spaces provided on the site plan is 9, which meets the requirements of the Zoning Code.

3.4.3 Parking Control

Parking control measures will be determined as the project design progresses.

3.5 Loading Analysis

Loading Requirements

The loading space requirement per Section 914.10.A of the City of Pittsburgh Zoning Code for the development is for nine (9) off-street loading spaces. The proposed development is anticipated to provide four (4) loading spaces. Therefore, a request for an Administrator Exception for reduction of loading spaces from nine (9) to four (4) will be completed and submitted to the Zoning Administrator in a separate document. Loading calculations are shown in Table 3.

Access for delivery vehicles for the grocery store will be via a right-in only curb cut on Penn Avenue. Access for delivery vehicles for the retail, restaurant, and medical office space and access for garbage trucks will occur at the site entrance on Shady Avenue. All non-residential delivery trucks will exit via the main driveway on Shady Avenue. Additional access for the residential loading will occur via Melmore Way.

4.0 PROJECTED TRAFFIC VOLUMES AND INTERSECTION CAPACITY ANALYSIS

4.1 Site-Generated Traffic

4.1.1 Trip Generation

Trip Generation

Vehicular trip generation for the proposed Shady Hill development was projected based upon the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017*. Multi-modal trip reductions for the land uses were estimated by Trans Associates, with PGHSNAP data used for the apartments. The multi-modal trip reductions were previously submitted to and approved by DOMI as shown in Table 4A.

Using this methodology, the proposed development is anticipated to generate a total of 242 vehicle trips during the AM peak hour (131 trips entering and 111 trips exiting), 385 vehicle trips during the PM peak hour (203 trips entering and 182 trips exiting), and 435 trips during the Saturday peak hour (222 trips entering and 213 trips exiting).

As development components changed throughout the design of the site, the trip generation was updated from trip shown in Table 4A to trips as shown in Table 4B. A comparison of the trips used for the analysis and the trips generated from current development components is shown in Table 4C. There is a difference of an additional 5 vehicle trips during the AM peak hour (4 additional trips entering and 1 additional trip exiting), 5 fewer trips in the PM peak hour (3 fewer trips entering and 2 fewer trips exiting), and 8 fewer trips during the Saturday peak hour (3 fewer trips entering and 5 fewer trips exiting). This difference was determined to be very minor, and the capacity and queuing analyses were not revised from the analyses performed and contained in this report.

Trip generation calculations are provided in the Technical Appendix.

4.1.2 Trip Arrival and Departure Distribution

Vehicular arrival/departure distributions for the proposed Shady Hill development were developed based on existing traffic patterns on the surrounding roadway network. The resultant trip arrival/departure distribution for the proposed development is presented in Figures 9A and 9B.

4.1.3 Trip Assignment – Determination of Site-Generated Traffic Volumes

The trip distributions presented in Figures 9A and 9B were applied to the new vehicle site trips generated during the AM, PM, and Saturday peak hours from Table 4A to determine the new trip distribution volumes for the Shady Hill development. The total vehicle site trips are presented in Figures 10A, 10B, and 10C.

Detailed trip generation and distribution calculations are provided in the Technical Appendix.

4.2 Background Traffic (Base Traffic)

4.2.1 Background Roadway Changes

Not applicable.

4.2.2 Existing Site Trips and Background City Approved Site Trips from Other Developments

The existing site trips are shown in Figure 11. The City approved development trips associated with other developments are shown in Figures 12A-12D. The total City approved background trips are shown in Figure 12E.

4.2.3 Background Traffic Growth

In order to project year 2022 background traffic volumes, an annual traffic growth factor was determined and applied to all of the existing 2019 traffic volume data minus the existing site trips. According to The Southwestern Pennsylvania Commission (SPC) Cycle 10 projections, traffic in the study area has a linear growth rate of 0.50 percent annually, which was applied and resulted in the 2022 background volumes shown in Figure 13.

4.2.4 Opening Year 2022 No-Build Conditions Traffic Volumes

In order to determine the 2022 no-build condition traffic volumes, the total City approved background trips and the 2022 background traffic volumes were combined. The resulting 2022 no-build conditions traffic volumes are presented in Figure 14.

The 2022 no-build conditions pedestrian volumes are shown in Figure 15.

As shown in Table 1 and Figure 16, all overall intersections operate at acceptable levels of service (LOS) D or better.

Queuing exceeding the storage area does occur on the northbound right Centre Avenue approach to Penn Avenue in the PM and Saturday peak hours, but the queue length is less than in the existing conditions. The southbound left Centre Avenue approach to Penn Avenue also exceeds the storage length for all peak hours. The southbound through/right Centre Avenue approach to Penn Avenue exceeds the storage length during the AM peak hour only.

The westbound left Penn Avenue approach to Shady Avenue exceeds the storage length in all peak hours. Queuing exceeding the storage area also occurs at the northbound left Shady Avenue approach to Penn Avenue during all peak hours.

The results of the queuing analysis are presented in Table 5.

Detailed capacity and levels of service printouts are provided in the Technical Appendix.

4.3 2022 Build Volumes (With Development)

4.3.1 Year 2022 Build Conditions Traffic and Pedestrian Volumes (With Development)

The forecasted year 2022 build traffic volumes (with development) were determined by removing the existing site trips from the existing on-site parking lot (Figure 11) and then combining the total site generated trips (Figure 10C) with the 2022 no-build traffic volumes (Figure 14). The resultant forecasted opening year 2022 build traffic volumes (with development) are presented in Figure 17. The corresponding pedestrian volumes are shown in Figure 18.

