NEGLEY STATION
STATION AREA PLAN

PORT AUTHORITY OF ALLEGHENY COUNTY
PLANNING AND EVALUATION DEPARTMENT

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ACKNOWLEDGMENTS

About the Port Authority

Port Authority of Allegheny County (PAAC) provides public transportation throughout Pittsburgh and Allegheny County.

The Authority's 2,600 employees operate, maintain and support bus, light rail, incline and paratransit services for approximately 200,000 daily riders.

Port Authority is governed by an 11-member board – unpaid volunteers who are appointed by the Allegheny County Executive, leaders from both parties in the Pennsylvania House of Representatives and Senate, and the Governor of Pennsylvania. The board and its committees hold regularly scheduled public meetings.

Port Authority's budget is funded by fare and advertising revenue, along with money from county, state, and federal sources. The Authority's finances and operations are audited on a regular basis, both internally and by external agencies.

Port Authority began serving the community in March 1964. In early 2015, the Port Authority began investing in a transit-oriented development program. This document is the result of investment to date, overseen by TOD staff and an interdisciplinary working group focused on TOD.

Participants

Port Authority of Allegheny County would like to thank agency partners for supporting the station area planning project at Negley Station, and all those who participated by dedicating their time and expertise.

This document was stewarded internally by Port Authority's TOD advisory committee, an inter-departmental body established to support the Station Improvement Program and other TOD activities. Current Port Authority Divisions and Departments represented on the committee include: Facilities & Rail Maintenance, Grants & Capital Programs, Legal & Consulting Services, Planning & Evaluation, Road Operations, Service Development & ITS Technology, System Safety, and Technical Support & Capital Programs. This committee and development of station area planning are managed by Breen Masciotra, TOD Project Manager, and Andrea Elcock, Community Planning Coordinator.

This study was developed by the Port Authority of Allegheny County in collaboration with the Community Solutions Group of GAI Consultants, evolve environment::architecture, and Brean Associates. All maps and graphics were created by Community Solutions Group and evolveEA unless otherwise noted.

Negley Station is the first plan to be produced by the Port Authority's Station Improvement Program which was initiated in 2016.

Port Authority

COMMUNITY SOLUTIONS GROUP

evolve environment :: architecture

BREAN ASSOCIATES

Published in February 2018.

CONTENTS

1.

INTRODUCTION

WHAT IS STATION AREA PLANNING?

Station area planning examines the challenges and opportunities for existing Port Authority fixed guideway stations within the context of three scales. For many communities, this process also serves as the first opportunity to engage in conversation with the Port Authority about issues related to station configuration, access, land use, and potential transit-oriented development (TOD) opportunities.

The Port Authority's Planning and Evaluation Department, supported by its consultant team - comprised of Community Solutions Group, evolve environment::architecture, and Brean Associates - outlined the following objectives for Negley Station:

- Plan for cost effective station improvements that will increase ridership at the station, thereby increasing the revenue potential for the Port Authority. These kinds of facility-specific improvements could generate increased ridership, as well as attract new real estate investment.
- Improve connectivity, operations, and overall function at the station in order to encourage high quality TOD on land adjacent to the station.
- Engage all of the relevant stakeholders to ensure that TOD opportunities are community-supported and complimentary to other planned projects. This will facilitate implementation of initiatives supportive of TOD (e.g. TOD-friendly zoning, strategic purchase of land, recommended roadway improvements).

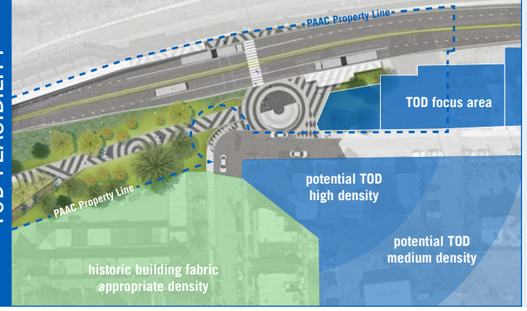
Members of the public met with the project team for workshops in April 2017 to discuss challenges and opportunities in the Negley Station Area. This image is from the evening workshop.

HOW TO USE THIS PLAN

This document is meant to provide the entire community of Negley Station area and transit-oriented development stakeholders - riders, residents, transit agencies, local governments, regional planners, community groups, developers, and others - with a common understanding of the existing conditions and opportunities for Negley Station.

It should be used to understand TOD feasibility and proposed station access enhancements and station design.

TOD FEASIBILITY



TOD Feasibility: Encourage development that integrates and expands transit use at Negley Station.

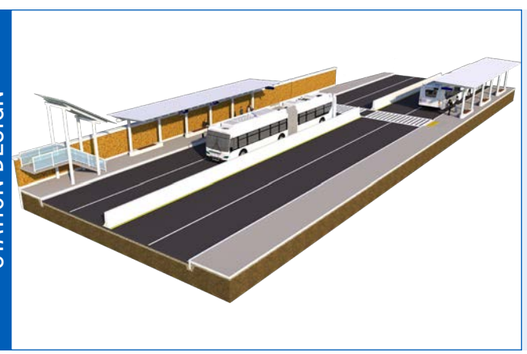
Per the Port Authority's 2016 Transit-Oriented Development Guidelines, TOD allows people to integrate transit use into their lives by creating dense, mixed-use places where they can live, work, shop, and play. Though Port Authority's land holdings at Negley Station are limited, this document outlines urban design principles that should be considered by land owners and potential developers in the Negley Station area.

STATION ACCESS

Station Access: Make it easy for people to get there.

Negley Station, one of the highest-performing stops in Port Authority's system, presents a wide array of conditions that could be improved to make the station area more compatible with a transit-oriented lifestyle. The user experience at Negley Station traverses a diverse urban landscape over which a transit agency has varying levels of control and responsibility. This document looks at opportunities within walking distance of Negley Station and should be used as a reference by the decision-making entities for areas outside of Port Authority's direct control.

STATION DESIGN



Station Design: Create a welcoming station.

Welcoming station design can transform utilitarian bus stops into attractive civic anchors. High quality station design can draw the public into the station area itself, establishing it as a community asset and destination. This document suggests opportunities to improve the safety, usability, and appeal of Negley Station. This includes proposed improvements to enhance the overall aesthetic, better integrate with the surrounding neighborhoods and improve multimodal access. Conceptual design for features on Port Authority property were developed to 10% completion, providing sufficient information to be integrated in future capital programs.

PLANNING PROCESS

The consultant team, working under the guidance of Port Authority's Planning and Evaluation Department, performed this study in four phases: Review and Analysis, Public Engagement, Conceptual Design, and Implementation Strategy.

Review and Analysis gave the team the background information to understand existing challenges and opportunities. This phase formed the basis for identifying potential infrastructure and development strategies that could be valuable for the Port Authority and the communities surrounding Negley Station.

Public Engagement opened a channel of dialogue between the public, the Port Authority, and the consultant team to discuss existing conditions and desires. The first set of meetings were working sessions that allowed community members to collaborate in design and analysis in order to identify challenges they face in using the station and to prioritize potential interventions. The second set were presentations and discussions that allowed community members to learn about and critique proposed strategies for addressing their concerns and other challenges identified in the station area.

In the Station Area Plan, the team used input from the community, input from Port Authority staff, and urban design best practices to propose improvements to station design and station access. Planning efforts also addressed the potential for TOD. Plan development was also informed by issues including safety, property ownership, cost, operational efficiency, and alignment with other initiatives. After initial concepts were created, they were vetted by the community at the second set of public meetings.

Implementation Strategy focused on the Port Authority's role in moving proposed projects forward. For any given station area project, the Port Authority may be tasked with developing, collaborating, or designing station area improvements.

Review and Analysis

- Reviewed relevant plans and studies to understand previously documented challenges and opportunities.
- Reviewed historic maps and photos to understand how existing infrastructure and development patterns came to be.
- Reviewed Port Authority station user surveys.
- Engaged with potential project partners and agencies to understand current projects in motion.
- Performed a preliminary survey and a site walk.

Public Engagement #1

- Presented initial findings at an interactive public meeting.
- In three rotating discussion table groups, documented ideas, concerns, and questions about the Negley Station area, Negley Station itself, and potential development near the station.
- After further concept development, met with the public again to gather additional ideas, concerns, and questions and to report on project progress.

Station Area Plan

- Developed plans for potential development near the station, improvements to the Negley Station area, and Negley Station itself.
- Developed plans for improvements to public realm infrastructure on and near Port Authority property.

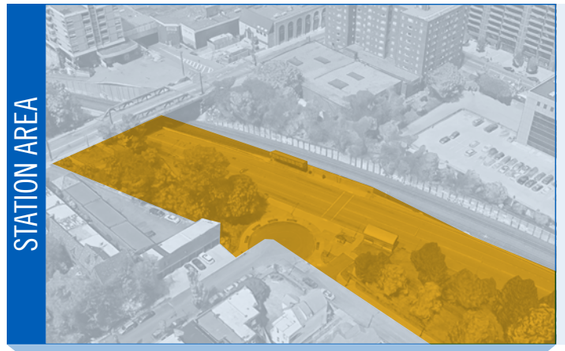
Public Engagement #2

Implementation Strategy

- Reviewed market analysis, conceptual alternatives, and institutional capacity to develop a strategy for project implementation.

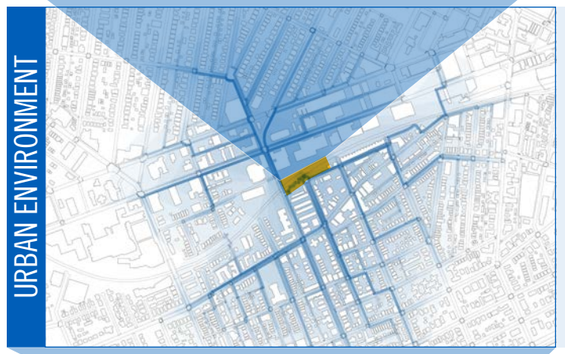
ANALYSIS AT THREE SCALES

This project was predicated upon the understanding that major public transit stations are important social and economic anchors for the communities they serve. To understand how Negley Station is integrated within it's community and the broader region, we considered issues at three scales:



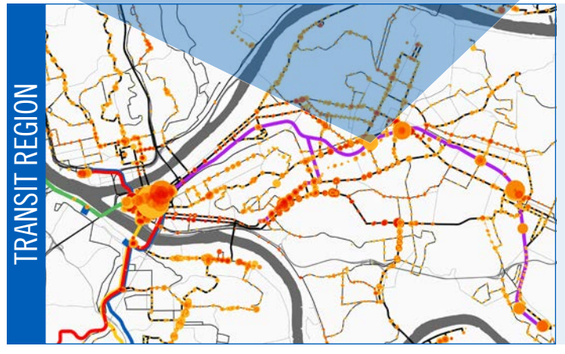
At the station area scale, we considered:

- Physical condition, assets and liabilities, environmental resources
- Customer use patterns and ridership, connectivity, safety, operational efficiency, multimodal transfer
- Opportunities for transit-oriented development (TOD) on Port Authority owned property



At the urban environment scale, we considered:

- Key transformations in the surrounding area that could be supportive of transit-oriented development
- Regulatory context and guiding documents
- Physical condition of infrastructure
- Economic trends in the adjacent area
- Cultural context with regards to community identity, place-making, and public art
- Community use patterns and perceptions
- Environmental context such as stormwater conveyance and ecological contiguity



At the regional scale, we considered:

- Improving connectivity to other major nodes and the complimentary or competitive uses at those nodes
- Regional economic forces that affect the attractiveness and viability of this node
- Timing of station area development in relation to other planned Port Authority projects
- Timing of station area development in relation to other relevant local and regional initiatives

NEGLEY: AN URBAN MIXED USE STATION

The Port Authority of Allegheny County's Transit-oriented Development Guidelines evaluated all 76 fixed guideway stations in its system. From this study, six TOD types were described and guidelines given for each. Negley Station, with its high-density and mix of uses, was classified as an Urban Mixed Use station.

> *Urban Mixed Use stations serve highly-populated, mixed-use neighborhoods of a considerably smaller scale than Downtown areas. Within this type, mixed use is prevalent: three to six jobs exist for every four residents. These stations serve as both a transit origin and destination due to the variety of land uses. Transit service is likely frequent, provided by fixed-guideway service and various local routes. Pedestrian connections are critical, linking the station to surrounding multi-family residential and mid-rise buildings. Typically, higher-density and smaller blocks support easy travel by foot, but sidewalks and other pedestrian infrastructure may need upgrading.*
>
> *On the Purple Line (East Busway), Negley Station is located in Pittsburgh's a compact, mixed-use, eastern neighborhood of Shadyside. Shadyside is home to three business corridors, two of which are in the Negley Station walkshed. With limited opportunities for new development, the planning and design of TOD and any station improvements will be critical to ensuring the future success of the station as an asset to both riders, community members, and the Port Authority.*

Page 19, PAAC TOD Guidelines, 2016

An aerial view of Negley Station showing Friendship, the Baum-Centre corridor, and Shadyside.
Source: Google Earth

Urban Mixed Use Multimodal Highlights

- Provide clear connections to on-street transit
- Connect to or enhance bicycle network
- Incorporate car share and bicycle share connections
- Park and Ride only appropriate if at the end of a line
- Provide appropriate, low levels of parking

Urban Mixed Use Walkability Highlights

- Provide key pathways to increase connectivity
- Create and maintain public space
- Connect developments to pedestrian uses
- Provide infrastructure to encourage visible, comfortable walking

Urban Mixed Use Development Highlights

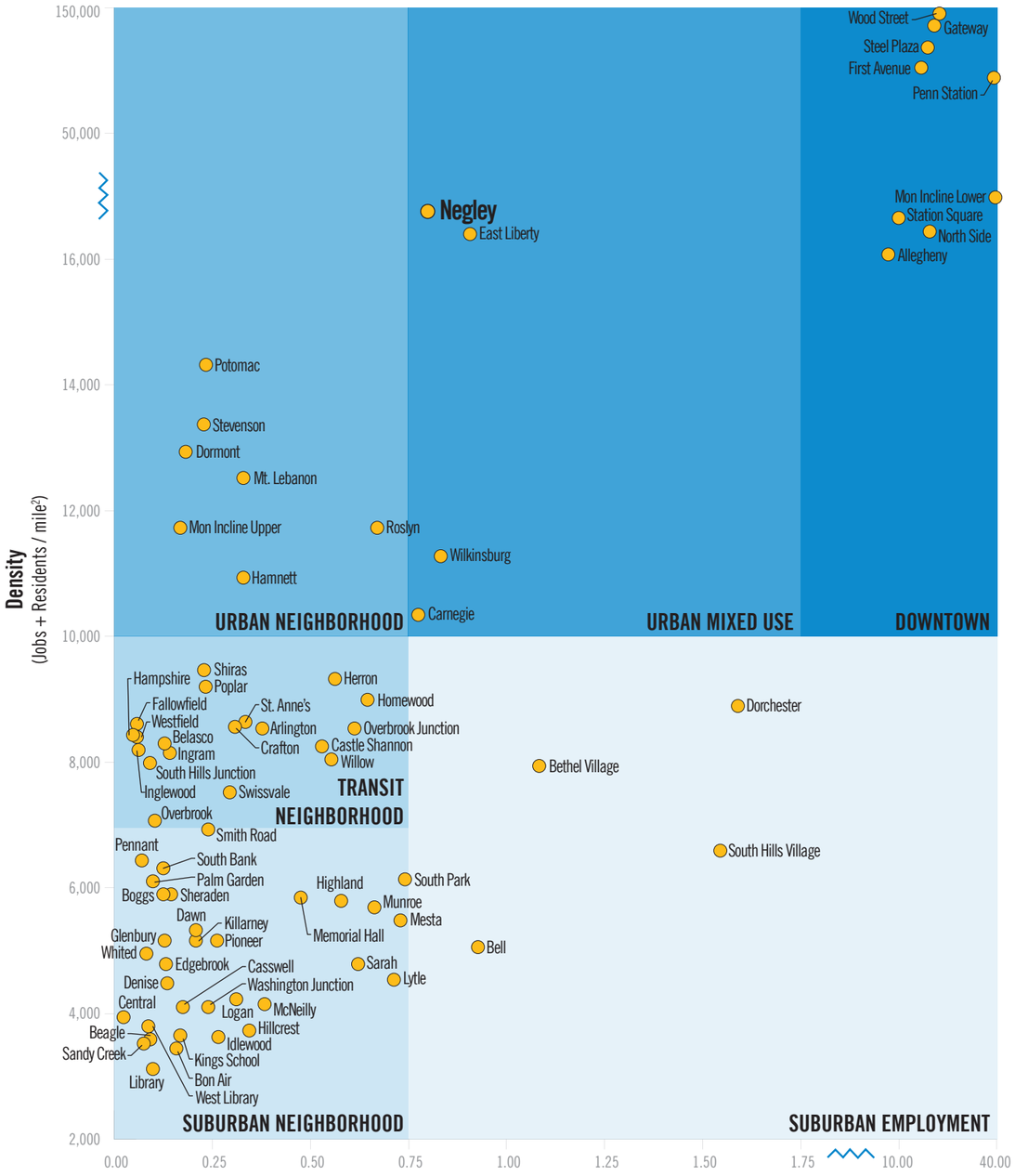
- 3-9 stories
- 60-80% lot coverage
- Multi-family or townhouses
- Orient building design to multiple forms of transit
- Building design should support and encourage street-level activity

Urban Mixed Use Keys to Success

- Reduce residential and commercial parking
- Optimize street level relationships between development and the public realm
- Consider/implement district parking strategy

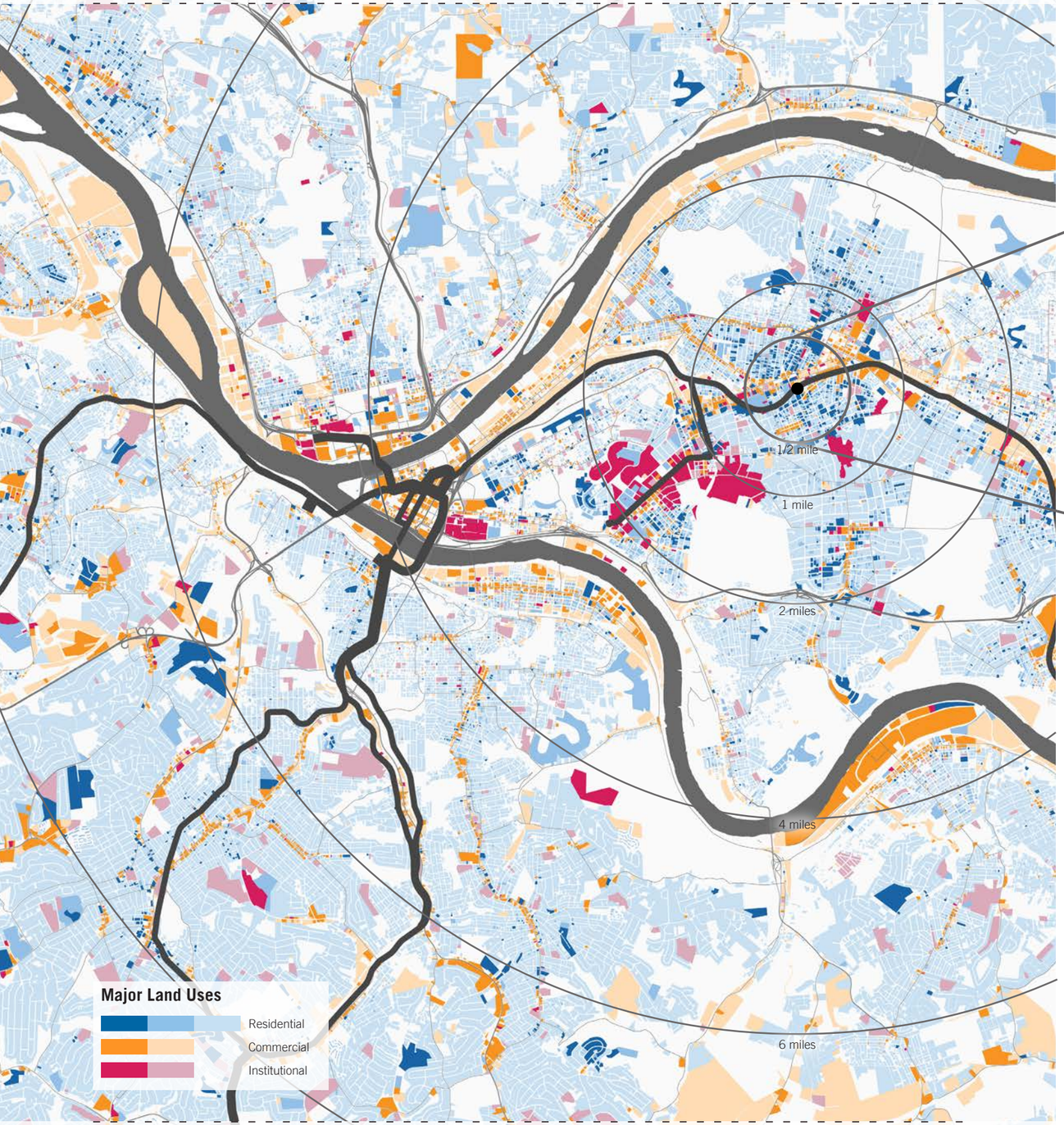
Urban Mixed Use Comparable Station Areas