4.3.2 Year 2022 Build Traffic Volumes - Intersections Levels of Service

Using the methodologies described in Section 3.3.2.5, intersection levels of service were determined at all of the study intersections under 2022 build conditions. It should be noted that the 2022 build conditions utilized optimized traffic signal timings. As shown in Table 1, all overall intersections operate at levels of service (LOS) D or better. The results of the capacity analysis are presented in Table 1 and Figure 19.

Queuing is essentially the same as under 2022 no-build conditions as shown in Figures 20A through 20C. Further details are provided in Section 5.5.

Detailed capacity and levels of service printouts are provided in the Technical Appendix.

5.0 SUPPLEMENTARY TRAFFIC ANALYSIS

5.1 Site Access

Access to the development will be provided via a traffic signal at Shady Avenue and Ellsworth Avenue/site driveway and a right-in only site driveway for delivery vehicles only located on Penn Avenue.

5.2 Traffic Safety

Traffic safety conditions within the study area will be maintained through additional traffic controls, as necessary.

In order to provide the best possible levels of service and traffic flow for the study intersections, the following mitigation measures for the driveway, roadways, and traffic control are recommended, as shown in Figures 21 and 22.

Penn Avenue and Site Driveway

- Construct right turn in only driveway.
- Post "DO NOT ENTER" sign inside the site on the driveway.

Shady Avenue mid-block between Ellsworth Avenue and Penn Avenue, near busway pedestrian path

- Install "No Pedestrian Crossing" signs on both sides of the street near the walkway from the Busway.

Penn Avenue/Ellsworth Avenue/Site Driveway

- Reconfigure driveway approach to decrease pedestrian crossing distances as shown in Figure 22.
- Reduce site driveway from three lanes to two lanes (one enter/one exit).
- Remove driveway island.
- Apply new crosswalks.
- Apply new stop bar on southbound Shady Avenue approach.
- Modify the traffic signal and signal poles as necessary.

5.3 Traffic Signals

The traffic signal at Penn Avenue and Ellsworth Avenue/Site Driveway will be modified as necessary to accommodate the recommendations outlined in section 5.2.

5.4 Site Circulation and Parking

5.4.1 Automobiles

See Section 5.1.

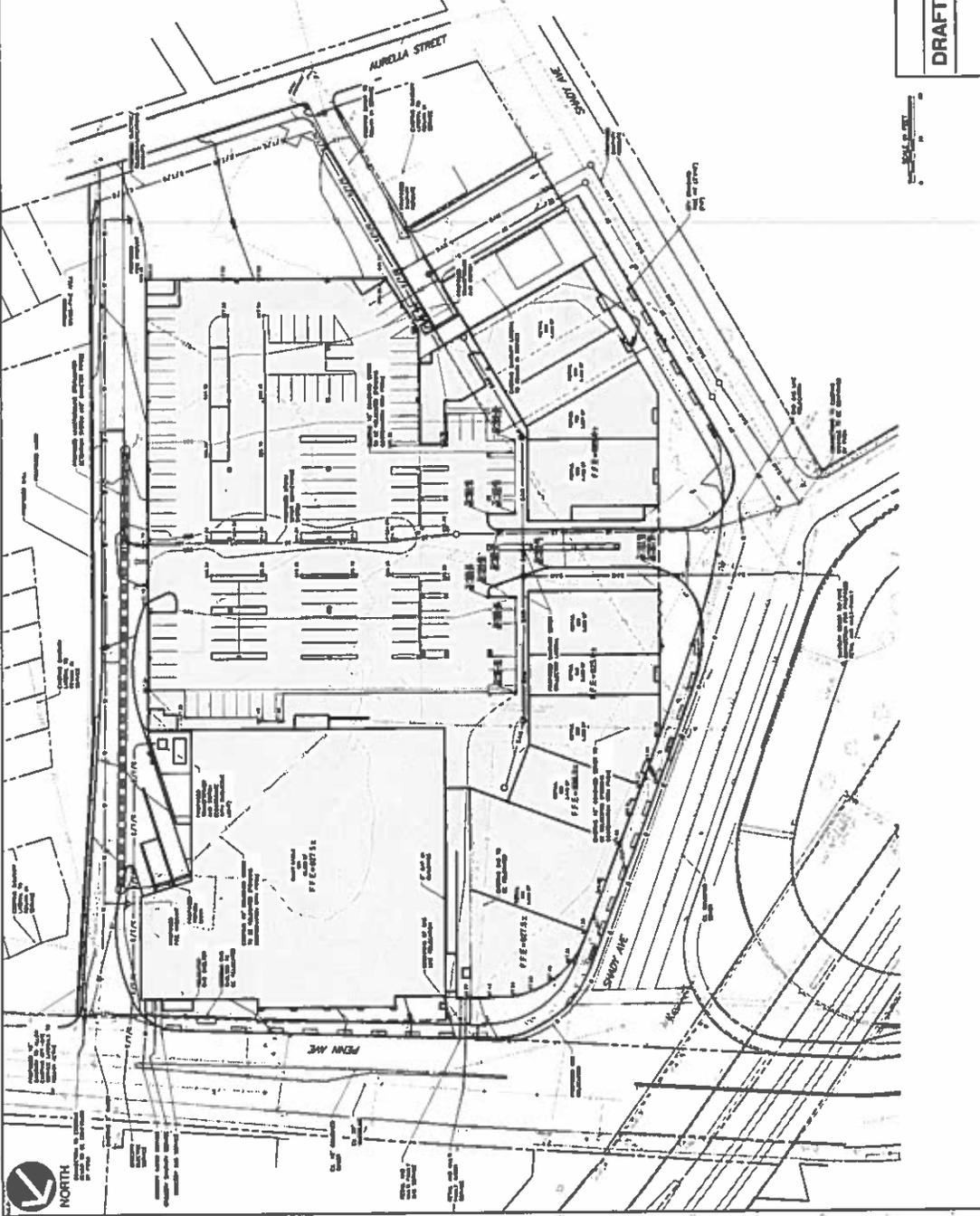
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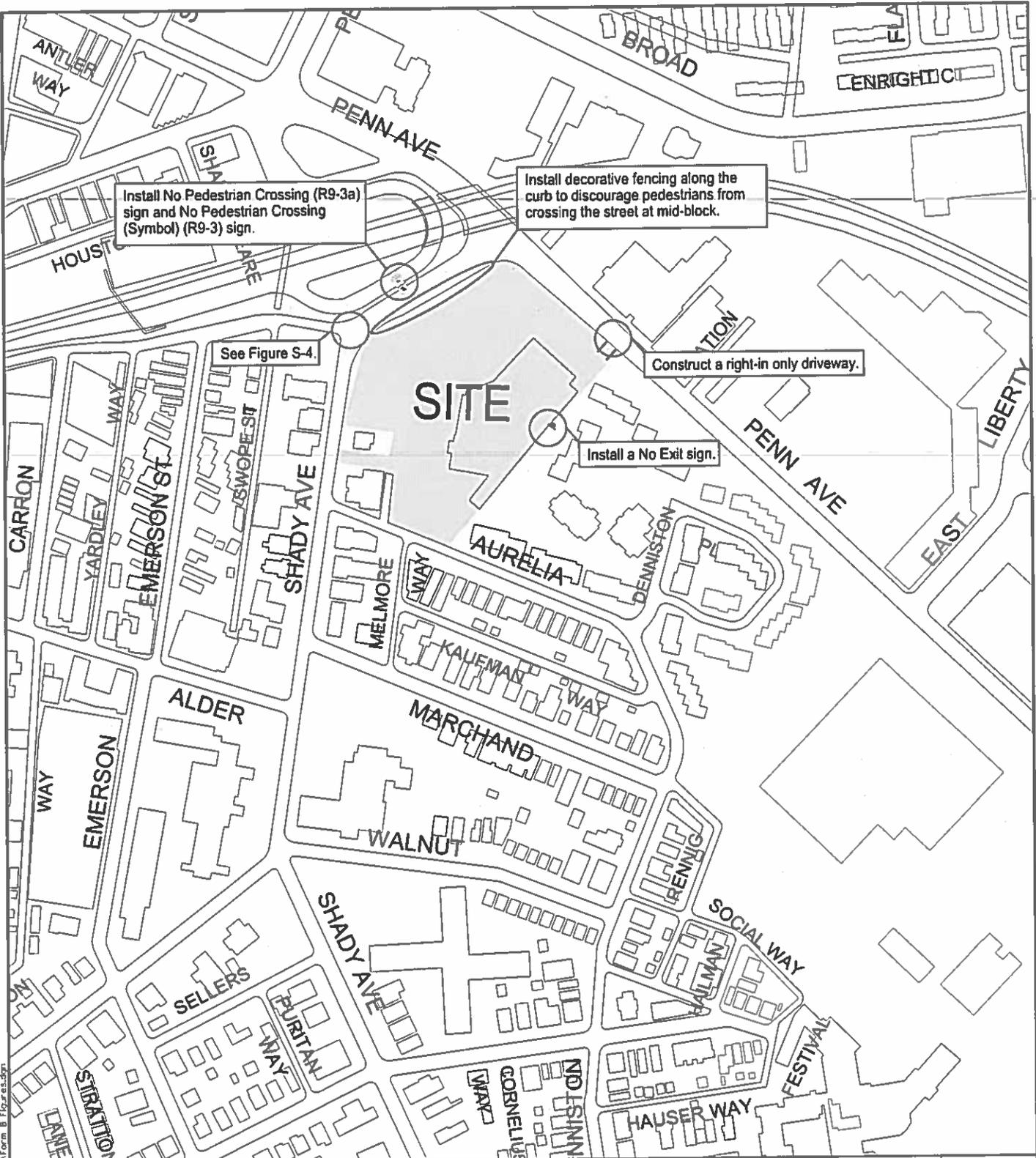
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 Fax: 412.381.1112
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SHADY HILL CENTER
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PITTSBURGH, PENNSYLVANIA