- East Liberty Station (MLK East Busway, P1)
- Wilkinsburg Station (MLK East Busway, P1)
- Carnegie Station (West Busway, G2)

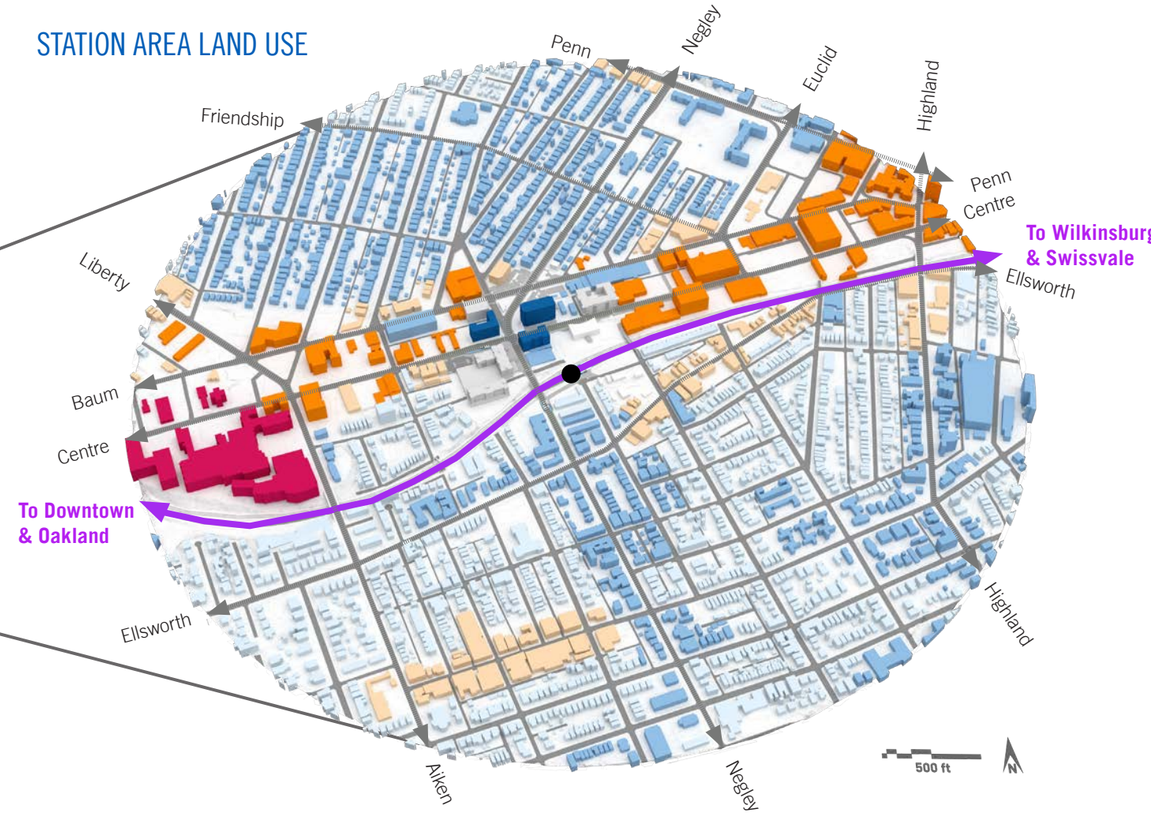


TOD Type Matrix.
Source: Page 13, PAAC TOD Guidelines, 2016

NEGLEY: URBAN CONTEXT



STATION AREA LAND USE



Negley Station is located adjacent to the Baum-Centre Corridor, a medium-to-high-density commercial corridor which is surrounded by dense neighborhoods at the heart of Pittsburgh's East End. The Corridor connects neighborhoods from west to east including Upper Hill District, North Oakland, Shadyside, Bloomfield, Friendship, and East Liberty. It is well connected to important job and activity centers in the region, including Downtown and Oakland which are the second and third largest economic centers in Pennsylvania. Downtown Pittsburgh serves as the center of commerce for southwestern Pennsylvania and Oakland is home to the region's highest density of medical and educational institutions.

Traveling to Downtown:

81 minutes by foot

27 minutes by bicycle

10 minutes by bus (P1, P2)

17 minutes by car during typical weekday traffic

Traveling to Oakland:

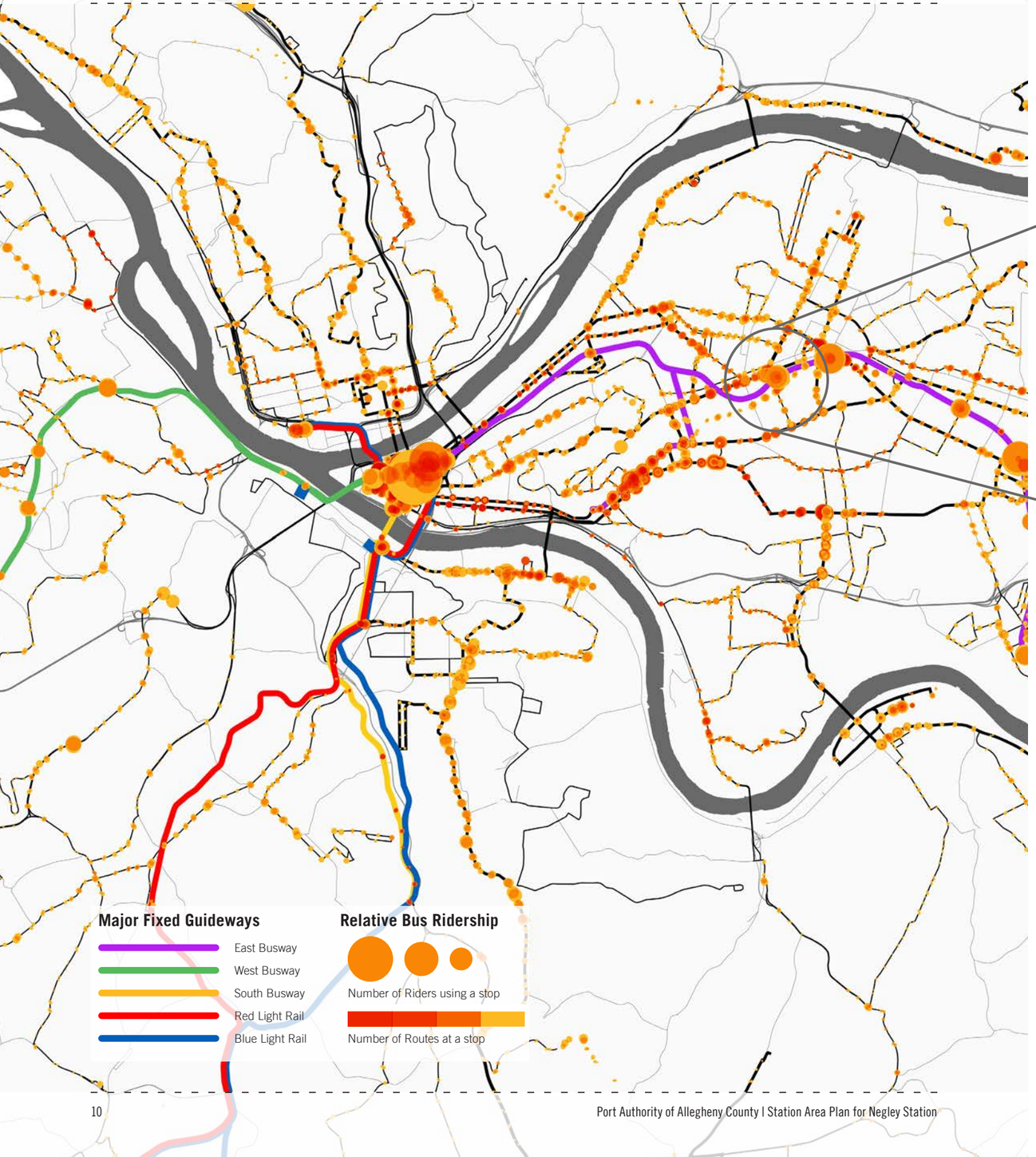
38 minutes by foot

14 minutes by bicycle

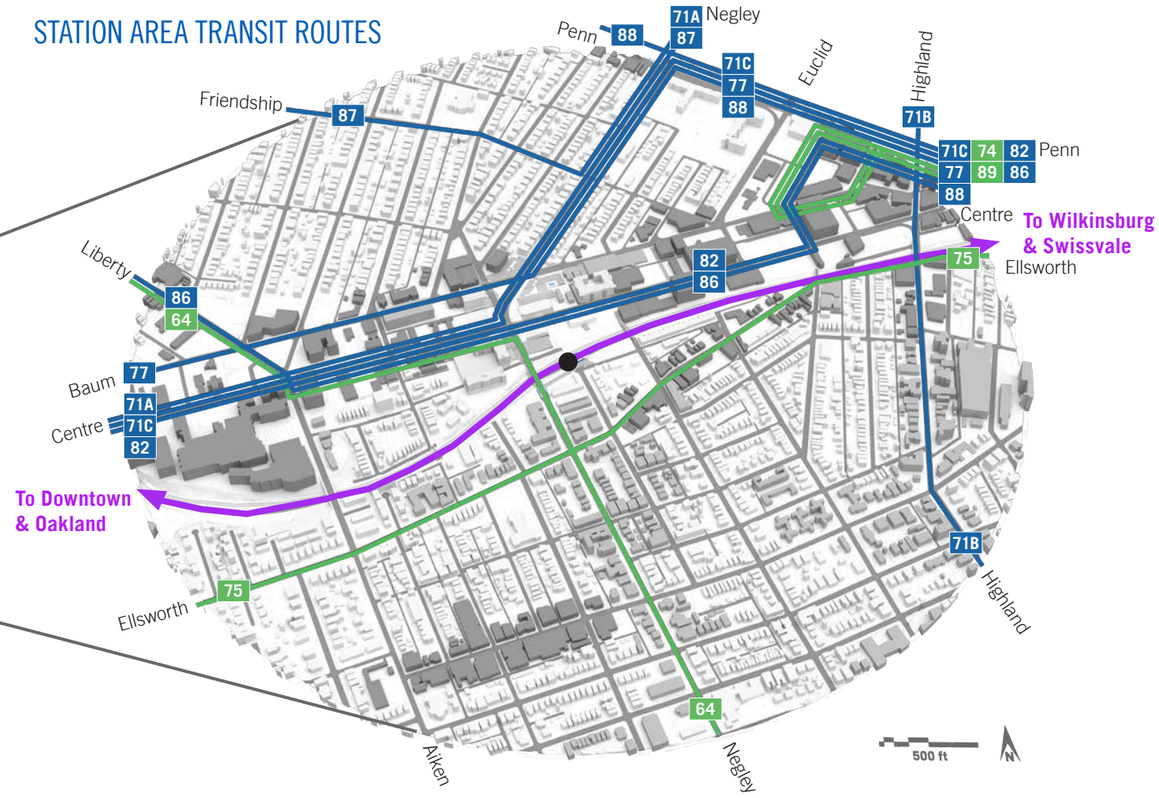
11 minutes by bus (P3)

11 minutes by car during typical weekday traffic

NEGLEY: TRANSIT CONTEXT



STATION AREA TRANSIT ROUTES



Routes serving the Negley Station Area

RAPID BUSWAY SERVICE

P1	East Busway All Stops
P2	East Busway Short (weekdays)
P3	Oakland

EXPRESS ROUTES USING EAST BUSWAY

P7	McKeesport
P10	Allegheny Valley
P12	Holiday Park
P16	Penn Hills
P17	Lincoln Park
P67	Monroeville
P68	Braddock Hills
P69	Trafford
P71	Swissvale
P76	Lincoln Highway
P78	Oakmont

LOCAL ROUTES TO DOWNTOWN

71A	Negley
71B	Highland Park
71C	Point Breeze
77	Penn Hills
82	Lincoln
86	Liberty
87	Friendship
88	Penn

LOCAL ROUTES TO OTHER NEIGHBORHOODS

64	Lawrenceville - Waterfront
74	Homewood - Squirrel Hill
75	Ellsworth
89	Garfield Commons

NEGLEY: HISTORICAL CONTEXT

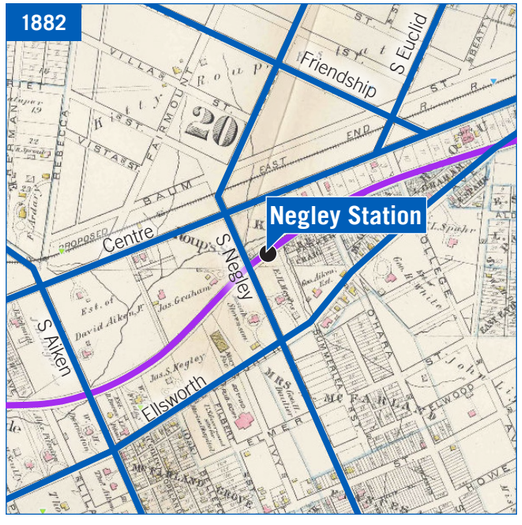
Today's urban fabric is woven with relics of the past. The widths of the streets, the sizes of the homes, the structures of former medium-scale warehouses, and the parking lots in between are all elements of the design brief facing planners and developers. By understanding how and why these relics came to be, the next generation may better resolve the relationships between infrastructure, land use, and the people who make this area a vibrant community.

When the Pennsylvania Railroad (PRR) entered Pittsburgh from the east in 1852, it was initially built with one track. Over time, with increasing population growth and industrial development in Pittsburgh, the railroad line was widened to four tracks to accommodate heavy volumes of local and through passenger and freight trains. However, during the twentieth century, as automobiles became increasingly the preferred choice among travelers, the public's usage of passenger trains dropped sharply. Demand for passenger service faded and in November 1964, the PRR discontinued all commuter rail service in Pittsburgh. The railroad also saw reduced freight traffic as more freight was moved by truck and the level of industrial activity in the Pittsburgh region declined. During the middle of the twentieth century, the PRR began to experience financial loses and eventually merged with its major rival, the New York Central Railroad to form the Penn Central Transportation Company, in February 1968. Two years after the merger, Penn Central became America's largest bankruptcy.

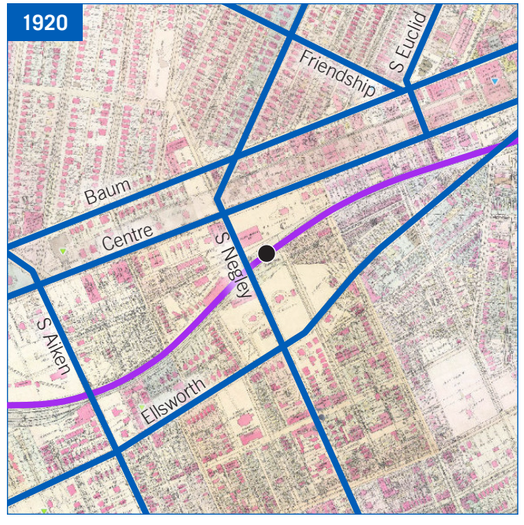
In 1976, Penn Central was merged into Conrail which was created to preserve and eventually revitalize the northeastern railroad network from the assets of Penn Central and several other bankrupt northeastern railroads.

With major reductions in passenger train service and changing patterns of freight train operations, Conrail was able to consolidate its operations onto two tracks. This made sufficient right-of-way available for the Martin Luther King, Jr. East Busway. Construction began in 1980 and it opened for service between Downtown Pittsburgh and Wilkinsburg in 1983, with an extension to Swissvale in 2003.

The busway investment in the form of a new transit guideway, stations, lighting and landscaping enhanced the appeal of the corridor for developers. This, in combination with other trends such as the growth of the educational and medical sectors in Pittsburgh's East End neighborhoods, has resulted in ongoing new construction and renovation of older buildings in the East Busway corridor. More recent community and city planning initiatives have resulted in investments which reflect the characteristics of transit-oriented development, in contrast to development that is near transit but doesn't achieve the same mix of uses and walkability.



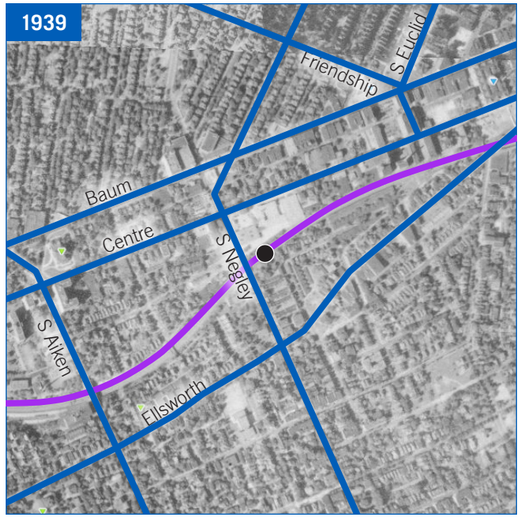
The 1882 map shows large parcels with relatively few buildings. Subdivisions in Shadyside offer a hint of the neighborhood to be built.
Source: ESRI Peoplemaps. Street names reflect their modern names.



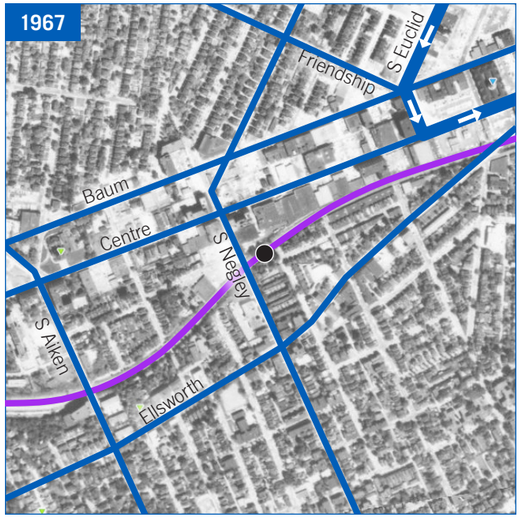
The 1920 map shows that most large parcels have been subdivided and developed. Baum Boulevard has been fully constructed by this time.
Source: ESRI Peoplemaps. Street names reflect their modern names.

A billboard on Baum Boulevard in 1920 is indicative of the rapid transition from nascent suburban neighborhood to booming commercial corridor.
Source: Pittsburgh City Photographer Collection, University of Pittsburgh

An art deco gas station on Baum Boulevard symbolizes the ambitions of the automobile industry on Pittsburgh's automobile row.
Source: Pittsburgh City Photographer Collection, University of Pittsburgh



The 1939 map shows that the area has been fully developed and is high-density. Streets appear to be tree-lined with a broad canopy.
Source: ESRI Peoplemaps. Street names reflect their modern names.



The 1967 map shows the progress of urban renewal, with many buildings demolished to make room for parking.
Source: ESRI Peoplemaps. Street names reflect their modern names.

STAKEHOLDERS AT NEGLEY STATION

Stakeholder input was an essential part of this process. Community groups, elected representatives, City and regional agencies, and the general public were invited to participate. A detailed list of stakeholders is included within the appendix of this report.

WHAT THE RIDERS SAY

Based on a 2016 survey performed by the Planning and Evaluation Department:

Where are you coming from/ where are you going?

Between Work and Home	57.1%
All Other Combinations	42.9%

How many miles do you normally travel to get to/from this facility?

Less than 1 Mile	74.5%
Greater than 1 Mile	25.5%

What barriers/obstacles did you encounter as you make your way to this facility?

None	59.9%
Traffic Danger	20.4%
Crosswalks	9.5%
Lighting	6.6%

What would you like to see that would make this station better?

Design	45.1%
Amenities	39.4%
Information	31.7%
Safety	26.8%
Pathways	17.6%

Riders wait for inbound buses to Downtown and Oakland at Negley Station. A rider is seen jaywalking where there is no marked crosswalk. The conceptual design included in this plan proposes solutions to discourage unsafe crossings.

Members of the public met with the project team for workshops in April 2017 to discuss challenges and opportunities in the Negley Station Area.

2.