CONCEPTUAL GRADING AND UTILITY PLAN
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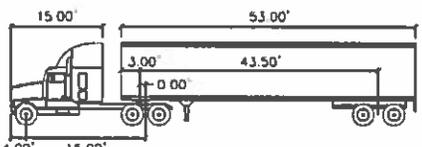
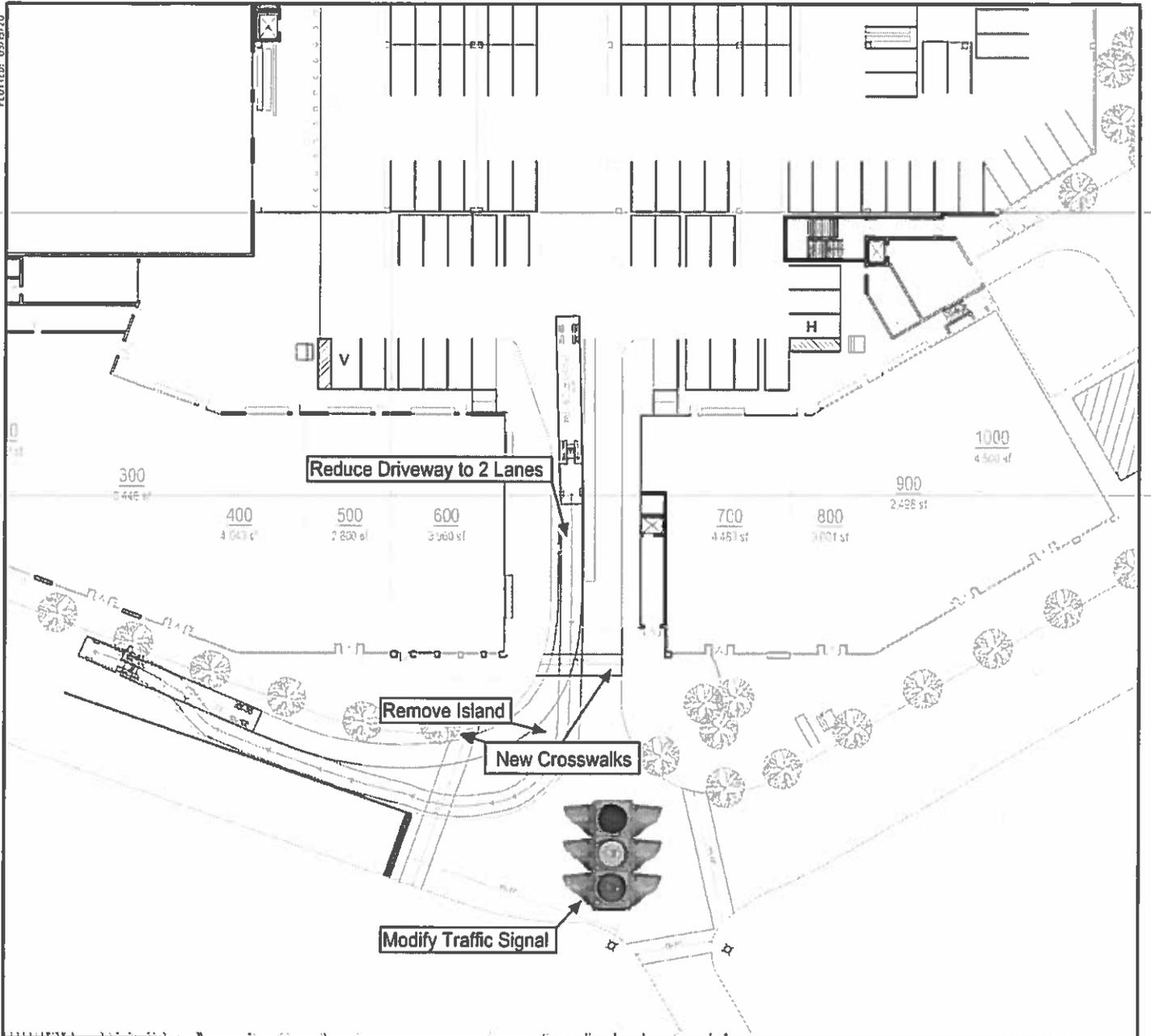
PROJECT NO. ECHOR00 - 18131
PROJECT: Shady Hill Center
TITLE:

Recommended Improvements

FIGURE
S-3

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WB-62 modified

Tractor Width	8.00'	Lock to Lock Time	6.0 sec
Trailer Width	6.50'	Steering Angle	28.4°
Tractor Track	8.00'	Articulating Angle	70.0°
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PROJECT NO.	ECHOR00 - 18131
PROJECT:	Shady Hill Center
TITLE:	Recommended Modified Site Driveway

FIGURE	S-4
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REVISED 10/2020



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PROJECT NO. ECHOR00 - 18131

PROJECT: Shady Hill Center

TITLE: Enhanced Penn Avenue Bus Stop

FIGURE

S-5

D.B. 08/2020/08/05

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2.0 PROPOSED DEVELOPMENT

2.1 Summary of Development

A description of the proposed Shady Hill development is presented in this section.

2.1.1 Location

The proposed Shady Hill development is located in the City of Pittsburgh. The site is bounded by Shady Avenue, Penn Avenue, Aurelia Street and adjacent properties, with the main driveway located on Shady Avenue opposite Ellsworth Avenue, controlled by an existing traffic signal. A second right-turn in only driveway limited to delivery vehicles will be located on Penn Avenue, adjacent to the main Giant Eagle store loading docks. The site is currently occupied by a Giant Eagle grocery store, a shopping center (not fully occupied) and a parking lot. The proposed development includes a Giant Eagle grocery store, retail space, restaurants, apartments, and medical office space.

The site location is shown in Figure 1.

2.1.2 Development Plan

The proposed Shady Hill development is anticipated to include the following development components:

- 36,260 GSF grocery store;
- 232 apartments;
- 25,246 GSF retail space;
- 8,443 SF restaurant space;
- 4,500 SF medical office space;
- 423 space parking garage;
- 78 bicycle parking spaces in a bike room; and
- 8 bicycle spaces (minimum) in outdoor bike racks.

Access to the site will be provided via two site driveways. The main driveway will be located (as it is today) on Shady Avenue opposite Ellsworth Avenue, and is signal controlled. The secondary driveway for delivery vehicles only is located on Penn Avenue at the eastern edge of the site and will accommodate right turn in only.

Details of the proposed development and its access points are presented in Figures 2A-2B.

5.4.2 Loading Vehicles

See Section 3.5. Turning templates for trucks accessing the loading spaces are shown in Figures 23A-23E.

5.4.3 Emergency Vehicles

Emergency (fire, paramedics, etc.) vehicles will have multiple access points to the Shady Hill site via the surrounding roadways of Penn Avenue, Shady Avenue, and Aurelia Street. A site access for emergency vehicles will be located on Aurelia Street.

5.5 Queuing Analysis

The 95th percentile queue lengths for the study intersections under existing, 2022 no-build, and 2022 build conditions were evaluated. For dense urban conditions, queuing analyses provide a far more accurate representation of traffic flow than level of service designations. The 95th percentile queue lengths for the study intersections under existing, 2022 no build, and 2022 build conditions were evaluated. Analyses were performed using methodologies published in the *Highway Capacity Manual 2010* by the Transportation Research Board using Synchro, Version 10 traffic analysis and simulation software.

Under 2022 build conditions, peak hour 95th percentile queue lengths were calculated, resulting in no significant increases in queue lengths, or obstruction of intersections, compared to the 2022 no-build (without development) conditions.

- Penn Avenue/Centre Avenue
 - Northbound Centre Avenue right turn lane, all three peak periods. Only the AM peak period represents a new condition of queue extending past turn bay length.
 - Southbound Centre Avenue left turn lane, occurring during all three peak periods under both 2022 no build and 2022 build conditions.
 - Southbound Centre Avenue through/right turn lane during the AM peak hour under both 2022 no build and 2022 build conditions.
- Penn Avenue and Shady Avenue
 - Westbound Penn Avenue left turns during all three peak periods under both 2022 no build and 2022 build conditions.
 - Northbound Shady Avenue left turn lane during all three peak periods under both 2022 no build and 2022 build conditions.

Detailed queuing analyses are summarized in Table 5 and Figures 20A through 20C for the AM, PM, and Saturday peak hours, respectively.

5.6 Crash Analysis

A summary of reportable crashes is presented in Table 6. No pattern of remediable crashes was identified. The highest number of crashes occurred at the Penn Avenue and Shady Avenue intersection. No pattern of remediable crashes was identified.

6.0 IMPROVEMENT ANALYSIS

6.1 Improvements to Accommodate Base Traffic and Site Traffic

This study has been performed in order to determine the traffic impacts of the proposed Shady Hill development based upon the City of Pittsburgh's traffic and parking impact study methodologies. In order to provide the best possible levels of service and traffic flow for the study intersections, the following mitigation measures for the driveway, roadways, and traffic control are recommended, as shown in Figures 21, 22 and 23.

Penn Avenue and Site Driveway

- Construct right turn in only driveway.
- Post "DO NOT ENTER" sign inside the site on the driveway.

Shady Avenue mid-block between Ellsworth Avenue and Penn Avenue, near busway pedestrian path

- Install "No Pedestrian Crossing" signs on both sides of the street near the walkway from the Busway.

Penn Avenue/Ellsworth Avenue/Site Driveway

- Reconfigure driveway approach to decrease pedestrian crossing distances as shown in Figure 22.
- Reduce site driveway from three lanes to two lanes (one enter/one exit).
- Remove driveway island.
- Apply new crosswalks.
- Apply new stop bar on southbound Shady Avenue approach.
- Modify the traffic signal and signal poles as necessary.

Penn Avenue Bus Stop

- Construct an enhanced Penn Avenue bus stop adjacent to the site, as shown in Figure 23.

6.2 Status of Improvements Already Funded, Programmed or Planned

Not applicable.

6.3 Evaluation of Benefits and Costs of Proposed Improvements

Not applicable.

7.0 FINDINGS

7.1 Site Accessibility

See Sections 5.1 and 5.4.

7.2 Traffic Impacts

See Sections 4.2, 4.3 and 5.2.

7.3 Need for Improvements

See Section 6.1.

8.0 RECOMMENDATIONS

8.1 Site Access/Circulation Plan

See Section 5.4.

8.2 Roadway Improvements

See Section 6.1.

8.3 Transportation Demand Management (TDM) Actions

Echo Realty is currently evaluating a comprehensive suite of TDM initiatives to reduce the amount of single-occupancy vehicle traffic to the Shady Hill Development. Echo Realty is reviewing best practices, analyzing alternatives, and developing a comprehensive TDM strategy. The specific TDM initiatives selected for pilot programs and/or permanent implementation will be determined prior to submission of the final transportation report for the Shady Hill Development.

Potential initiatives include:

- Controlled access bike room with a workbench and a few tools/air pump.
- Outdoor public bike racks.
- Support the surrounding residential community if they petition the City for new or expanded Residential Permit Parking areas.
- These tenants will likely not all work during standard business hours, decreasing the numbers of persons present at one time. Encourage tenants to permit flexible work hours.
- Provide an informational kiosk in the building lobby, which would provide information on public transit and institutional shuttle service, as well as locations of Healthy Ride bikes and scoobis stations.
- Offer Uber/Lyft discounts.
- Encourage tenants to recommend ride-matching services to employees, such as SPC's ride-share matching program.
- Encourage tenants to offer parking cash out programs, offering employees who do not drive the value of a parking space as cash.
- Provide priority parking for carpools and vanpools.
- Provide follow-up on TDM strategies to DOMI as required.
- Provide rideshare matches as an amenity to residents.
- Provide TDM informational packet/website to residential tenants at move-in.
- Per previously stated commitments, establish a fund of \$50,000 for purchase of transit passes to be used by tenants of the multi-family units.

8.4 Traffic Operations Plan

Not applicable.

8.5 Truck Loading Management Plan

To be included in the reduction request letter to be sent to the Zoning Administrator.

8.6 Construction Management Plan

To be developed during the design phase.

9.0 CONCLUSIONS

This study has been performed in order to determine the traffic impacts of the proposed Shady Hill development based upon the City of Pittsburgh's traffic and parking impact study methodologies. In order to provide the best possible levels of service and traffic flow for the study intersections, the following mitigation measures for the driveway, roadways, and traffic control are recommended, as shown in Figures 21, 22 and 23.