STATION AREA PLAN

2.1 NEIGHBORHOOD CONTEXT

Negley Station is influenced by its location in and near four neighborhoods within Pittsburgh's East End: Shadyside, Bloomfield, Friendship, and East Liberty, each with their own characteristics. Shadyside is primarily a residential neighborhood with a mix of single family homes, multi-family homes, and apartments. The neighborhood has several distinct retail main streets. Bloomfield consists of higher density attached housing and has a commercial street that runs the length of the neighborhood. Friendship consists of large homes that were once single-family homes, but now many have been retrofitted to multi-family homes. East Liberty was Pittsburgh's second largest commercial area after the Central Business District through the 1950s. However, the neighborhood saw major demographic changes and urban renewal in the 1960s, including widespread demolition of previous residential and commercial structures and replacement with affordable housing units and surface parking lots. After years of disinvestment, there has recently been significant commercial and residential redevelopment occurring in East Liberty.

There are two major east/west corridors, Baum Boulevard and Centre Avenue, connecting the four neighborhoods. They influence planning strategies and context within the area. Historically, Centre Avenue was the main artery and transit route. Baum Boulevard was built to be a reliever for higher capacity automobile traffic. Baum Boulevard was originally lined with auto-centric businesses such as car dealerships, car repair facilities, and gas stations while Centre Avenue has had more traditional urban uses, such as apartments, storefronts, churches, along with a major hospital.

In recognizing that the area around Baum Boulevard and Centre Avenue have their own distinct characteristics, Pittsburgh's Department of City Planning designated the Baum-Centre Corridor Overlay District in 2003. Anticipating increased development levels, the overlay district was created to protect existing land uses and encourage complementary new land uses. The overlay district was also enacted to protect and enhance the context of new development, including siting, massing, proportion, scale, facade treatment, and materials. The Baum-Centre Overlay District compliments TOD efforts by encouraging new uses and high-density consistent with the existing mixed-use character of the corridor.

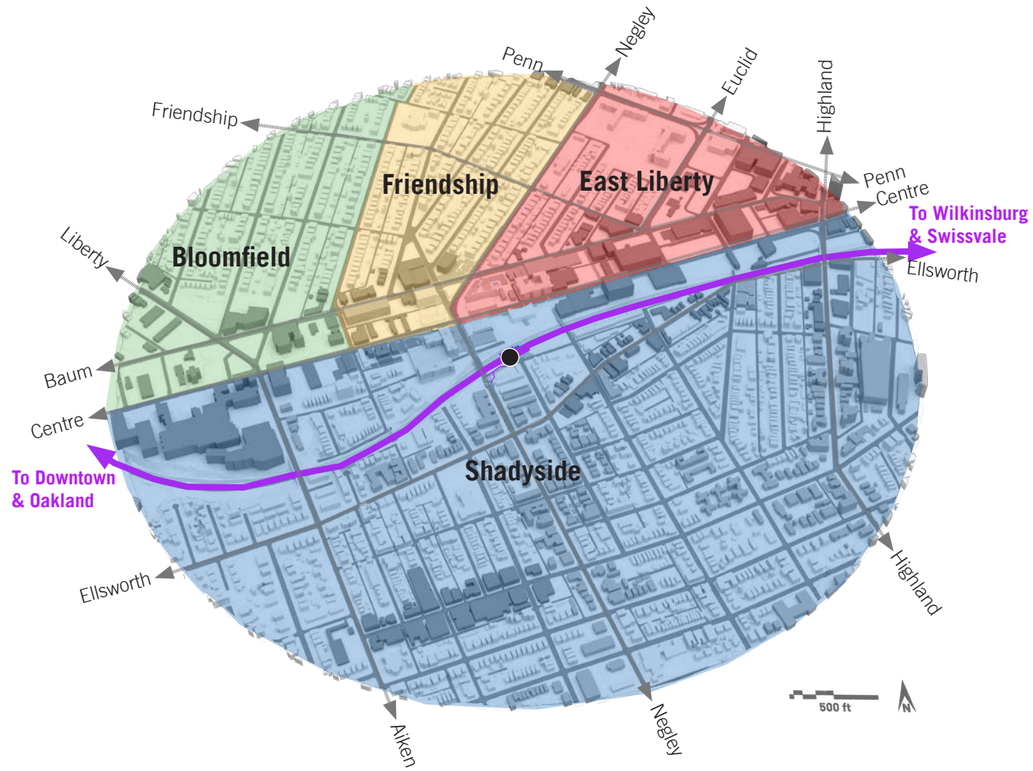
Negley Station is in a residential area of Shadyside, one block south of Centre Avenue. The East Busway and parallel Norfolk Southern Railroad (formerly the Pennsylvania Railroad's Mainline) create a distinct edge between the urban fabric of the Baum-Centre Corridor and the neighborhood feel of Shadyside. The link between the two is the historic Negley Avenue Bridge over the busway and railroad. There was originally a pedestrian staircase that directly connected the Negley Avenue Bridge and inbound platform, but this was closed in 2007 due to deterioration and removed in 2014. All users must cross the busway at-grade to reach the inbound platform which may be a barrier to further use. Access to the Baum Center Corridor is thus an evident challenge as described by survey respondents from the Port Authority's 2016 station user survey. Lack of access creates barriers to increased transit use. There are opportunities to link these gaps and better connect the street grid, helping to improve access to the station.

Centre Avenue looking West. Centre Avenue is in the dense and mixed use Baum-Centre Corridor and serves as the boundary between Shadyside and East Liberty/ Friendship/Bloomfield. Baum and Centre are very busy roads.

Ellsworth Avenue looking west toward Negley. Shadyside is a medium density residential neighborhood and like Friendship to the north is relatively quiet when compared to the bustle of Baum and Centre.

Currently, the neighborhoods within Negley Station's walkshed have limited greenspace, according to the City of Pittsburgh's Open Space, Parks and Recreation Plan. The station is located between a fully developed residential neighborhood and the Norfolk Southern rail line. Neighborhood streets intersect Baum Boulevard at angles, so there are small triangular areas of green space along the corridor. Baum Grove is one of these triangular areas located one block north of Baum Boulevard. It is a significant asset for the Friendship neighborhood.

STATION AREA NEIGHBORHOODS



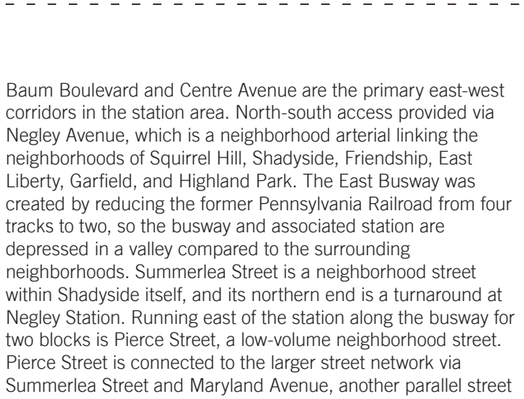
NEIGHBORHOOD CONTEXT: MOBILITY

Baum Boulevard and Centre Avenue are the primary east-west corridors in the station area. North-south access provided via Negley Avenue, which is a neighborhood arterial linking the neighborhoods of Squirrel Hill, Shadyside, Friendship, East Liberty, Garfield, and Highland Park. The East Busway was created by reducing the former Pennsylvania Railroad from four tracks to two, so the busway and associated station are depressed in a valley compared to the surrounding neighborhoods. Summerlea Street is a neighborhood street within Shadyside itself, and its northern end is a turnaround at Negley Station. Running east of the station along the busway for two blocks is Pierce Street, a low-volume neighborhood street. Pierce Street is connected to the larger street network via Summerlea Street and Maryland Avenue, another parallel street to Negley Avenue. Beyond the Negley Station, the East Liberty Station is the next busway station to the east, approximately a half mile away. West of Negley, the P1 and P2 continue to Downtown with a stop at Herron Avenue Station approximately 2 miles to the west and the P3 continues to Oakland via the Neville Street Ramp with a stop at Centre Avenue Station approximately 1.5 miles to the west.

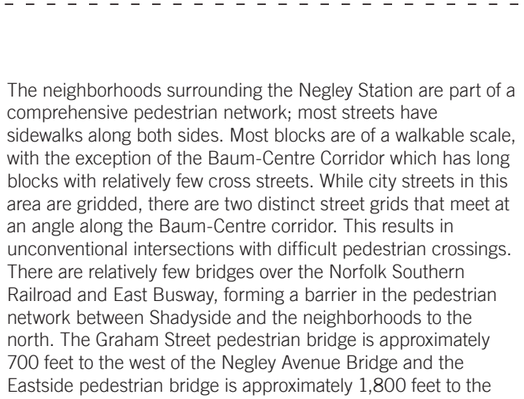
Implementation of the planned bus rapid transit (BRT) route through Oakland will increase ridership on the P3. This improvement will enhance the P3 as an important connecting route between Negley Station and the new on-street BRT routes which are proposed to converge in Oakland.

The neighborhoods surrounding the Negley Station are part of a comprehensive pedestrian network; most streets have sidewalks along both sides. Most blocks are of a walkable scale, with the exception of the Baum-Centre Corridor which has long blocks with relatively few cross streets. While city streets in this area are gridded, there are two distinct street grids that meet at an angle along the Baum-Centre corridor. This results in unconventional intersections with difficult pedestrian crossings. There are relatively few bridges over the Norfolk Southern Railroad and East Busway, forming a barrier in the pedestrian network between Shadyside and the neighborhoods to the north. The Graham Street pedestrian bridge is approximately 700 feet to the west of the Negley Avenue Bridge and the Eastside pedestrian bridge is approximately 1,800 feet to the east.

Negley Avenue is one of Pittsburgh's designated bicycle routes. North of Centre Avenue, Negley Avenue has bicycle lanes that were installed in the fall of 2017 and extend to Stanton Avenue. South of Centre Avenue in the immediate vicinity of the Negley Station, Negley Avenue is a marked on-street shared bicycle route. There are bicycle share (Healthy Ride) stations at the intersection of Negley Avenue and Baum Boulevard and at the intersection of Ellsworth Avenue and Maryland Avenue. The new Negley Avenue bicycle lanes dramatically improve north-south bicycle connectivity, but gaps in the network remain, most strikingly along the Baum-Centre corridor.

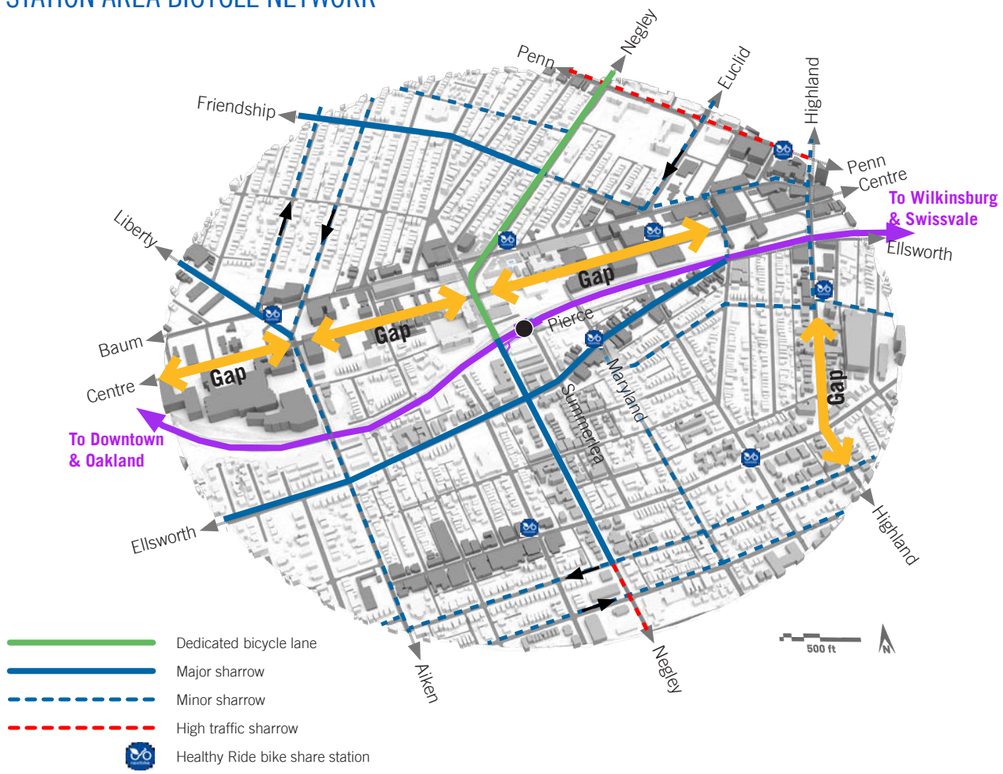


Inbound buses such as the 71A and 71C coming from the north on Negley or 82 and 86 coming from the east on Centre have nearside stops and the shelters are scheduled for replacement.



Negley Station is accessed from Negley Avenue by a set of stairs and a zig-zagging ramp. It is accessible, but is narrow and indirect.

STATION AREA BICYCLE NETWORK



There are newly painted Negley Avenue bicycle lanes at Centre Avenue.
Source: Bicycle Pittsburgh

NEIGHBORHOOD CONTEXT: BARRIERS

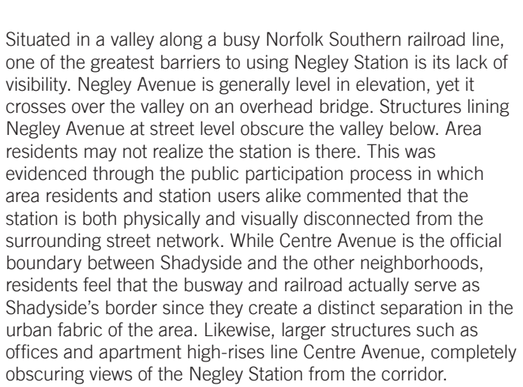
Situated in a valley along a busy Norfolk Southern railroad line, one of the greatest barriers to using Negley Station is its lack of visibility. Negley Avenue is generally level in elevation, yet it crosses over the valley on an overhead bridge. Structures lining Negley Avenue at street level obscure the valley below. Area residents may not realize the station is there. This was evidenced through the public participation process in which area residents and station users alike commented that the station is both physically and visually disconnected from the surrounding street network. While Centre Avenue is the official boundary between Shadyside and the other neighborhoods, residents feel that the busway and railroad actually serve as Shadyside's border since they create a distinct separation in the urban fabric of the area. Likewise, larger structures such as offices and apartment high-rises line Centre Avenue, completely obscuring views of the Negley Station from the corridor.

Pedestrians can walk to Negley Station along two small Shadyside neighborhood streets, Summerlea Street and Pierce Street, as well as along a sloping, winding pedestrian ramp from Negley Avenue. Pierce and Summerlea streets do not experience very much through pedestrian traffic as they only have residential land uses and terminate at the busway and railroad, while Summerlea does provide a direct connection to the Ellsworth commercial corridor. Negley Avenue is the only north/south street that crosses the busway for a quarter mile to the east and a half mile to the west, so the majority of station users come from Negley Avenue.

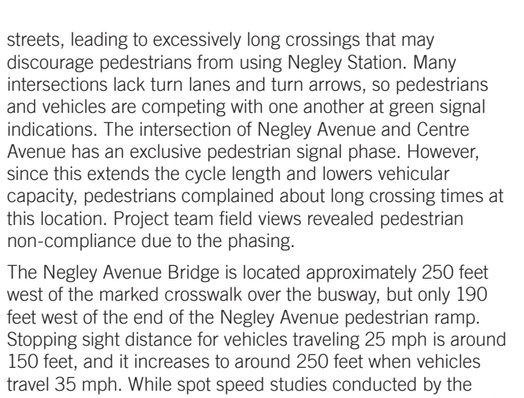
In addition to the barrier of crossing the busway itself, the Baum-Centre corridor has well-traveled streets that experience traffic congestion. Baum Boulevard has two lanes of traffic in each direction with angular intersections along traversing streets, leading to excessively long crossings that may discourage pedestrians from using Negley Station. Many intersections lack turn lanes and turn arrows, so pedestrians and vehicles are competing with one another at green signal indications. The intersection of Negley Avenue and Centre Avenue has an exclusive pedestrian signal phase. However, since this extends the cycle length and lowers vehicular capacity, pedestrians complained about long crossing times at this location. Project team field views revealed pedestrian non-compliance due to the phasing.

The Negley Avenue Bridge is located approximately 250 feet west of the marked crosswalk over the busway, but only 190 feet west of the end of the Negley Avenue pedestrian ramp. Stopping sight distance for vehicles traveling 25 mph is around 150 feet, and it increases to around 250 feet when vehicles travel 35 mph. While spot speed studies conducted by the project team show that buses obey the posted speed limit of 25 mph in the station area, there were observed instances of non-transit vehicles (such as emergency services vehicles) exceeding the posted speed limit. As a result, some riders have concerns with crossing the busway to access the service. Some users also expressed concerns about inadequate lighting, both in the station area itself and along Summerlea Street which has a dense tree canopy. This concern makes some users perceive Negley Station and the surrounding street area as somewhat unsafe in the evening and late night hours.

A pedestrian safety and operational analysis has been performed to take a more detailed look at these barriers to the station use, as well as recommendations for improvements. Refer to the attachments to this report for a more detailed analysis.

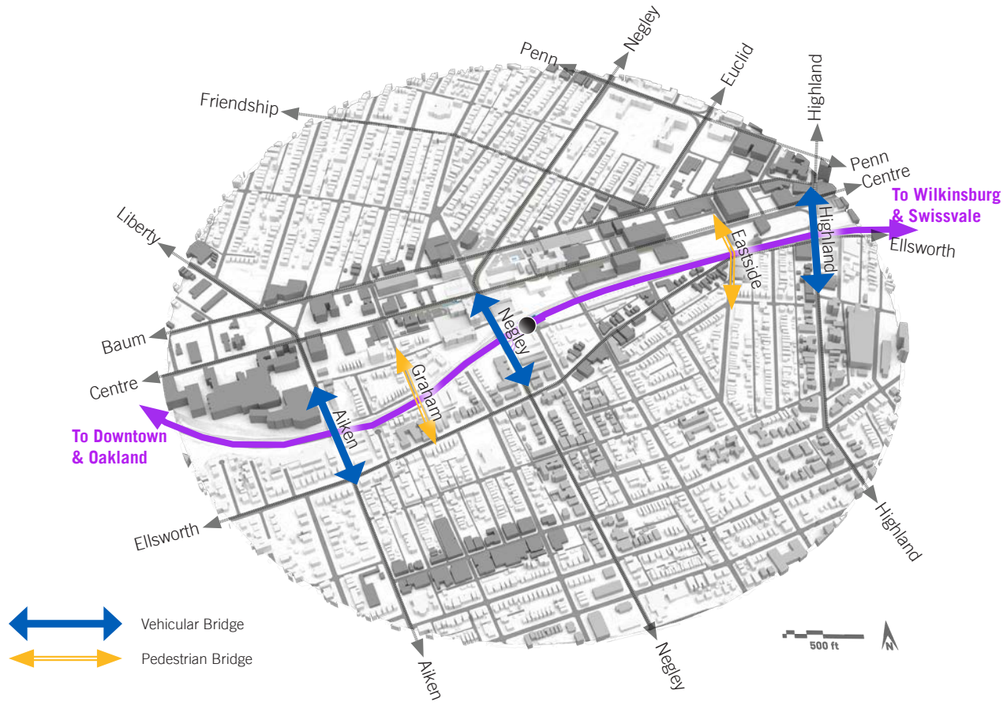


The Graham Street pedestrian bridge as viewed from the North. It connects residential areas on either side of the Busway.



The Eastside pedestrian bridge as viewed toward Ellsworth Avenue. It connects a residential area of Shadyside to a major shopping center and to East Liberty.

STATION AREA CROSSINGS OVER THE BUSWAY

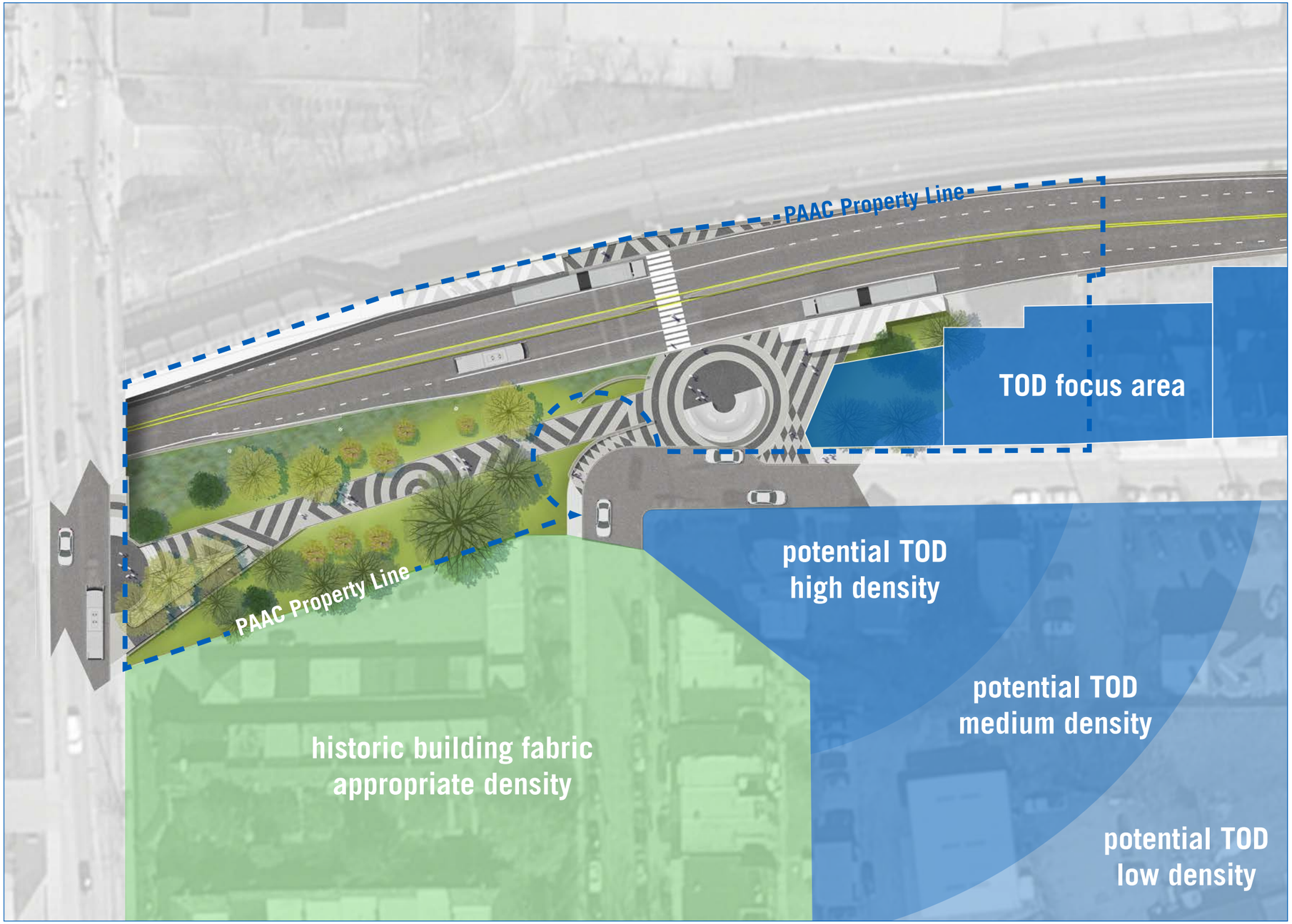


A view of Negley Avenue Bridge looking north towards Centre Avenue and Baum Boulevard. In the foreground is the on-street bus stop for the 64 and the entrance to Negley Station.

2. Station Area Plan

2.2 TOD

Within the area adjacent to the station, property ownership information was collected to determine focus areas for potential TOD. Properties that are either publicly owned or assembled by one property owner help facilitate TOD. Scattered property ownership can make TOD challenging as it works best when higher density and mixed uses can be achieved at scale. As reflected in the following map, a portion of the property located adjacent and east of the station is owned by the Port Authority, while the other portion is owned by a private entity. Because of its strategic location next to the station, this area north of Pierce Street should be the priority location for TOD. The area to the south of Pierce Street and the station presents a potential long-term opportunity for TOD. As property ownership, market conditions, or community desires change, these properties could be redeveloped into more dense, mixed-use structures that better support walkability and a transit-oriented lifestyle.



TOD: OPPORTUNITY SITES

Identifying potential areas of development beyond the Port Authority owned property illustrates how vacant or underutilized property might be well-suited for future TOD in the long-term.

SITE ADJACENT TO STATION AND NORTH OF PIERCE STREET

Existing Conditions

- Land Use: Residential
- Zoning: Single-unit Residential. Very High-density
- Estimated Acreage: 0.25
- Parking: On-site
- Ownership: Port Authority, Standard Realty

Challenges

- A portion of the property is owned by Port Authority, while the other portion is owned by a private entity.
- The site is long and narrow, making certain types of development challenging.
- There is limited visibility from major thoroughfares, restricting the number of viable uses.
- Street access is via low volume neighborhood roadways, which can also present challenges for some types of commercial tenants.
- Even with excellent transit options, there are possible concerns from potential developers, nearby residents, and nearby businesses about parking availability.

Opportunities

- PAAC has control over a portion of the property.
- The site provides direct access to the station.

Area East of Negley Station, North of Summerlea

SITE ADJACENT TO STATION AND SOUTH OF PIERCE STREET

Existing Conditions

- Land Use: Residential and Commercial
- Zoning: Single – Unit Residential. Very High-density
- Estimated Acreage: 1.5 acres
- Parking: On-site
- Ownership: Several private owners

Challenges

- Property ownership within the adjacent neighborhood is scattered.
- There is limited street visibility for retail along Pierce Street.
- Pierce Street is too narrow to support both two-way traffic and parking.

Opportunities

- It is possible to create a direct link between potential TOD and Negley Station.
- There exists the potential for higher density housing / mixed-use development (4 to 5 stories in order to maintain consistency with surrounding neighborhood).
- Mixed-use development could potentially support shared parking for TOD and the Ellsworth shopping district.

SUGGESTED STRATEGY: TOD NORTH OF PIERCE STREET

The property which is currently owned by the Port Authority and located east of the station area, and is currently vacant, could be used to leverage new private sector, transit-oriented development adjacent to the station. Since a portion of the land would be well suited for TOD, this site represents a logical near-term opportunity. PAAC is in the early stages of developing a request for proposal (RFP) process for those strategic parcels of land which could potentially achieve TOD objectives. Based on market realities (discussed in the implementation section), the site is envisioned as a mix of multi-family, mixed-income housing and street-front commercial use.

SUGGESTED STRATEGY: TOD SOUTH OF PIERCE STREET

Given the proximity to other commercial districts (e.g. along Ellsworth Avenue), in addition to the proximity to the station, it is recommended that the property located adjacent to Pierce Street (to the south) and adjacent to Maryland Avenue (to the west) be developed as mixed-use TOD in the long-term. Considering existing land usage patterns, TOD near Negley Station should focus on medium-density mixed-income residential close to the station, transitioning to commercial development along Maryland Avenue and approaching Ellsworth Avenue. As property ownership, market conditions, or community desires change, these properties could be redeveloped into denser, mixed-use structures that better support walkability and a transit lifestyle.

2.3 STATION ACCESS

Analysis of existing connections to Negley Station identified gaps within the urban fabric throughout the neighborhood surrounding the station. Improvements to roadway connections and streetscapes can leverage additional pedestrian and bicycle use, and also helps to reinforce complete streets efforts currently underway throughout the City of Pittsburgh.

CONNECTION VIA SUMMERLEA STREET, PIERCE STREET, AND MARYLAND AVENUE

Existing Conditions

- Through Lanes: 2 (1x1) along Summerlea
1 (1x1) along Pierce
2 (1x1) along Maryland
- Sidewalk Width: 5' 0"
- Speed Limit: 25 mph
- Parking: On-Street
- Bicycle Lanes: None

Challenges

- The approach from Summerlea Street lacks a visual connection to the station.
- Bollards had been installed at the end of Pierce Street to inhibit automobile circulation however these are frequently removed. They were intended primarily for access control, having little impact on safety.
- In many locations, no buffer is located between the sidewalk and the road.
- Two-way circulation can be challenging due to narrow road width.
- There is currently no wayfinding signage to Negley station at the intersections of Maryland Avenue and Ellsworth Avenue or Summerlea Street and Ellsworth Avenue.

Opportunities

- Pierce Street is situated at the low point of a depression and offers an opportunity to connect to regional stormwater efforts.
- There is an existing bicycle share station on Maryland Avenue, offering a link to the greater bicycle network.
- Community anchors located along the block (e.g. neighborhood restaurants, a nursery that holds special events) attract potential transit users to the area.

View to Negley Station on approach from Summerlea Street.

Approach to Negley Station along Pierce Street.

View of bike share station and commercial development at corner of Ellsworth Avenue and Maryland Avenue.

View heading east along Pierce Street toward Maryland Avenue.

STATION ACCESS: STREETSCAPES

ROAD DIETS AND BUMP-OUTS

The Complete Streets concept encourages ease of access for all modes of transportation. As described by the National Complete Streets Coalition, streets that are “incomplete” – in other words, that don’t support all users – tend to hinder economic growth and can result in lost business and lower overall productivity. It is recommended that the Port Authority and its collaborators consider Complete Streets strategies to encourage walkability and multimodal access such as:

- Road diets typically reduce roadways by one traffic lane in order to improve access for pedestrians and bikes. Road diets have also been shown to reduce motorist crashes.
- Curb extensions can reduce average right turn speeds and also call attention to pedestrians waiting to cross at an intersection. Curb extensions, also known as bump-outs, can also be used at mid block.

GREEN INFRASTRUCTURE

Green infrastructure should be incorporated along and adjacent to Maryland Avenue in order to capture street runoff and also as part of larger watershed efforts by the Pittsburgh Water and Sewer Authority to address stormwater issues along Maryland Avenue and south of Ellsworth Avenue. Where appropriate, green infrastructure could be installed in planting strips, bump-outs, and in green open spaces.

ONE-WAY CIRCULATION

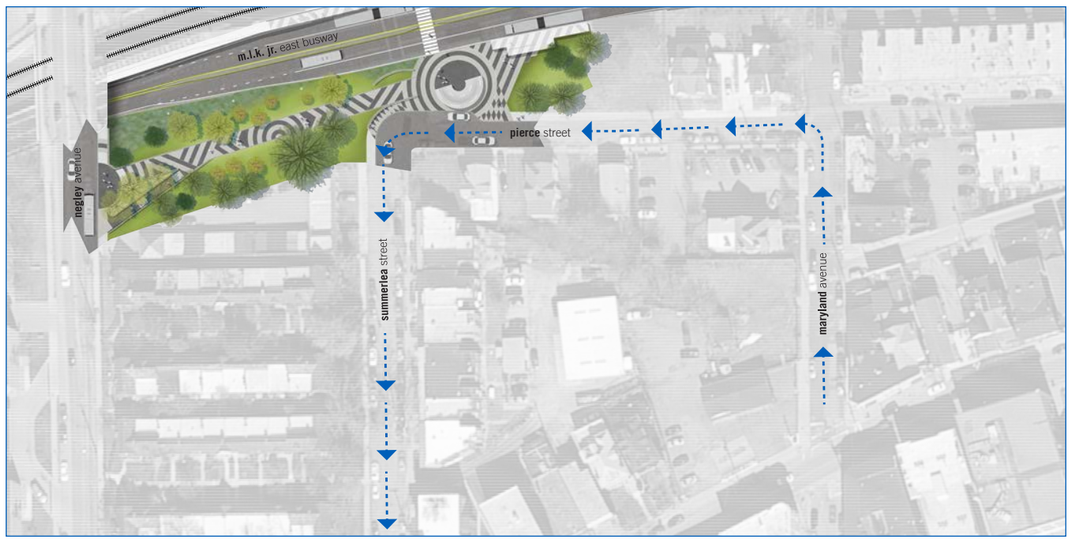
One-way circulation was considered as a strategy that could improve the quality of the streetscapes along portions of Summerlea, Pierce, and Maryland.

Potential positive impacts from a one-way circulation strategy:

- Calms traffic since opposing drivers will no long conflict with each other
- Allows room for bump outs and wider sidewalks
- Reduces crash potential with a single vehicular lane
- Simplifies pull-off area for passenger drop-offs and pick-ups

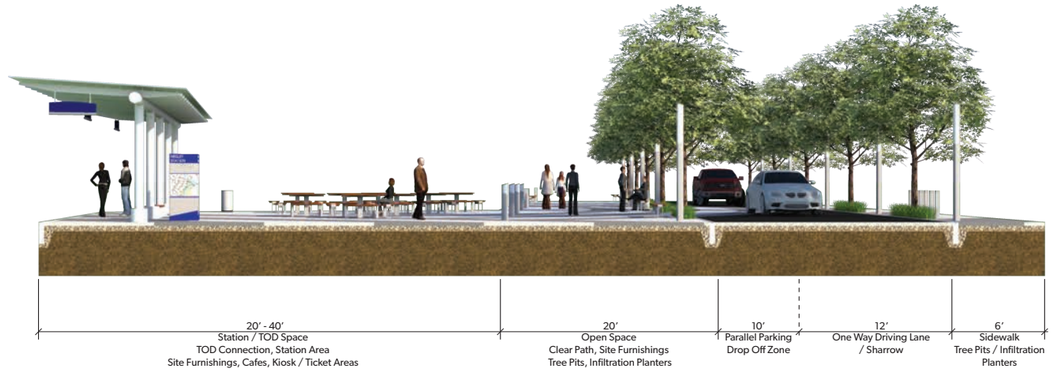
Potential negative impacts from a one-way circulation strategy:

- Preferred to be paired with one way street in opposite direction
- May be less convenient for some residents



A conceptual map showing a potential one way street strategy near Negley Station.

Road Diet and Integrated Green Infrastructure: Pierce Street



Road Diet and integrated Green Infrastructure: Maryland Avenue

STATION ACCESS: GATEWAYS

NEGLEY AVENUE

Existing Conditions:

- Through Lanes: 4 (2x2) along Baum
2 (1x1) along Negley
- Sidewalk Width: 8’ to 10’
- Speed Limit: 25 MPH
- Parking: On-street parking along Negley and north of Baum
- Bicycle Lanes: None

Challenges

- Negley is below street grade, resulting in a weak visual connection.
- The loading area for the building located next to the supermarket store is not well buffered from the street and creates an unwelcoming pedestrian environment.
- The triangular parcel located near the intersection of Negley Avenue and Baum Boulevard leads to confusing traffic patterns for both cars and pedestrians. This has improved since the re-striping associated with the installation of bicycle lanes, but still presents challenges to safety and usability.
- In many cases, the sidewalk is not protected from the adjacent road.
- Bike access south of Centre Avenue can be challenging.

Opportunities

- Bicycle lanes were recently installed along Negley Avenue north of Centre, improving bicycle access to the station.
- Potential enhancements could be made to the Giant Eagle entrance in order to better engage the street and protect pedestrians.
- The Baum-Centre corridor includes higher density commercial and residential development within walking distance of Negley Station that is consistent with many TOD best practices.
- Additional new development is proposed along Baum.

A view of the Negley Avenue automobile-only entrance to the supermarket. The pedestrian entrance is located on Centre Avenue.

The Negley Avenue Bridge, which crosses the busway and the railroad is planned to be reconstructed in the 2020s.

CENTRE AVENUE

Existing Conditions

- Through Lanes: 2 (1x1)
- Left Turn Lanes: At intersection
- Right Turn Lanes: None
- Sidewalk Width: 10’ 0”
- Speed Limit: 35 MPH
- Parking: On-street, both sides
- Bicycle Lanes: None

Challenges

- There are several store front vacancies located along Centre Avenue near the intersection of Centre Avenue and Negley Avenue.
- There is currently no buffer between the street and the sidewalk and the right-of-way for pedestrians is narrow in some locations along the corridor.
- The intersection of Negley Avenue and Centre Avenue is a high volume intersection, leading to lengthy wait times for crossing during certain peak hours.
- Long blocks make walkability a challenge.

Opportunities

- New development is occurring to the east along Centre Avenue, including a concentration of redevelopment in East Liberty.
- There may be a potential link across the busway to the Centre Avenue corridor from Negley Station.
- The existing building located at the southwest corner of Centre Avenue and Negley Avenue appears underutilized and could present a TOD opportunity given high visibility and traffic volumes.
- The pedestrian crossing at the intersection of Negley Avenue and Centre Avenue are “piano key” type markings which provide a higher level of visibility than the standard crosswalks found at most Pittsburgh intersections.

A view of the intersection of Negley Avenue and Centre Avenue, looking southeast.

A view of the intersection of Negley Avenue and Centre Avenue, looking west.

STATION ACCESS: GATEWAYS

AN URBAN GATEWAY AT CENTRE AND NEGLEY

The supermarket at Negley and Centre is an innovative approach to a full scale supermarket in an urban environment. It is adjacent to major transit assets and sits at a crucial juncture between four neighborhoods at the core of Pittsburgh's East End. It was also implemented with an eye toward density and compactness and includes a two level subterranean garage as well as a structurally integrated residential tower on upper levels.

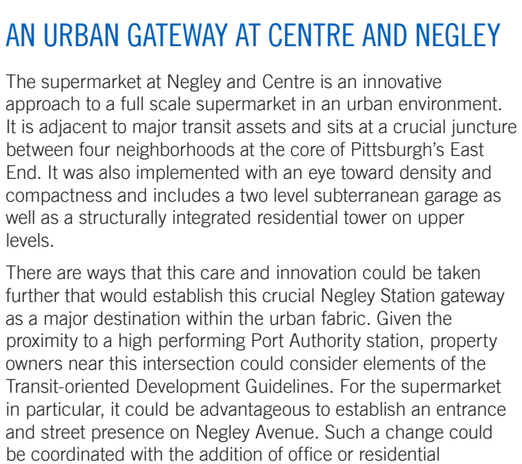
There are ways that this care and innovation could be taken further that would establish this crucial Negley Station gateway as a major destination within the urban fabric. Given the proximity to a high performing Port Authority station, property owners near this intersection could consider elements of the Transit-oriented Development Guidelines. For the supermarket in particular, it could be advantageous to establish an entrance and street presence on Negley Avenue. Such a change could be coordinated with the addition of office or residential development on upper levels and could allow for casual pedestrian shoppers to browse through the store as if it were a traditional market hall.

The bus shelter at the intersection of Negley Avenue and Centre Avenue is scheduled for replacement. This will enhance the transit user experience in this area.

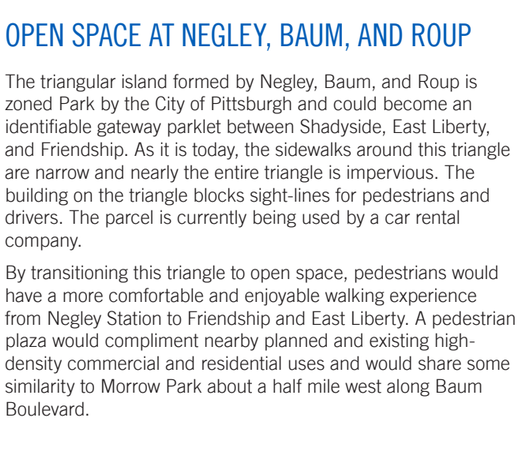
OPEN SPACE AT NEGLEY, BAUM, AND ROUP

The triangular island formed by Negley, Baum, and Roup is zoned Park by the City of Pittsburgh and could become an identifiable gateway parklet between Shadyside, East Liberty, and Friendship. As it is today, the sidewalks around this triangle are narrow and nearly the entire triangle is impervious. The building on the triangle blocks sight-lines for pedestrians and drivers. The parcel is currently being used by a car rental company.