Penn Avenue and Site Driveway

- Construct right turn in only driveway.
- Post "DO NOT ENTER" sign inside the site on the driveway.

Shady Avenue mid-block between Ellsworth Avenue and Penn Avenue, near busway pedestrian path

- Install "No Pedestrian Crossing" signs on both sides of the street near the walkway from the Busway.

Penn Avenue/Ellsworth Avenue/Site Driveway

- Reconfigure driveway approach to decrease pedestrian crossing distances as shown in Figure 22.
- Reduce site driveway from three lanes to two lanes (one enter/one exit).
- Remove driveway island.
- Apply new crosswalks.
- Apply new stop bar on southbound Shady Avenue approach.
- Modify the traffic signal and signal poles as necessary.

Penn Avenue Bus Stop

- Construct an enhanced Penn Avenue bus stop adjacent to the site as shown in Figure 23.

Transportation Demand Management (TDM) Actions

Echo Realty is currently evaluating a comprehensive suite of TDM initiatives to reduce the amount of single-occupancy vehicle traffic to the Shady Hill Development. Echo Realty is reviewing best practices, analyzing alternatives, and developing a comprehensive TDM strategy. The specific TDM initiatives selected for pilot programs and/or permanent implementation will be determined prior to submission of the final transportation report for the Shady Hill Development.

Potential initiatives include:

- Controlled access bike room with a workbench and a few tools/air pump.
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- These tenants will likely not all work during standard business hours, decreasing the numbers of persons present at one time. Encourage tenants to permit flexible work hours.

- Provide an informational kiosk in the building lobby, which would provide information on public transit and institutional shuttle service, as well as locations of Healthy Ride bikes and scoobis stations.
 - Offer Uber/Lyft discounts.
 - Encourage tenants to recommend ride-matching services to employees, such as SPC's ride-share matching program.
 - Encourage tenants to offer parking cash out programs, offering employees who do not drive the value of a parking space as cash.
-
- Provide priority parking for carpools and vanpools.
 - Provide follow-up on TDM strategies to DOMI as required.
 - Provide rideshare matches as an amenity to residents.
 - Provide TDM informational packet/website to residential tenants at move-in.
 - Per previously stated commitments, establish a fund of \$50,000 for the purchase of transit passes to be used by tenants of the multi-family units.

Provided these recommendations are implemented, the traffic, parking, pedestrian, bicycle, and loading impacts of the proposed Shady Hill development will be appropriately mitigated.