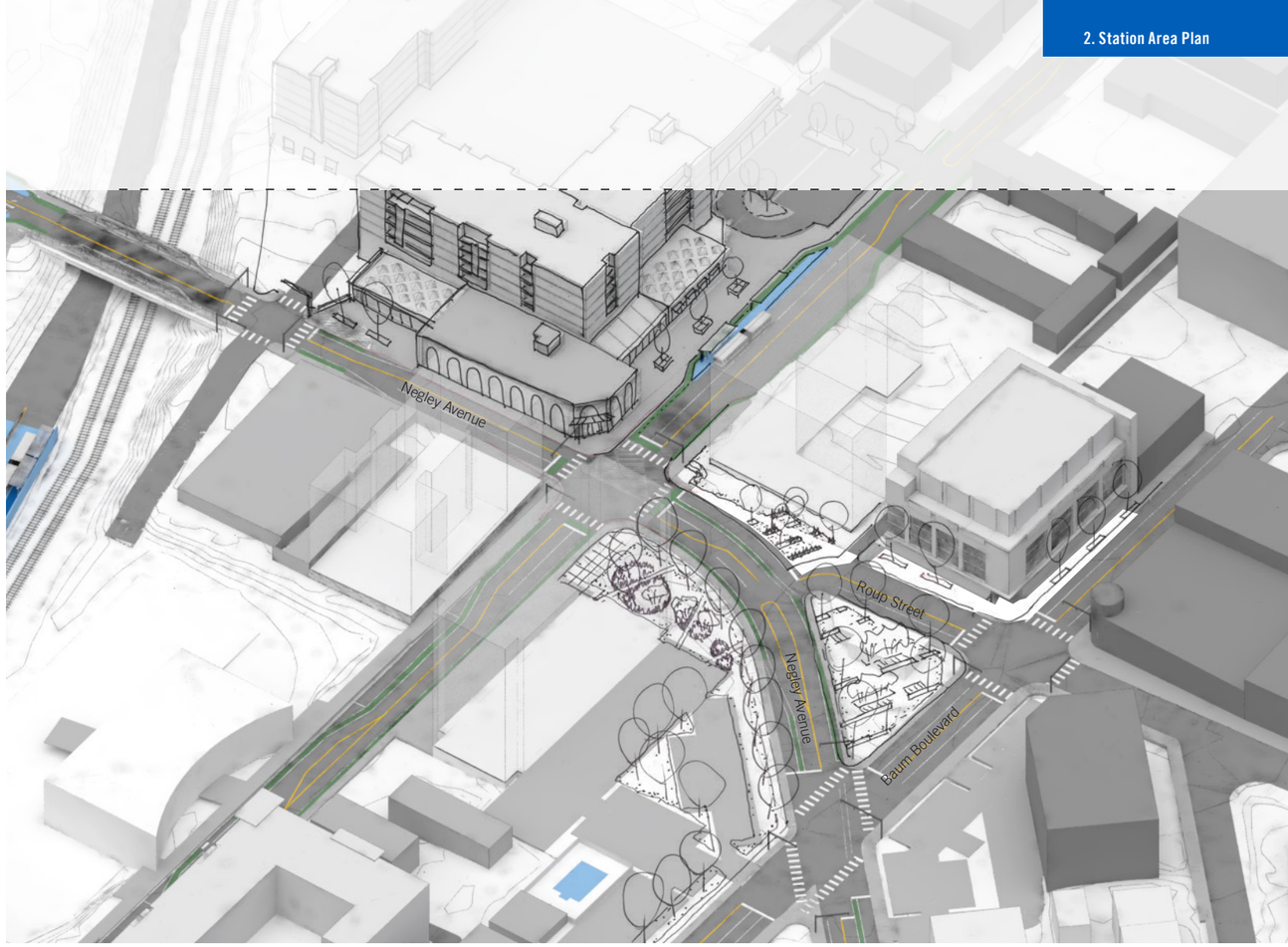
By transitioning this triangle to open space, pedestrians would have a more comfortable and enjoyable walking experience from Negley Station to Friendship and East Liberty. A pedestrian plaza would compliment nearby planned and existing high-density commercial and residential uses and would share some similarity to Morrow Park about a half mile west along Baum Boulevard.



Chelsea Market in New York is a destination urban food market integrated in a high-density retail and commercial office building.
Source: Carole A. Feurerman



Triangle Park in Downtown Pittsburgh is a public open space between Liberty Avenue, Fifth Avenue, and Market Street.
Source: Chicago Architecture Foundation



While the existing supermarket does have a presence on both Negley and Centre avenues, the Negley Avenue entrance is for cars only.

Under current conditions, the triangle bounded by Negley, Baum, and Roup is nearly 100% paved and offers minimal facilities for pedestrians.

STATION ACCESS: OTHER CONNECTIONS

The reintroduction of stairs to the inbound transit platform will help reduce pedestrian busway crossings and also provide improved access for the pedestrians traveling to the station from the north. A potential bridge crossing at Maryland Avenue would create a direct connection to the station from Centre Avenue and Baum Boulevard, decreasing the time to walk for existing riders and increasing the number of potential riders who can reach the station.

POTENTIAL NEW PEDESTRIAN BRIDGE

Existing Conditions

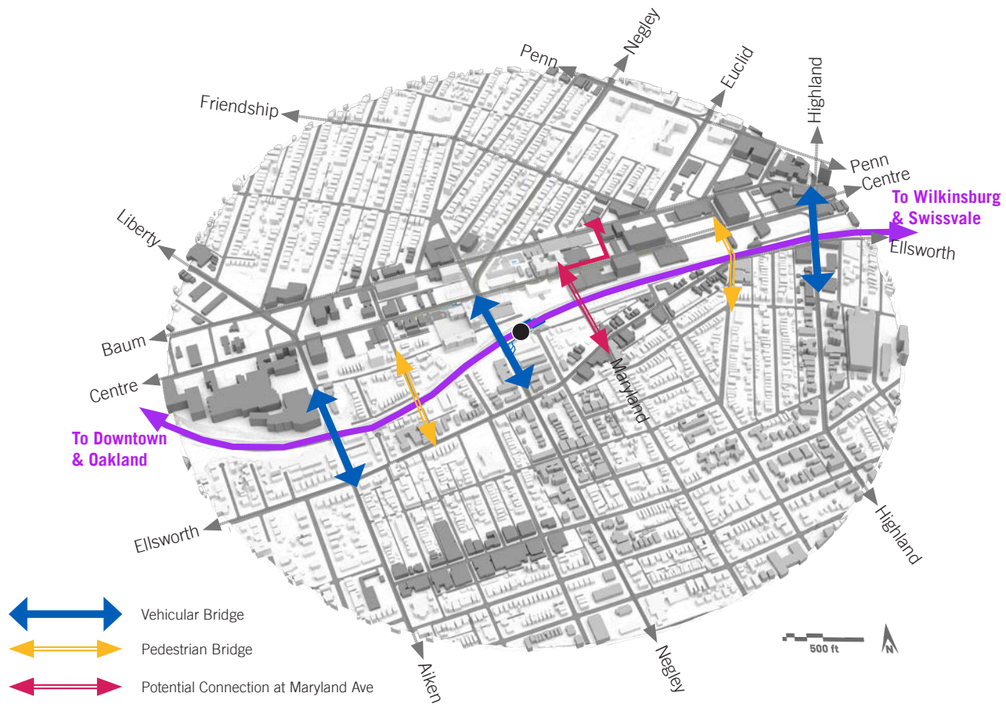
- Land Use: Commercial
- Zoning: Urban Neighborhood Commercial
- Parking: Garage
- Ownership: SNH Medical Office Properties Trust, Norfolk Southern Railroad

Challenges

- A connection across the rail line would require coordination with the railroad owner, Norfolk Southern.
- A portion of the connection to Centre Avenue is privately-owned.
- There are topography challenges from Maryland Avenue to Centre Avenue.

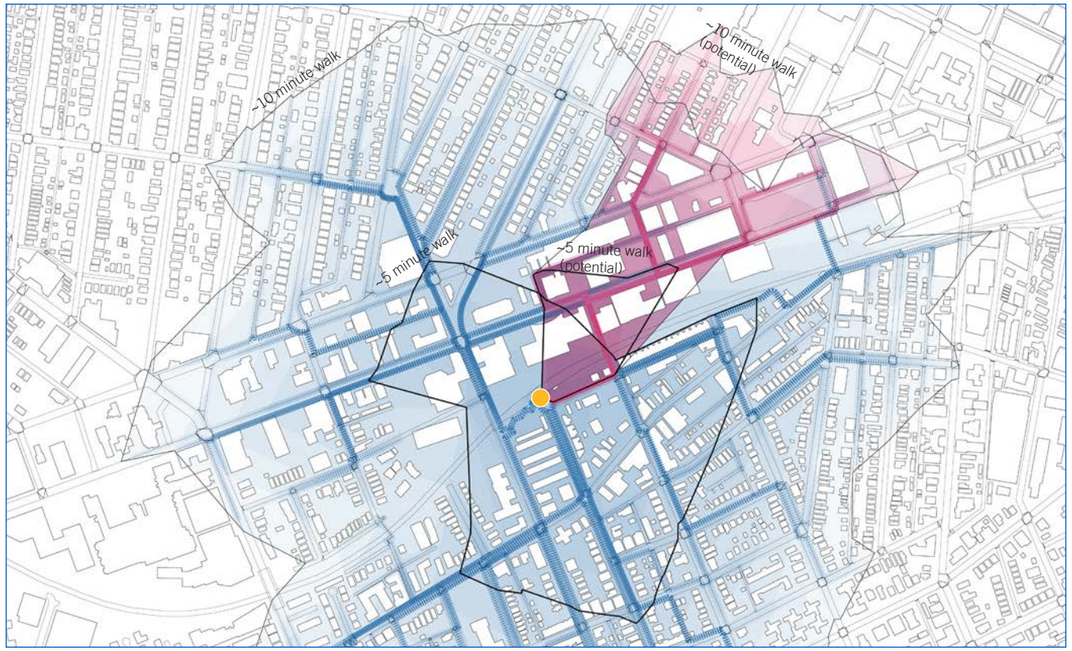
Opportunities

- A new pedestrian bridge from Maryland Avenue to Centre Avenue could also ultimately lead to new connections to the Baum Boulevard corridor.
- There appears to be excess parking capacity at the parking lot located north of Negley Station, implying the potential for a shared parking facility.



A view of Negley Station from the north side of the tracks.

A view of the structured parking that partially surrounds the commercial office building located North of the busway from Negley Station.



A bridge at Maryland Avenue, paired with a mid-block passageway to Baum Boulevard, could dramatically improve connectivity to parts of Shadyside and East Liberty.

2.4 STATION ANALYSIS

The following site analysis focuses on property owned by the Port Authority at Negley Station, including a linear tract connecting the station to Negley Avenue, as well as a rectangular parcel located adjacent to the busway and parallel to Pierce Street.

CONNECTION TO NEGLEY AVENUE

Existing Conditions

- Zoning: Single-unit Residential. Very High-density
- Estimated Acreage: 0.5
- Ownership: Port Authority of Allegheny County

Challenges

- There is a significant elevation change from Negley Avenue to the station. As a result, the current pathway includes several switchbacks while a direct connection would be preferable.
- The narrowness of the existing pathway makes it difficult for multiple people or modes to use the ramp at the same time. This is of particular concern to users of wheelchairs, scooters, and bicycles.
- The station is hidden from view along Negley Avenue.
- A direct connection is provided from Negley Avenue to the outbound station, but not to the inbound station.
- The pathway connection site from Negley Avenue was not planned as a TOD location since the site is not part of a continuous commercial corridor along Negley Avenue.

Opportunities

- The Port Authority controls the property.
- A valued heritage tree is located on site.

Negley Station Site, Port Authority Owned

MLK East Busway

STATION PLATFORMS, SHELTERS, AND ENTRY

Challenges

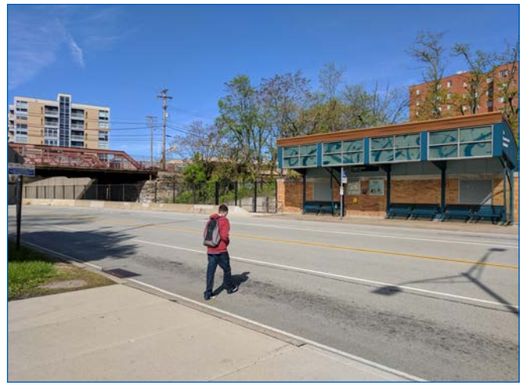
- There are limited seating options at and adjacent to the station.
- Safety at the station is a concern as users oftentimes cross the busway outside of the designated pedestrian crossing.
- There is limited station visibility on the approach from Summerlea Street.
- Bicycle amenities are limited.
- The inbound platform is not shaded during certain hours of the day.
- The inbound platform cannot be substantially widened due to the location of the existing railroad tracks and the alignment of the busway.

Opportunities

- The existing Summerlea terminus and lower station area present the opportunity for new plaza design, including the introduction of public art, green infrastructure, plantings, and an overall stronger connection to the community.
- Port Authority controls the property.

A view of the Negley Avenue Bridge from the Station Area

Station area approach from Summerlea Street



A station user is seen jaywalking toward the inbound platform.

3.

STATION CONCEPTUAL DESIGN

3.1 CONCEPTUAL DESIGN

Upon development of final plan recommendations, the project team continued to advance recommendations specific to station design. Conceptual design for features on Port Authority property were developed to 10% completion, providing sufficient information to be integrated in future capital programs.

Proposed recommendations to Negley Station have potential to improve the overall function of the station as well as increase ridership and station revenues. The proposed improvements incorporate enhanced connections, flexible gathering areas, and safer access to Negley station platforms.

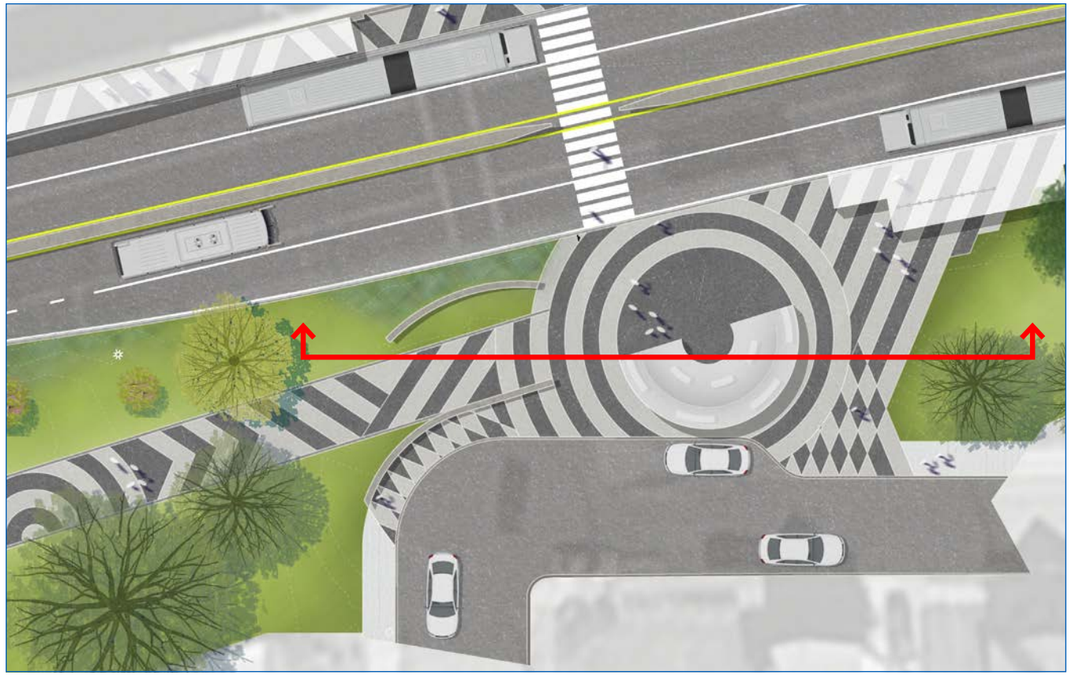
Approaching Negley Station from Negley Avenue, pedestrians have two points of access to reach the station. From the north, plans include a new stairway connection from Negley Avenue to the inbound platform. This will be coordinated with the planned rehabilitation of the Negley Avenue bridge. The new stair access will feature a visually open structure that introduces new station branding facing the east busway.

Proposed changes to the pedestrian link located south of the Negley Avenue bridge include a 15 foot wide pathway with an integral stained concrete pattern. The patterned paving continues at a new plaza area adjacent to the east bound station canopy. The pathway provides a straight connection (5 percent slope) to the station, with a ramp introduced at the top of the pathway to provide an ADA accessible route. The proposed access ramp is two feet wider than the existing ramp to allow for a more comfortable decent into the station area. A seatwall is proposed for the area at the bottom of the pathway and adjacent to the busway to create a resting place and to discourage pedestrians from crossing the busway outside of the designated pedestrian crossing. Most of the existing vegetation is maintained throughout the greenspace. New low maintenance ground cover is proposed for the hillside that faces the inbound platform.

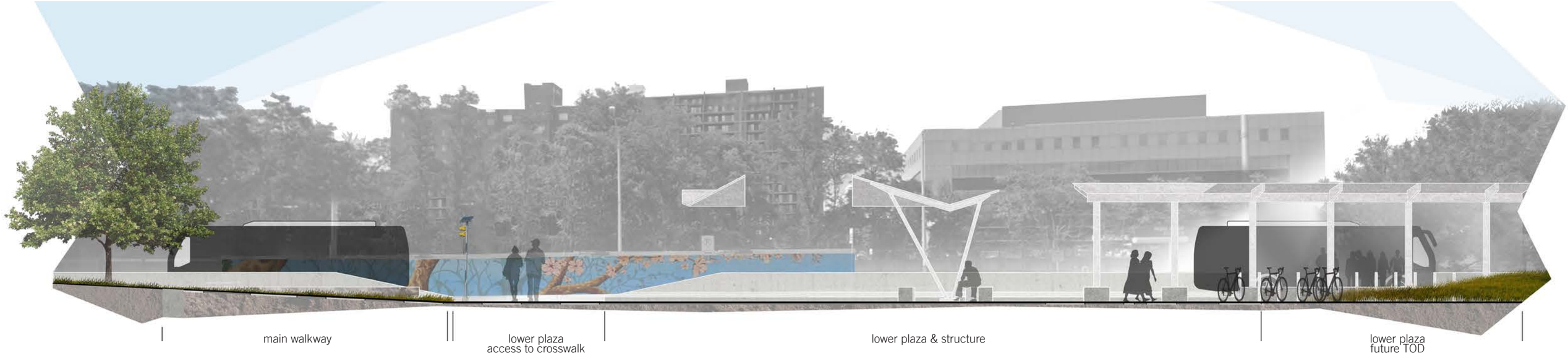
The lower transit plaza is a multi-functional space that provides a semicircular covered shelter with seating, flex space towards the east for future TOD uses such as outdoor dining or recreation, and a dedicated pedestrian drop-off and loading zone along Pierce Street. This space is the main hub of activity for Negley Station, leading users to both the inbound and outbound bus platforms. The semicircular covered shelter enhances visibility of the station within the surrounding area and provides a place to sit for users of the drop-off area.

Integration of public art at the station is also proposed. Potential locations for either sculpture or mural art include the plaza areas and along the retaining wall at the inbound platform. New area lighting is proposed for the station in order to improve nighttime visibility.

Facility and amenity upgrades are proposed for both the inbound and outbound platforms. Each shelter will be extended to accommodate additional station users as well as allow for the stacking of two buses to comfortably load and unload passengers. In addition to accommodating more users, expanded shelters ensure that users of East Busway express commuter buses have shelter as well. Currently express bus riders must load an unload at a part of the platform which is unsheltered. Each shelter will have updated station signage, seating, and ConnectCard kiosks integrated into the design allowing for a more user friendly experience at Negley Station.

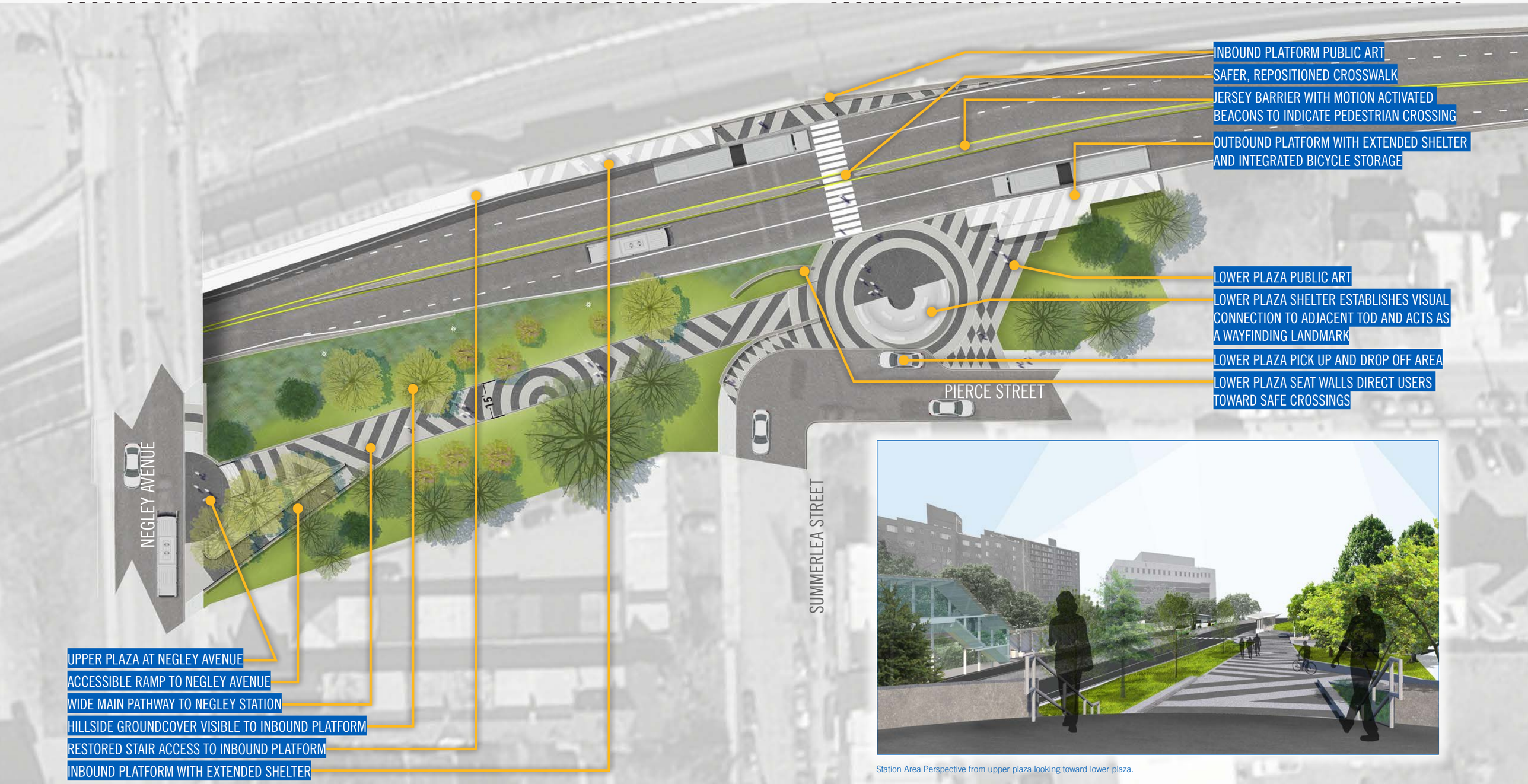


A zoom in of the site plan showing the approximate location of the conceptual sections illustrated below.