TABLES

**TABLE 1
CAPACITY ANALYSIS SUMMARY
Shady Hill Center
City of Pittsburgh, Allegheny County, Pennsylvania**

Approach	Movement	Level of Service (Delay) ⁽¹⁾								
		A.M. Peak Hour ⁽²⁾			P.M. Peak Hour ⁽³⁾			Saturday Peak Hour ⁽⁴⁾		
		2019 Existing	2022 No Build Mitigated ⁽⁵⁾	2022 Build Mitigated ⁽⁶⁾	2019 Existing	2022 No Build Mitigated ⁽⁵⁾	2022 Build Mitigated ⁽⁶⁾	2019 Existing	2022 No Build Mitigated ⁽⁵⁾	2022 Build Mitigated ⁽⁶⁾
Penn Avenue and Centre Avenue										
Eastbound <i>Penn Avenue</i>	Left	F (80.4)	F (71.2)	D (49.0)	F (177.6)	F (76.4)	F (76.4)	F (143.8)	E (68.6)	E (73.0)
	Through	D (37.6)	D (40.5)	D (40.6)	D (39.3)	D (40.2)	D (40.2)	D (37.4)	D (40.2)	D (40.2)
	Through/Right Approach	D (37.6)	D (40.5)	D (40.5)	D (39.4)	D (40.3)	D (40.3)	D (37.5)	D (40.5)	D (40.5)
Westbound <i>Penn Avenue</i>	Left	D (43.7)	D (44.5)	D (41.6)	E (68.6)	D (47.9)	D (47.9)	E (59.1)	D (45.8)	D (46.6)
	Through	F (411.7)	E (59.0)	E (61.5)	F (523.1)	E (66.6)	E (66.9)	F (465.3)	E (62.9)	E (64.3)
	Right	E (64.8)	D (38.2)	D (49.0)	E (56.4)	D (37.6)	D (36.1)	E (60.9)	D (40.5)	D (38.5)
Northbound <i>Centre Avenue</i>	Left	A (5.5)	A (8.1)	C (22.5)	A (7.1)	A (7.0)	A (7.9)	A (6.5)	A (8.3)	A (8.1)
	Through	F (122.2)	D (35.5)	D (44.9)	F (142.8)	C (34.8)	C (34.5)	F (123.5)	C (34.4)	D (34.3)
	Right	D (38.1)	C (33.0)	C (34.5)	D (43.5)	D (50.6)	D (51.2)	D (42.5)	D (39.8)	D (41.5)
Southbound <i>Centre Avenue</i>	Left	B (12.4)	A (7.5)	C (22.9)	C (24.8)	B (12.6)	B (12.2)	D (40.3)	B (13.6)	B (13.8)
	Through	C (25.6)	B (19.9)	C (28.4)	C (34.0)	C (31.3)	C (30.9)	D (41.3)	C (24.9)	C (25.5)
	Right	C (30.8)	D (44.2)	D (43.8)	C (32.7)	D (42.4)	D (46.4)	C (32.7)	D (44.0)	D (48.4)
Overall Intersection		E (66.0)	C (31.8)	C (36.8)	E (77.3)	D (35.1)	D (35.3)	E (70.9)	C (32.9)	C (33.7)
Penn Avenue and Shady Avenue										
Eastbound <i>Penn Avenue</i>	Through	C (31.3)	C (30.2)	C (32.6)	D (42.9)	C (31.3)	C (30.7)	D (39.0)	C (30.7)	C (30.3)
	Through/Right Approach	C (32.1)	C (30.6)	C (33.2)	D (42.9)	C (31.5)	C (31.0)	C (39.8)	C (31.0)	C (30.7)
	Left	C (31.7)	C (30.4)	C (32.9)	D (42.9)	C (31.3)	C (31.0)	D (39.4)	C (30.8)	C (30.5)
Westbound <i>Penn Avenue</i>	Left	C (25.0)	B (19.6)	C (21.0)	C (32.7)	C (27.7)	C (29.6)	C (32.8)	C (25.4)	C (27.0)
	Through	B (14.8)	B (11.0)	B (11.0)	B (14.8)	B (11.2)	B (11.2)	B (15.2)	B (11.2)	B (11.2)
	Right	B (17.9)	B (13.4)	B (13.9)	B (19.8)	B (15.7)	B (16.2)	B (19.9)	B (14.9)	B (15.2)
Northbound <i>Shady Avenue</i>	Left	C (22.3)	C (26.9)	C (30.4)	C (24.0)	C (31.9)	D (35.3)	C (22.7)	C (25.9)	C (32.9)
	Through	B (14.4)	B (17.4)	B (17.3)	B (15.4)	C (20.1)	B (21.4)	B (14.6)	B (18.4)	B (20.0)
	Right	B (18.8)	C (23.0)	C (23.8)	C (20.1)	C (26.4)	C (24.8)	B (19.1)	C (24.7)	C (27.5)
Overall Intersection		C (22.7)	C (21.2)	C (22.6)	C (29.0)	C (23.9)	C (24.8)	C (27.5)	C (23.1)	C (23.9)
Penn Avenue and Westley Site Driveway										
Eastbound <i>Penn Avenue</i>	Approach	A (0.0)	A (0.0)	N/A	A (0.0)	A (0.0)	N/A	A (0.0)	A (0.0)	N/A
Westbound <i>Penn Avenue</i>	Approach	A (0.0)	A (0.0)	N/A	A (0.0)	A (0.0)	N/A	A (0.0)	A (0.0)	N/A
Northbound <i>Westley Site Driveway</i>	Approach	B (11.0)	A (11.9)	N/A	B (14.6)	B (15.4)	N/A	B (13.5)	B (14.4)	N/A
Overall Intersection		A (0.2)	A (0.2)	N/A	A (0.5)	A (0.4)	N/A	A (0.4)	A (0.4)	N/A
Penn Avenue and Easterly Site Driveway										
Eastbound <i>Penn Avenue</i>	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Westbound <i>Penn Avenue</i>	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Northbound <i>Easterly Site Driveway</i>	Approach	B (10.5)	B (11.3)	N/A	B (12.1)	B (12.7)	N/A	B (11.4)	A (12.0)	N/A
Overall Intersection		A (0.1)	A (0.1)	A (0.0)	A (0.1)	A (0.1)	A (0.0)	A (0.2)	A (0.2)	A (0.0)
Penn Avenue and Station Street⁽⁷⁾										
Eastbound <i>Penn Avenue</i>	Approach	A (2.9)	A (3.8)	A (3.8)	A (5.4)	A (5.9)	A (6.0)	A (5.4)	A (6.3)	A (6.3)
Westbound <i>Penn Avenue</i>	Approach	C (20.2)	B (14.7)	B (13.9)	C (22.4)	B (17.8)	B (16.4)	C (23.3)	B (17.5)	B (16.6)
Southbound <i>Station Street</i>	Approach	C (26.6)	C (21.4)	C (21.0)	C (25.7)	C (23.6)	C (21.8)	C (28.3)	C (23.1)	C (22.3)
Overall Intersection		B (14.2)	B (10.5)	B (10.1)	B (15.1)	B (13.3)	B (12.6)	B (16.7)	B (13.5)	B (13.1)
Ellsworth Avenue/Northerly Site Driveway and Shady Avenue										
Eastbound <i>Ellsworth Avenue</i>	Approach	D (38.9)	D (38.0)	D (37.8)	C (34.8)	C (33.4)	C (33.1)	D (37.9)	D (37.6)	D (36.8)
Westbound <i>Northerly Site Driveway</i>	Left/Through	C (32.1)	C (30.4)	N/A	C (23.6)	C (23.1)	N/A	C (30.6)	C (30.2)	N/A
	Right	C (32.6)	C (30.8)	N/A	C (24.4)	C (23.8)	N/A	C (31.3)	C (30.8)	N/A
Northbound <i>Shady Avenue</i>	Approach	C (32.5)	C (30.7)	C (33.6)	C (24.1)	C (23.5)	C (25.6)	C (31.1)	C (30.6)	C (33.7)
Southbound <i>Shady Avenue</i>	Left	A (4.1)	A (4.9)	A (5.2)	A (8.5)	A (9.0)	A (9.8)	A (4.8)	A (5.0)	A (6.0)
	Through	A (3.4)	A (4.0)	A (4.4)	A (7.6)	A (8.0)	A (9.2)	A (4.3)	A (4.5)	A (5.6)
	Right	A (4.7)	A (5.6)	A (5.8)	A (9.1)	A (9.8)	B (10.4)	A (5.1)	A (5.4)	A (6.2)
Overall Intersection		B (11.4)	B (12.3)	B (13.8)	B (17.0)	B (16.8)	B (17.7)	B (13.7)	B (13.8)	B (16.4)
Southerly Site Driveway and Shady Avenue										
Westbound <i>Southerly Site Driveway</i>	Approach	B (11.8)	B (12.2)	A (0.0)	B (12.9)	B (13.3)	B (12.9)	B (12.4)	B (12.5)	B (13.3)
Northbound <i>Shady Avenue</i>	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Southbound <i>Shady Avenue</i>	Approach	A (0.2)	A (0.1)	A (0.0)	A (0.1)	A (0.1)	A (0.0)	A (0.2)	A (0.2)	A (0.0)
Overall Intersection		A (0.4)	A (0.3)	A (0.0)	A (0.6)	A (0.6)	A (0.0)	A (0.4)	A (0.5)	A (0.0)
Aurelia Street and Shady Avenue										
Westbound <i>Aurelia Street</i>	Approach	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Northbound <i>Shady Avenue</i>	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Southbound <i>Shady Avenue</i>	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Aurelia Street and Site Driveway										
Eastbound <i>Aurelia Street</i>	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.2)	A (0.2)	A (0.0)	A (0.5)	A (0.5)	A (0.0)
Westbound <i>Aurelia Street</i>	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Southbound <i>Site Driveway</i>	Approach	B (9.0)	A (9.0)	A (0.0)	A (9.0)	A (9.0)	A (0.0)	A (8.9)	A (8.9)	A (0.0)
Overall Intersection		A (0.9)	A (0.9)	A (0.0)	A (1.4)	A (1.4)	A (0.0)	A (2.2)	A (2.2)	A (0.0)