3. Station Design

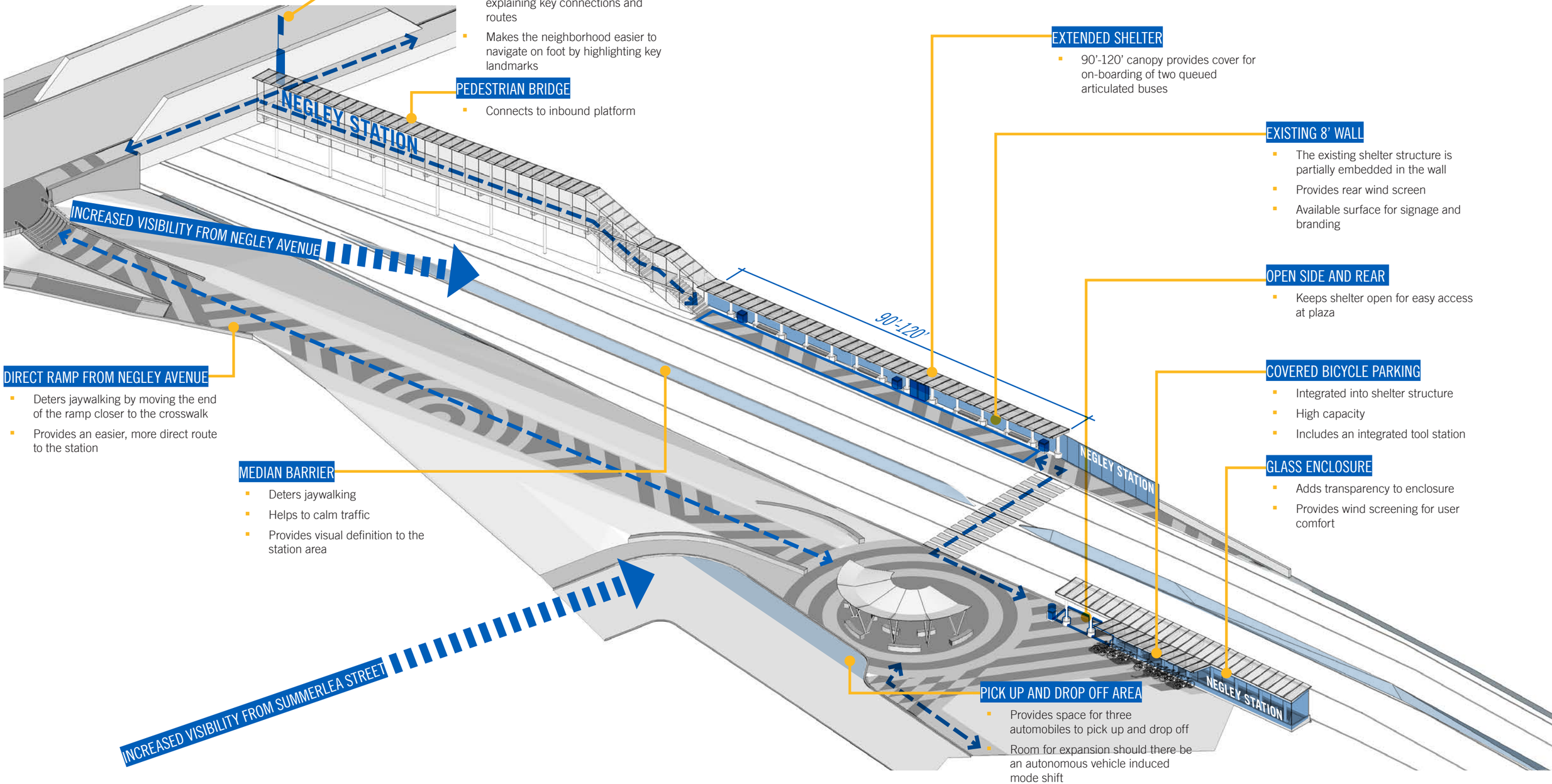
CONCEPTUAL DESIGN: PLAN



Station Area Perspective from upper plaza looking toward lower plaza.

3. Station Design

CONCEPTUAL DESIGN: STATION



WAYFINDING TOTEMS

- Makes transit easier to use by explaining key connections and routes
- Makes the neighborhood easier to navigate on foot by highlighting key landmarks

PEDESTRIAN BRIDGE

- Connects to inbound platform

DIRECT RAMP FROM NEGLEY AVENUE

- Deters jaywalking by moving the end of the ramp closer to the crosswalk
- Provides an easier, more direct route to the station

MEDIAN BARRIER

- Deters jaywalking
- Helps to calm traffic
- Provides visual definition to the station area

EXTENDED SHELTER

- 90'-120' canopy provides cover for on-boarding of two queued articulated buses

EXISTING 8' WALL

- The existing shelter structure is partially embedded in the wall
- Provides rear wind screen
- Available surface for signage and branding

OPEN SIDE AND REAR

- Keeps shelter open for easy access at plaza

COVERED BICYCLE PARKING

- Integrated into shelter structure
- High capacity
- Includes an integrated tool station

GLASS ENCLOSURE

- Adds transparency to enclosure
- Provides wind screening for user comfort

PICK UP AND DROP OFF AREA

- Provides space for three automobiles to pick up and drop off
- Room for expansion should there be an autonomous vehicle induced mode shift

3.2 SITE

PUBLIC ART

Public art, such as sculpture, could be used to add uniqueness and interest to the Negley Station upper and lower plazas.

Public art, such as mosaics or murals, could be used to add uniqueness and interest to the Negley Station platform areas.

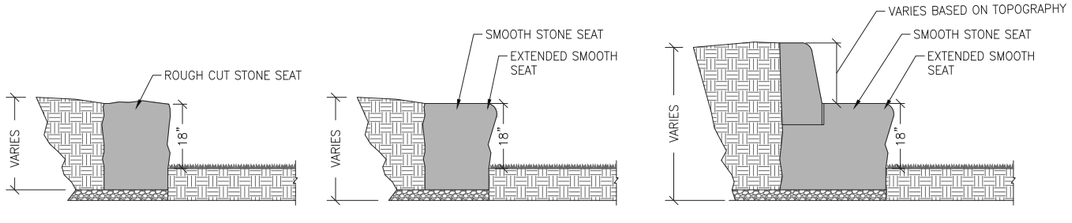
SITE FURNISHINGS

Examples of seat walls that are integrated with plaza landscaping.

An example of a seat wall that is a sculptural element of a public plaza.

An example of a seat wall that is integrated in a retaining wall.

A zoom in of the site plan showing the approximate location of the conceptual sections illustrated below.



Conceptual sections through the proposed seat walls in the lower plaza show three alternatives for this site element.

SITE

SITE FURNISHINGS

Smaller scale light fixtures can define the boundary between the street and the plaza. They provide illumination and act as a welcoming beacon to the station area. Source: Forms + Surfaces

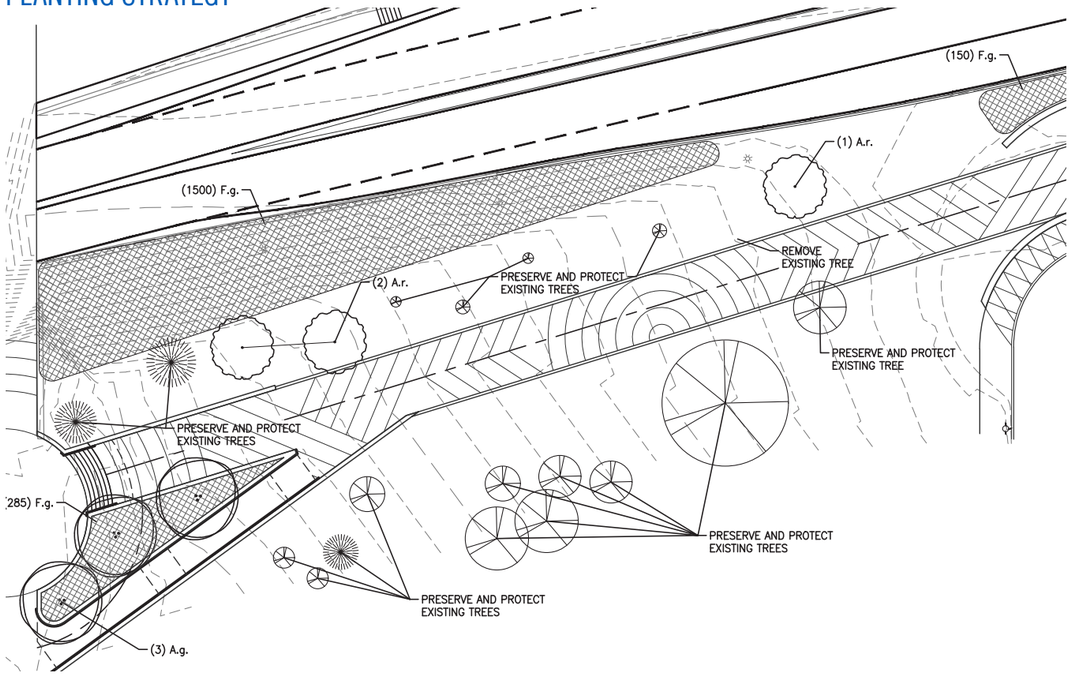
Streetlights should be cleanly designed and can be consistent at Negley Station as well as near all Port Authority stations.
Source: Forms + Surfaces

Simple stationary seating such as this cast concrete bench is easy to maintain.
Source: Tectura

The iconic bicycle garage at East Liberty Station is able to store a high capacity of bicycles in a compact, covered space.

Bicycle storage can also be used to reaffirm station branding through shape and color. Standalone bicycle locking stations can also help to define the extents of the station area. Source: Forms + Surfaces

PLANTING STRATEGY



Qty	Key	Botanical Name	Common Name	Size	Comments
3	A.g.	*Acer griseum*	Paperbark Maple	2" cal. B&B	Disease free
3	A.r.	*Acer rubrum* "Franksred"	Red Sunset Red Maple	2-1/2" cal. B&B	Disease free
1935	F.g.	*Festuca glauca* "Elijah Blue"	Elijah Blue Fescue	#1 cont.	18" O.C. Triangular Spacing

Acer griseum
Paperbark Maple

Acer rubrum "Franksred"
Red Sunset Red Maple

Festuca glauca "Elijah Blue"
Elijah Blue Fescue

SITE

WAYFINDING

Wayfinding, the practice of using signs, maps, and other graphics and audible methods to convey location and direction to travelers, is an important component of the overall plan. Within the surrounding neighborhoods and station area, a coordinated and easily navigable wayfinding and signage system will assist transit users to reach their destinations. Any wayfinding methods used in conjunction with Negley Station will need to adhere to the most recent Port Authority graphic standards for signage. Wayfinding elements will also need to be congruent with the overall Negley Station aesthetics. Installation of wayfinding elements at key intersections let people know the direction and proximity of a nearby rapid transit station. A comprehensive wayfinding strategy may further improve walkability by helping pedestrians navigate to key destinations throughout the station area.

Over 70% of users of Negley Station travel a distance less than one mile to get to the station. Additionally, the majority of those users either walk or ride a bicycle to the station. Though current users of the station may be familiar with the neighborhood, new residents and visitors would benefit from directional signage. Proper wayfinding elements might leverage new use of Port Authority transit as the area continues to redevelop and attract new visitors and residents.

Negley Station is near, but not directly adjacent to, three major retail corridors: Ellsworth, Baum, and Centre. The station sits below the street level of its namesake road, Negley Avenue, and can be difficult to spot if unfamiliar with the area. Improved wayfinding can help increase awareness of the proximity of the station to the many users of these three highly trafficked corridors.

New wayfinding and information signage (left) is being deployed at East Busway stations to replace older signage (right). The new signage is capable of including information screens in addition to static maps. One notable upgrade with the new signage is the prominent Port Authority branding and colors.

STATION AREA WAYFINDING CONCEPTUAL MAP

A conceptual map of key locations for on-site and off-site wayfinding.

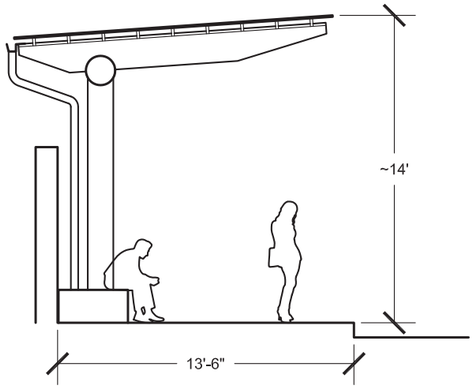
3.3 STRUCTURE

The conceptual shelter design for Negley Station seeks to build on the successful attributes of the recently reconstructed East Liberty Station which is the next station to the east. Thus, a modified translucent canopy design allows Negley Station to achieve a similar look and feel as East Liberty Station, helping the Port Authority to curate a consistent identity along the East Busway. This also provides the opportunity for modularity and economy of scale for both construction and routine maintenance.

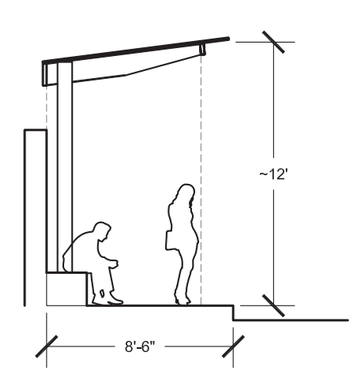
Successful qualities at East Liberty Station that should be echoed at Negley Station:

- East Liberty Station is bright and airy. The open design and translucent roof panels make the station platforms feel inviting and safe.
- East Liberty Station uses solid concrete benches with inset wood slats. They are rust-resistant and do not collect refuse underneath. Wood is also a preferred seating surface for thermal comfort.
- East Liberty Station has staircases to both inbound and outbound platforms, making access both convenient and easy to understand.
- The design language is clean and simple, allowing Port Authority branding to stand out.
- Negley Station should be sized to use the same or similar components, but scaled down to fit within the available space and neighborhood context.

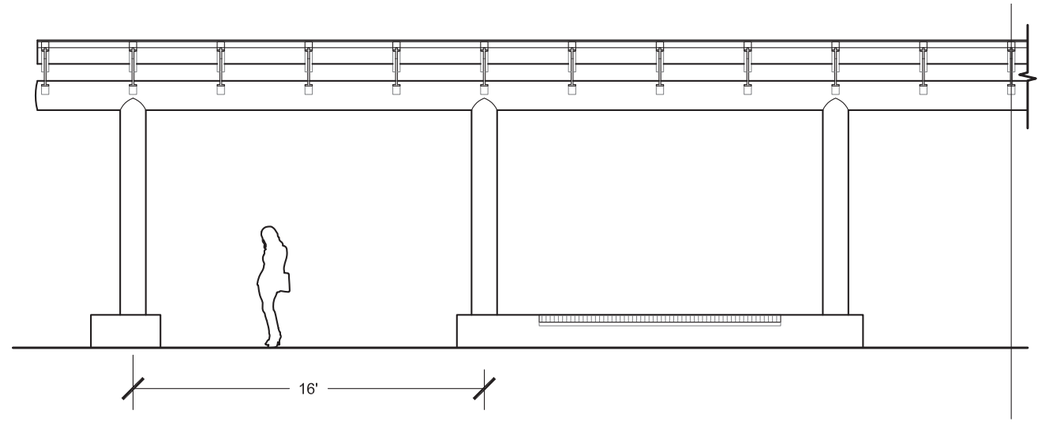
The canopies at East Liberty Station are translucent, and fixtures such as security cameras, platform lighting, and benches are integrated into the canopy structure.



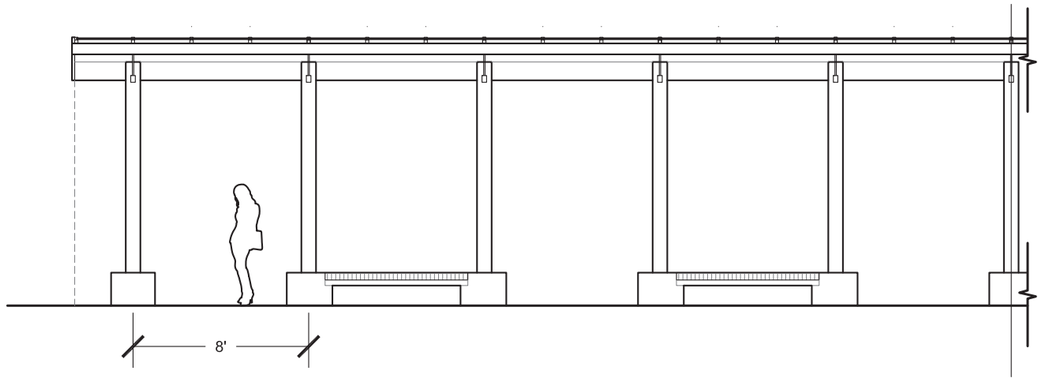
4 SECTION - EAST LIBERTY
SCALE: 3/16" = 1'-0"



2 SECTION - NEGLEY
SCALE: 3/16" = 1'-0"



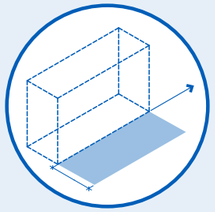
3 ELEVATION - EAST LIBERTY
SCALE: 3/16" = 1'-0"



1 ELEVATION - NEGLEY
SCALE: 3/16" = 1'-0"

STRUCTURE: PRINCIPLES

Access + Boarding



Ideal access and boarding conditions should consider:

- Porosity and clearance for rider mobility.
- 8’ unobstructed zone for platform + ramp.
- 10’ minimum distance from crosswalk for near-side stops.
- Bus size and route frequency.

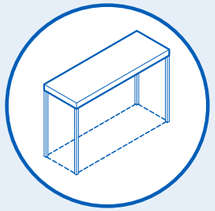
Existing Condition at Negley Station

- Outbound: rider access limited to one side by earth berm at rear and far side of shelter
- Inbound: constrained by existing rear wall; 8’-9’ of platform width between wall and curb necessitates less obstruction by shelter

Compared to the New East Liberty Station

- Outbound: free access from the rear and sides
- Inbound: constrained by existing rear wall; platform area width remains generous for increased flow in front area of shelter

Shelter



An ideal shelter should:

- Provide rain cover and sun shade.
- Consider location, ridership data, bus size, and bus frequency to determine appropriate coverage area.
- Where appropriate, provide a cantilevered roof to provide additional shading.

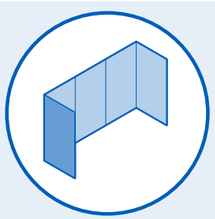
Existing Condition at Negley Station

- Expressive roof that incorporates decorative cornices and integrated art/design

Compared to the New East Liberty Station

- High-redundancy structure with translucent roof panels; prioritizes rain cover, openness, and natural light over shading

Protection



Ideal protection from the elements should:

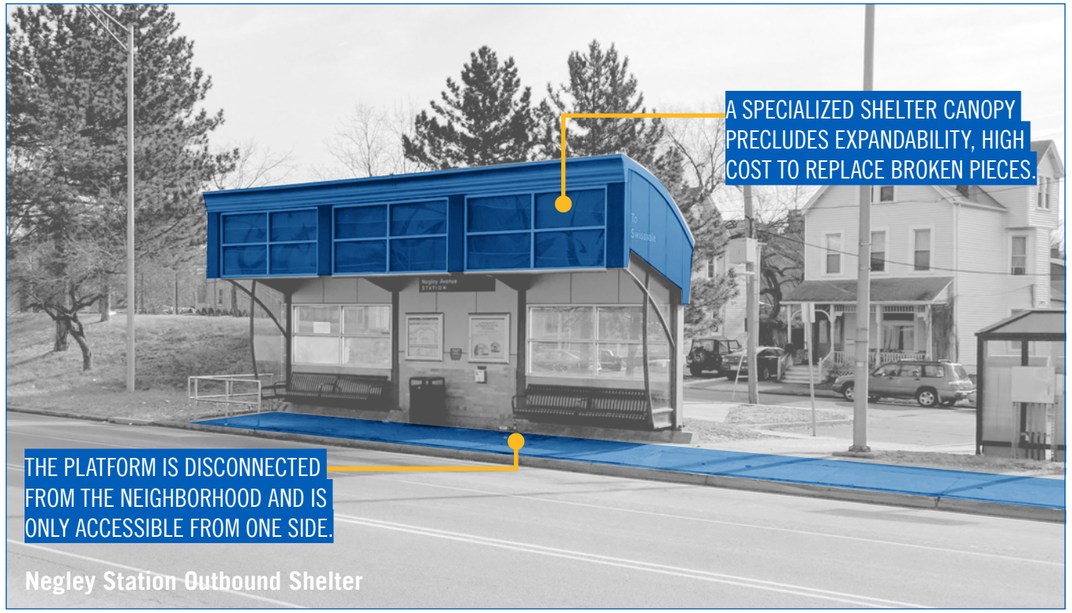
- Mitigate discomfort from noise and wind.
- Be implemented in a way that does not inhibit freedom or movement or obstruct sight-lines.

Existing Condition at Negley Station

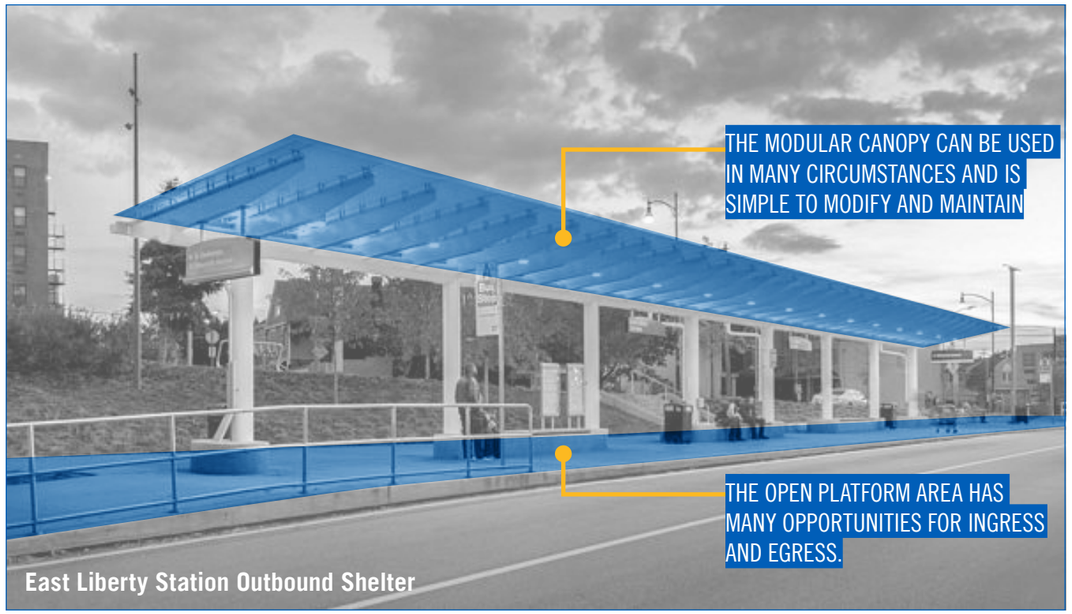
- 3-sided shelters provide increased comfort from wind but obstruct movement at shelter sides

Compared to the New East Liberty Station

- Existing brick wall at inbound shelter provides wind and noise screening at railway; no additional wind screening



Negley Station Outbound Shelter



East Liberty Station Outbound Shelter

STRUCTURE: PRINCIPLES

Visibility

Ideally, visibility at a station should:

- Consider visibility of oncoming buses and people.
- Create unobstructed views of oncoming buses from inside the shelter.
- Promote social safety by allowing visibility both into and out of the shelter through the use of transparent materials.

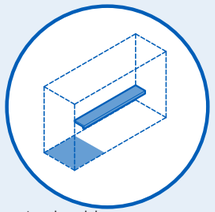
Existing Condition at Negley Station

- Good visibility of oncoming buses; windows in mostly solid rear wall allow limited view of shelter occupants

Compared to the New East Liberty Station

- Full visibility of oncoming buses and riders

Seating



Ideal seating elements should:

- Provide permanent sitting areas.
- Provide wheelchair zones of at least 2.5’ x 4’.
- Consider location, ridership data, and bus frequency to determine appropriate seating capacity.
- Provide leaning rails at 3.5’ above ground where appropriate on the interior and exterior of the shelter.

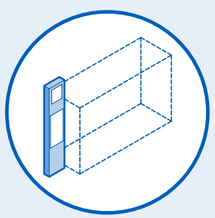
Existing Condition at Negley Station

- Steel slat bench attached to structure; back support for increased comfort

Compared to the New East Liberty Station

- Wood slat bench integrated into concrete structure; easy maintenance, attractive materials; no back support

Signage and Branding



Ideal signage and branding elements should:

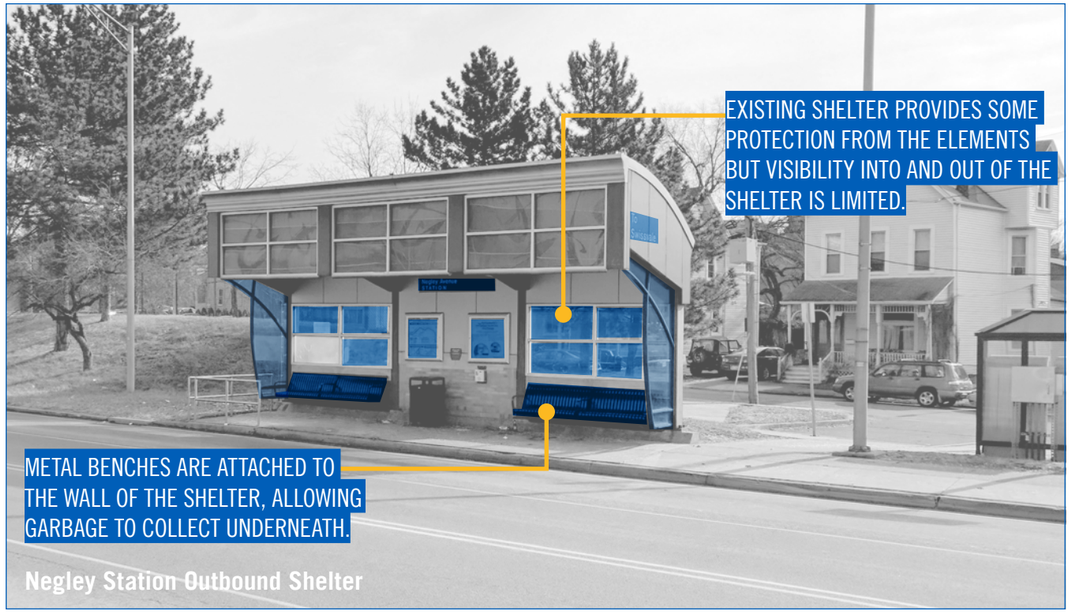
- Legibly display information for wayfinding and trip planning.
- Display stop and system information that includes stop name, route numbers, and system branding.
- Place system information and maps so that they do not obstruct important sight-lines in the station.

Existing Condition at Negley Station

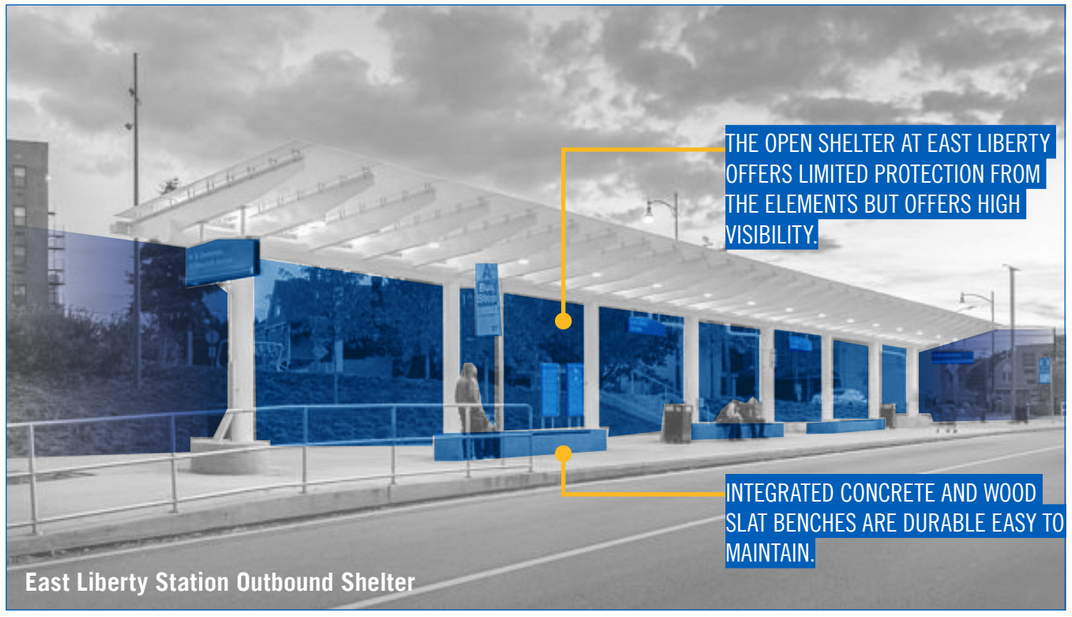
- System info centrally located; shelter walls act as signage

Compared to the New East Liberty Station

- System info centrally located; variety of signage legible from multiple viewpoints



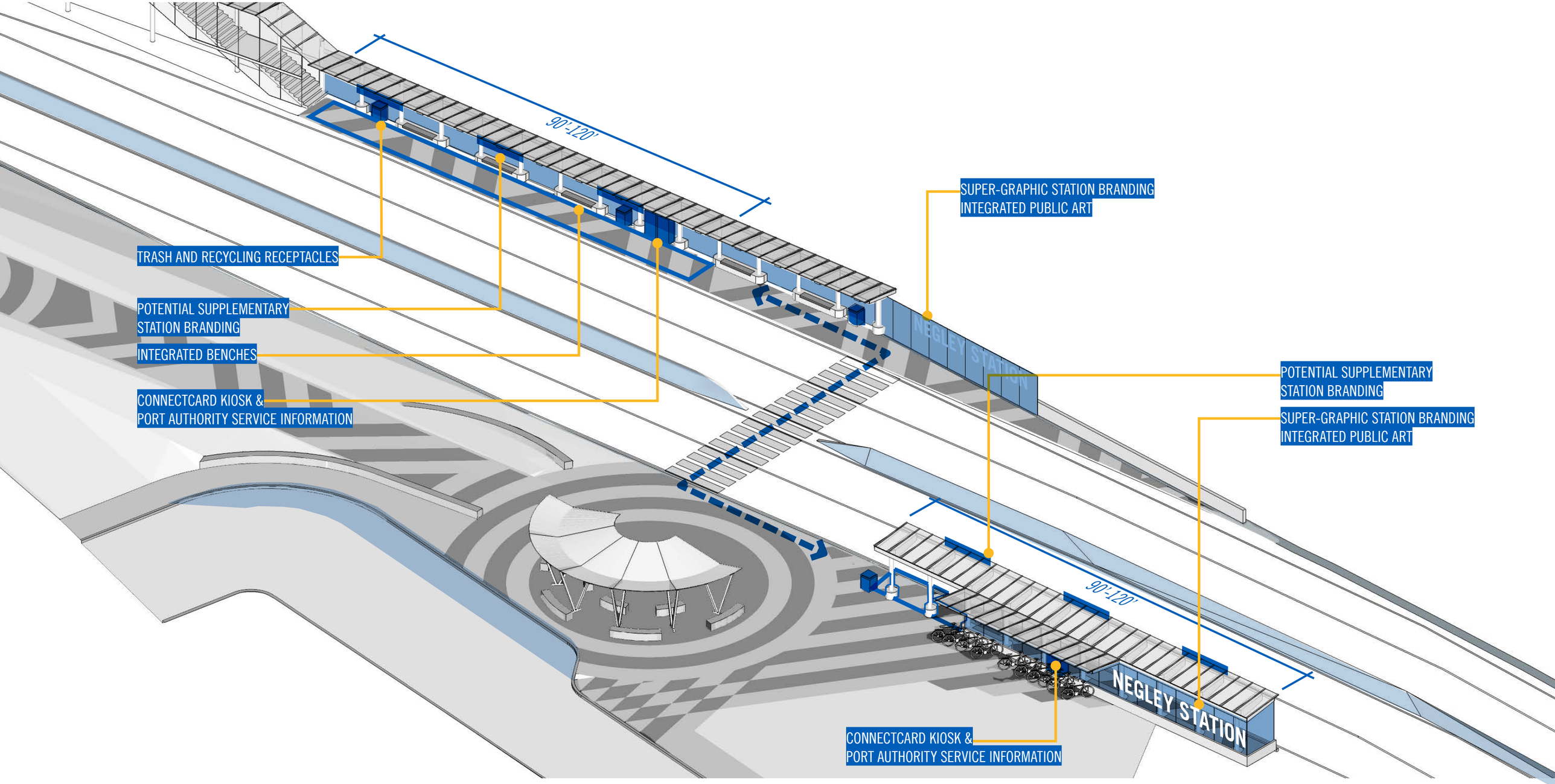
Negley Station Outbound Shelter



East Liberty Station Outbound Shelter

3. Station Design

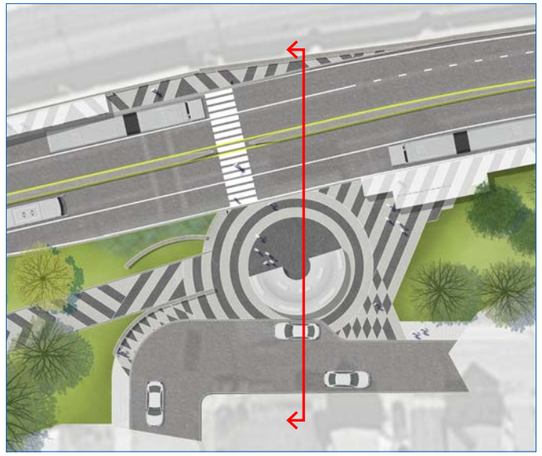
STRUCTURE: AMENITIES



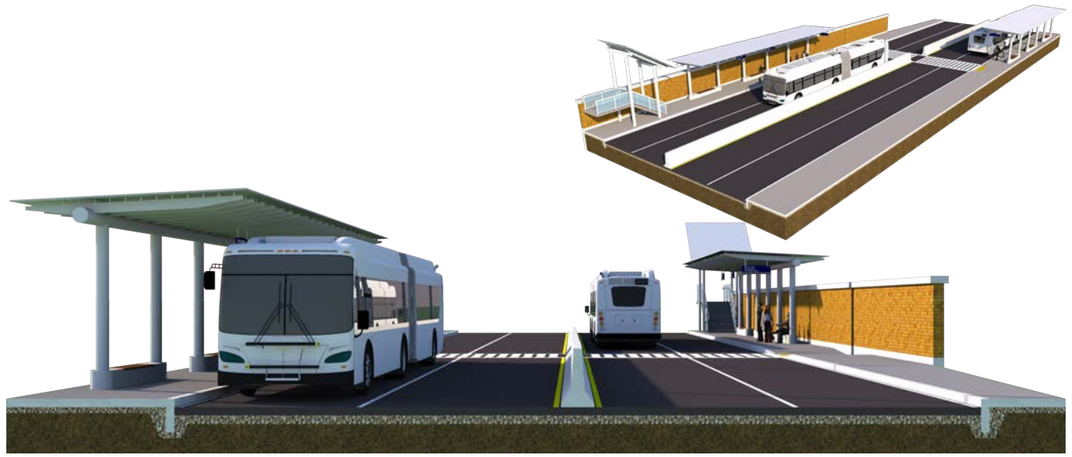
3.4 BUSWAY

Crossing the busway outside of the crosswalk is an ongoing concern. Proposed safety interventions include:

- The busway should be widened by three feet to include a jersey barrier between the inbound and outbound lanes. To accommodate this, the curb line along the southern edge of the busway should be shifted south.
- The outbound platform should be shifted further to the east such that two articulated buses may utilize the platform without obstructing the pedestrian crosswalk. New pedestrian warning beacons in the median jersey barrier could be activated by the users to signal their crossing to oncoming vehicles.
- The bus platforms should be connected by a wider, repositioned crosswalk.
- The extended ramp to Negley Avenue should begin adjacent to the sidewalk, discouraging users from crossing at a diagonal or at an unsafe location.
- Landscaping, such as a seat wall, should be installed between the ramp and the busway to encourage users to follow the walking safest route through the station area.



A zoom in of the site plan showing the approximate location of the conceptual sections illustrated below.



A isometric and typical section cut through the East Busway to show the proposed lane configuration with a jersey barrier median.

4.

IMPLEMENTATION STRATEGY

4.1 IMPLEMENTATION

The findings of the previous stages have informed the following implementation recommendations which address Port Authority's various roles in shepherding the ideas in this plan to completion. Strategies include design and construction as well as issues such as funding, inter-agency cooperation, public-private partnerships, and policy recommendations. We have also included recommended approaches to developer recruitment for early stage proposals.

The Port Authority of Allegheny County has prepared for TOD in the area by establishing TOD Design Guidelines, organizing and leading the necessary agencies and groups, informing the public, and developing plans that are market-ready and well-integrated with necessary infrastructure improvements. Implementation strategies address issues such as funding, inter-agency cooperation, public-private partnerships, and policy recommendations. This chapter is ordered according to the Port Authority's role in implementation.

1: DEVELOP

This role addresses proposed TOD projects that the Port Authority can lead.

- Transit-oriented Development north of Pierce Street

2: COLLABORATE

This role encompasses proposed projects and strategies that the Port Authority can influence through strategic collaborations.

- Transit-oriented development south of Pierce Street
- Improved streetscapes (along Maryland Avenue, Pierce Street, and Summerlea Street)
- Improved gateways (at Negley Avenue bridge, at Giant Eagle, at the corner of Negley Avenue and Centre Avenue, at the corner of Negley Avenue and Baum Boulevard)
- Improved connections (potential pedestrian bridge at terminus of Maryland Avenue, across busway)

3: DESIGN

This role reflects proposed projects and implementation strategies that are linked to property controlled by the Port Authority. Projects include:

- Station area improvements and shelter replacement
- Reconstruction of the stairwell to the inbound platform
- Enhanced access to the station
- Safety improvements on the busway

A view of the Negley Station pedestrian ramp to Negley Avenue from the inbound platform.

Potential Early Catalytic Projects 0-2 years

PAAC Property Station Area Improvements

Action Items:

- Refine station area conceptual design.
- Coordinate with PAAC internal design team.
- Allocate capital funding for priority improvements.
- Implement station improvements.

Ongoing PAAC TOD efforts

- Explore TOD-friendly zoning for the station area.
- Investigate Tax Increment Financing (TIF) as a tool to support TOD on this site.
- Develop guidelines for evaluating TOD projects.

Wayfinding

Action Items:

- Confirm sign locations with community and city.
- Consider pilot wayfinding program.

Public Realm Improvements along Negley Avenue

Action Items:

- Continue to coordinate with City of Pittsburgh regarding the Negley Avenue bridge; advocate for a design that improves conditions for pedestrians and cyclists as well as station visibility.

Mixed-Use Development North of Pierce Street

Action Items:

- Finalize Port Authority RFP procedures and issue RFP for potential development partners on Port Authority owned land.
- Coordinate infrastructure improvements.
- Stipulate affordable housing requirements, as applicable.
- Consider gap funding.
- Consider potential zoning changes.

Medium Term Projects 2-5 years

Public Realm Improvements along Pierce Street, Summerlea Street, and Maryland Avenue

Action Items:

- Work with city to incorporate green infrastructure along Maryland Avenue and Pierce Street, consistent with PWSA efforts and to mitigate flooding along Pierce.
- Support design of streetscape improvements.
- Further investigate support for potential one-way circulation.