**TABLE 1 (cont'd)
CAPACITY ANALYSIS SUMMARY
Shady Hill Center
City of Pittsburgh, Allegheny County, Pennsylvania**

Approach	Movement	Level of Service (Delay) ⁽¹⁾								
		A.M. Peak Hour ⁽²⁾			P.M. Peak Hour ⁽³⁾			Saturday Peak Hour ⁽⁴⁾		
		2019 Existing	2022 No Build Mitigated ⁽⁵⁾	2022 Build Mitigated ⁽⁶⁾	2019 Existing	2022 No Build Mitigated ⁽⁵⁾	2022 Build Mitigated ⁽⁶⁾	2019 Existing	2022 No Build Mitigated ⁽⁵⁾	2022 Build Mitigated ⁽⁶⁾
Merchand Street and Shady Avenue										
Westbound Aurora Street	Approach	B (10.8)	B (11.1)	B (11.3)	B (11.9)	B (12.2)	B (12.3)	B (11.9)	B (12.0)	A (12.2)
Northbound Shady Avenue	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Southbound Shady Avenue	Approach	A (0.4)	A (0.4)	A (0.5)	A (0.4)	B (0.4)	A (0.4)	A (0.2)	A (0.2)	A (0.3)
Overall Intersection		A (1.3)	A (1.2)	A (1.3)	A (1.2)	A (1.2)	A (1.2)	A (0.7)	A (0.7)	A (0.8)
Alder Street/Church Driveway and Shady Avenue										
Eastbound Alder Street	Approach	C (15.4)	C (16.2)	C (18.1)	C (19.7)	C (21.6)	D (25.1)	C (16.0)	C (16.4)	C (18.9)
Westbound Church Driveway	Approach	C (15.8)	C (16.8)	C (17.1)	B (16.9)	C (17.9)	C (17.9)	C (17.5)	C (17.9)	C (18.3)
Northbound Shady Avenue	Approach	A (3.1)	A (2.9)	A (2.9)	B (2.5)	A (2.5)	A (2.6)	A (3.3)	A (3.3)	A (3.2)
Southbound Shady Avenue	Approach	B (0.1)	A (0.1)	A (0.1)	A (0.1)	A (0.1)	A (0.1)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		A (5.0)	A (5.0)	A (5.4)	A (5.2)	A (5.4)	A (6.3)	A (4.3)	A (4.3)	A (4.7)
Walnut Street and Shady Avenue										
Eastbound Walnut Street	Approach	B (14.9)	B (17.7)	B (17.7)	B (15.7)	B (18.8)	B (18.8)	B (15.4)	B (17.6)	B (17.6)
Westbound Walnut Street	Approach	B (15.5)	B (18.5)	B (18.6)	B (15.7)	B (18.7)	B (18.8)	B (15.1)	B (17.2)	B (17.3)
Northbound Shady Avenue	Approach	B (11.7)	A (9.4)	A (9.4)	B (11.7)	A (9.3)	A (9.2)	B (11.8)	A (9.9)	A (10.0)
Southbound Shady Avenue	Approach	B (11.9)	A (9.4)	A (9.5)	B (12.7)	B (10.3)	B (10.4)	B (11.9)	B (10.1)	B (10.1)
Overall Intersection		B (12.3)	B (10.6)	B (10.6)	B (12.9)	B (11.4)	B (11.5)	B (12.3)	B (11.0)	B (11.1)

(1) Level of service and vehicular delay calculated using HCM 2010 methodology through the use of Synchro Traffic Signal Coordination Software, Version 10.

(2) 7:45 A.M. - 8:45 A.M.

(3) 4:30 P.M. - 5:30 P.M.

(4) 1:15 P.M. - 2:15 P.M.

(5) Optimized timings

(6) Optimized splits and timings

(7) Level of service and vehicular delay calculated using HCM 2000 methodology through the use of Synchro Traffic Signal Coordination Software, Version 10.

Source: Analysis by Trans Associates.