Public Realm Improvements along Negley Avenue

Action Items:

- Initiate discussions with Giant Eagle regarding enhancement of the connection between its store at Negley Avenue.

Wayfinding

Action Items:

- Develop wayfinding signage design guidelines.

Long Term Strategic Initiatives 5+ years

Mixed-Use Development South of Pierce Street

Action Items:

- Continue conversations with stakeholders to promote TOD.
- Explore other ways municipalities can incentivize TOD.
- Explore TOD-friendly zoning for station area.

Improvements at Negley Avenue and Baum Boulevard

Action Item:

- Continue to advocate for public space on the triangular site at Baum, Negley, and Roup.

Pedestrian Bridge at Maryland Avenue

Action Items:

- Approach railroad regarding pedestrian bridge concept.
- Work with city and adjacent property owners (as applicable) to refine concept.
- Secure potential funding (e.g. Port Authority capital budget, TIF, CIP, etc.)

4.2 DEVELOP

In order to understand the underlying market feasibility at the site, the team looked at the region's competitive position and tested the market potential for various land. We also considered broader real estate issues, such as the implications of first floor commercial space. This section looks specifically at Port Authority owned parcels that could become sites for TOD.

THE RESIDENTIAL MARKET

The market rate rental housing market has experienced a significant influx of new housing construction over the past several years. With approximately 1,300 new rental units either proposed or under construction near Negley Station, and relatively high vacancy rates at a few of the new apartment projects built in the immediate area, it is suggested that new housing proposed at the site include a mix of market rate and affordable units to penetrate multiple market segments and price points. It has been pointed out consistently over the past few years that demand for affordable housing units greatly exceeds supply throughout the Pittsburgh region, and there are obstacles involved in construction of these units. Many of the challenges include addressing the funding gap typically associated with construction of affordable units; construction of these units has become more challenging due to an unknown future with respect to state and federal funding (e.g. low income housing tax credits). There are also City efforts in place to address the complex issue of affordable housing (i.e. City of Pittsburgh Affordable Housing Task Force). Other incentives and policy changes (e.g. developer requirement for the inclusion of affordable housing, allowing increased density) would obviously have an impact on potential development at the site. These development issues will be discussed in greater detail when addressing project implementation.

Transit-oriented development is, by virtue of its location next to transit, a logical and complementary location for affordable housing. Since the site is surrounded by existing moderate to low-density residential and commercial development, we would also recommend that residential development at the site not exceed five stories. This height recommendation also takes into consideration the existing change in elevation, with the busway at an existing elevation of about 14 feet below the elevation along Ellsworth Avenue.

THE OFFICE MARKET

While there has been little new construction of office space in the immediate area over the past several years, it appears that new supply may be catching up with demand, with over one million square feet of new office space slated for construction over the next few years, and about one-third of this new space targeted for the East Liberty/Shadyside area. As a result, it might be appropriate to include larger scale new office space (over 25,000 square feet) at the Negley Station site in the mid to long term, after the market has had time to absorb the new space coming on line. However, the TOD site at Negley is also appropriate for smaller-scale commercial office space commonly prescribed with TOD such as day care facilities, institutional or cultural space, and professional or medical office space. These uses will also help to drive traffic at the TOD site at Negley Station.

4. Implementation Strategy

THE RETAIL MARKET

The East Liberty market continues to transition, with new hotel anchors contributing to the location of new restaurants in the area. Developers have had some difficulty leasing some first floor retail along Penn Avenue in East Liberty. There has been traction in leasing space near Centre and Highland, with successful bar and restaurant tenants. The overall Shadyside retail market is relatively well leased, and rent levels are increasing. However, first floor commercial space near Negley Station and along the Centre Avenue corridor is challenged to some degree by a high vacancy rate. Despite these vacancies, the broader retail market within 0.25 miles of the site appears to be performing relatively well.

The Negley Station site, and potential TOD adjacent to the station, is constrained to some extent by visibility and accessibility, site location factors that are critical to most retail tenants. While transit ridership is an important demand factor, it is not likely to overcome a location with low visibility. However, there are certain types of retail that might be more compatible with a station location, especially as TOD takes hold.

First floor retail (e.g. mixed use development or first floor retail with residential units above) can also be difficult. It is oftentimes challenging for small scale retailing activities on the first floor to match the depth or dimensions needed for the residences above. These residential dimensions stem from a variety of factors including the market itself (1, 2, or 3 bedroom units), the kind of apartment (seniors, rental, other, and the need for light penetration into the units). Not infrequently these factors lead to dimensions for an average multi-unit building with a double loaded corridor of 60'-80' from front to back. Any depth of a store approaching these figures from the main sidewalk or street side creates too much depth and results in less functional and efficient space. For restaurants, the space needs can vary somewhat from traditional retail standards.

Financing for mixed-use buildings can also be an issue. Given some difficulties associated with ground floor retail, we would recommend any small scale retail be built adjacent to the station and perhaps next to, rather than on the first floor of, a residential development where it psychically can be accommodated. If this isn't an option the general feasibility of retail itself as a use needs to be carefully evaluated.

Some TOD guidelines prescribe commercial uses that are inherently transit-oriented (e.g. not oriented towards car-driven customers). The City of Austin TOD Guidebook lists potentially transit-oriented uses such as health clubs, personal services, restaurants, day care facilities, coffee shops, local pubs, outdoor cafes, and financial institutions. Given proximity to the commercial district along Ellsworth Avenue, proposed new transit-oriented development, and proximity to the station, small scale commercial space in-line with the categories listed as transit-oriented are logical.

Another potential strategy for phasing in retail at Negley Station is being tested at the Grosvenor-Strathmore Metro station in Bethesda, Maryland and includes testing retail concepts with pop-up retail kiosks (in this case the retail shops are housed in old transit cars). The stands are open from 3:30 to 7:30 pm on select days adjacent to the Metro stop. Retail concepts currently being tested include a florist, clothing shop, and bakery.

DEVELOP: ZONING IMPLICATIONS

TOD OPPORTUNITY: PROPERTY EAST OF NEGLEY STATION AREA AND NORTH OF PIERCE STREET

Existing Land Use:	Residential
Existing Zoning:	R1A-VH, Single Unit Attached Residential Very High-density
Estimated Acreage:	0.25
Ownership:	PAAC, Standard Realty, and Thomas Seabrooke.

Based on the market implications and the site configuration, it is recommended this TOD opportunity site, which includes Port Authority owned property, be developed as multi-family residential, including a mix of both market rate and affordable housing units. The development should be consistent with the surrounding development framework in terms of density and not exceed five stories in height. The development should include a mix of uses, with commercial uses facing Pierce Street, ideally including those uses that are consistent with TOD and not reliant on high traffic areas (e.g. personal services, day care facilities, financial institutions). The development could also include less permanent retail kiosks near the station area itself.

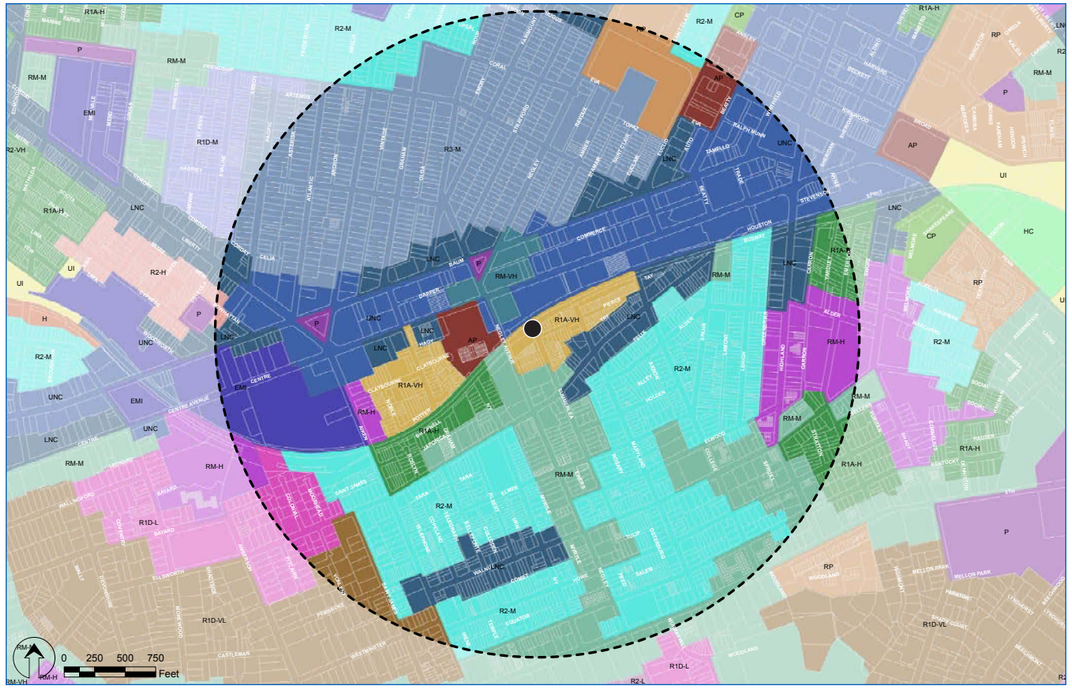
The recommended land use for the site would require rezoning to a mixed-use district and inclusion as part of a TOD zoning overlay district. An overlay district could exclude those uses that are not TOD friendly (e.g. low rise buildings with stringent parking requirements, drive through retail) and also prescribe building proportions, densities, and parking ratios that are consistent with TOD. For example, with respect to density, it has been estimated that 12 to 60 dwelling units per acre is required to ensure pedestrian friendly environments. The Port Authority is currently working with municipalities to investigate opportunities to implement TOD-friendly zoning in station areas throughout its system.

ZONING CODE AND PARKING STANDARDS

Proposed TOD at Negley should:

- Include adequate, preferably structured, parking facilities that do not dominate the transit station area or consume large amounts of land.
- Reduce or eliminate off-street parking requirements for developments within easy walking distance of transit stations. Many TOD ordinances have reduced parking by 25 percent or more, depending on how high the “standard” requirements are.
- Place a cap (maximum limit) on the amount of surface parking that may be developed. Some ordinances have established caps of 125 percent above the required minimum, or have set the typical minimum as a maximum, while permitting a reduction in parking.
- Encourage shared parking between businesses when peak times or hours of operation differ.
- Limit, or price to discourage, all-day parking in transit station core areas. Encourage the use of short-term on-street parking.
- Locate surface parking to the rear of buildings or in the interior of blocks. Parking access and parking areas should not occupy more than one-third of the street frontage per block.
- Screen surface parking from view with low decorative fences, walls or hedges.
- Require internal landscaping and recognizable, well-lighted pedestrian paths within large parking lots.
- Incorporate green infrastructure to manage stormwater, in coordination with the Pittsburgh Water and Sewer Authority.

4. Implementation Strategy



Existing Negley Station Area Zoning Map

Half Mile Radius

AP, CP, EMI, H, HC, LNC, P, R1A-H, R1A-VH, R1D-H, R1D-L, R1D-M, R1D-VL, R2-H, R2-L, R2-M, R2-VH, R3-M, RM-H, RM-M, RM-VH, RP, UI, UNC

Zoning Classification	Permitted Uses	Allowable Density	Height	Parking Requirements
R1A-VH, Single Unit Attached, Very High-density	One dwelling units that are attached to one or more dwelling units by a party wall or separate abutting wall.	Min. Lot Size: 1,200 SF Min. Lot Size per Unit: 400 SF	40’ Not to exceed 3 stories	Minimum off-street: 1 per unit
LNC, Local Neighborhood Commercial District	Residential (single and multi-unit), limited restaurant and retail, medical office, limited office, day care, financial institutions, cultural service, community center, library. (TOD-friendly uses noted, several other uses also permitted)	Min. Lot Size: 0 Max. F.A.R.: 2:1 Max Lot Coverage: 50%	45’ Not to exceed 3 stories	When 2 or more uses are located within the same development, parking schedule applies, or shared parking plan can be submitted.

To encourage Transit-oriented Development, parking standards could be adjusted to take transit usage into account.

DEVELOP: BUILDING RELATIONSHIPS

THE RFP PROCESS

The Port Authority is in the process of developing and adopting TOD Request for Proposal (RFP) procedures. Once adopted, the Port Authority should issue an RFP for the proposed TOD site.

As part of the RFP process, prospective developer partners are being asked to align with the Port Authority's vision of the project. The Port Authority should initiate this process by sharing their prior analytical and planning work with interested teams. Developers should be asked to develop a fairly detailed development concept and financing plan, including the following components:

- A detailed description, and visual depiction, of the developer's project concept, including development program, schematic site and building sections and elevations, and phasing plans if any.
- A project budget, including all hard and soft costs by category.
- A marketing and leasing plan, including evidence of any tenant commitments.
- A proposed financing plan, including a statement of sources and uses of funds that clearly outlines the form, magnitude, and timing of any expected public resources, a multi-year cash flow analysis, and a statement of expected developer returns. Developers should demonstrate clear evidence of the capability of attracting sufficient equity and debt financing for the project.
- A project management plan, including a full description of the proposed development process, through final delivery of the completed project. This should include a detailed timeline and project schedule that clearly identifies the critical actions required by the Port Authority.

The RFP should also contain a complete description of the developer-selection criteria and the process by which developer partners will be selected. It is customary to interview short-listed teams and to visit their previous projects before making a final selection.

WORKING WITH THE DEVELOPMENT COMMUNITY

The Port Authority should continue to engage with key stakeholders and the public at appropriate times to discuss development plans and to establish a positive working relationship between all parties. Successful dialogue could improve the odds of achieving support for the development plan and development agreement.

While outside of Port Authority's domain, expedited development review is a powerful tool since developers often state that the lengthy permitting process can make TOD prohibitive. Since developers often cite the length of the review and permitting process as a barrier to implementing transit-oriented development, strategies such as one-stop TOD shops, removal or consolidation of steps in the review process (a "green tape" program), or conducting some of the permitting steps in advance of the development proposal can all serve as incentives for TOD. Similarly, team inspections allow the developer an assessment of all major permitting issues before a building plan is submitted for review. Along the same lines, reduced development fees also offer an incentive for developers involved in TOD.

The Port Authority should have flexibility when selecting a developer, and also incorporate potential fiscal and economic impacts into the overall assessment of the proposal. The Port Authority should work with the City to streamline aspects of the review process that may slow or discourage transit-oriented development. Finally, the Port Authority should be prepared to use a range of contractual agreements in formalizing a relationship with the chosen developer.

4. Implementation Strategy

ONGOING WORKING RELATIONSHIPS WITH ALLEGHENY COUNTY AND THE CITY OF PITTSBURGH

The Port Authority continues to work closely with the City of Pittsburgh to promote TOD, especially as it relates to station access. There needs to be an established working relationship between the City and the Port Authority so that the process can continue to gain momentum and all interests can be considered in negotiations moving forward. This relationship is particularly important as issues regarding station access and pedestrian safety in the station area frequently fall under the City's jurisdiction.

The Port Authority should also continue to engage with Allegheny County Economic Development regarding strategic developments near public transit.

OTHER TOD CHALLENGES

In some cases, mixed-use development can be difficult to implement. For example, it can be difficult to physically integrate ground floor retail with upper floor residential uses due to different space needs and configurations. Also, ground floor retail can remain vacant for several years due to insufficient market demand, compromising project cash flow. Moreover, some financial institutions remain reluctant to finance certain forms of mixed-use demand. It might be preferable in the early years to fill first floor retail with interim uses for nonprofits or community facilities such as childcare centers. In Denver, a form based code allows greater flexibility in defining what types of uses can be implemented in ground floor space.

4.3 COLLABORATE

PUBLIC REALM IMPROVEMENTS ALONG PIERCE STREET, SUMMERLEA STREET, AND MARYLAND AVENUE

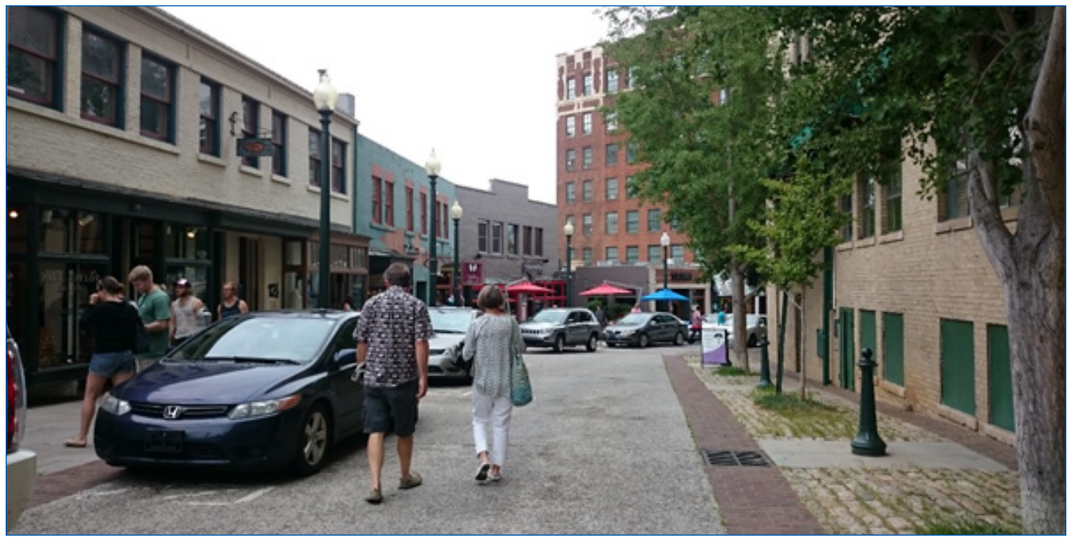
Public realm improvements proposed for the three access roads to the station (Pierce Street, Summerlea Street, and Maryland Avenue) represent a mid-term (2 to 5 years) priority project. Design solutions for these access streets include the introduction of green infrastructure along the right-of-way to address flooding issues along Pierce Street and the potential to expand sidewalks and alter traffic patterns to improve pedestrian and bicyclist flow. It is suggested that the City consider the concept of shared streets as it applies to the three access roads. Shared streets, which are more common in Europe and known as “woonerf”, tend to slow traffic speeds and create space for people as well as for cars. Characteristics common to shared streets include textured pavements for roadways, oftentimes flush with the curb, and the use of street furniture to help define the public spaces.

The consultant team also considered the possibility of one-way circulation to the station (in a one-way direction heading westbound along Pierce Street in order to enable drop-offs and pick-ups). Today Pierce Street functions as a 2-way yield street given narrow lane widths and relatively low traffic volumes. Also, the bollards placed at the end of Pierce Street to prevent through traffic should be removed permanently.

One-way circulation would help enhance pedestrian safety by:

- Limiting pick-ups and drop-offs to one side of Pierce/Summerlea.
- Avoiding any pedestrian street crossings during pick-ups and drop-offs.
- Eliminating any sight distance concerns around the station by reducing potential vehicle conflicts.
- Reducing chances of side-swipe collisions with parked cars.
- Reducing the number of vehicular movements at the intersections and decreasing traffic congestion. Because both Maryland and Summerlea meet Ellsworth at all-way stop signs, there are no sight distance or pedestrian safety concerns introduced by making Summerlea one way.

The conversion to a one-way street would require agreement by 70% of the impacted property owners. This would require a significant outreach effort in order to reach this level of consensus. Also, should TOD occur along Pierce Street, a traffic study would need to be performed as part of the planning process, thus addressing circulation issues. The City or future developer should examine the needs in this area and identify opportunities for improving pedestrian safety through changes to traffic patterns or the right of way. Streetscapes should be designed to maximize space for pedestrians and stormwater capture while encouraging slower vehicle speeds (shared car and bicycle right of way is appropriate here). One strategy for accomplishing this could be the conversion of Maryland, Pierce, and Summerlea (in the blocks adjacent to the station) to a one-way loop. All options should be considered.



Shared Streets example, Asheville, North Carolina.

PUBLIC REALM IMPROVEMENTS AND WAYFINDING ALONG NEGLEY

Public realm improvements along Negley Avenue present a mid to long-term opportunity and are linked, in part, to planned improvements to the Negley Avenue bridge. The Port Authority should continue to work closely with the City of Pittsburgh to coordinate desired access improvements at the station, including construction of the staircase from Negley Avenue to the inbound platform. The Port Authority should also advocate for improved pedestrian/bicycle access along Negley Avenue given its importance as a key access point to the station. Currently, the travel lanes are 15 feet wide; the street width could be reduced (11 foot minimum) in order to expand the sidewalk width and enhance pedestrian safety. The Port Authority should also continue to work with the City of Pittsburgh to improve pedestrian crossings at the Negley Avenue/Centre Avenue intersection. Enhanced wayfinding improvements at key gateways should also be included as a mid to long-term opportunity for the Port Authority. The Port Authority should continue conversations with local advocacy groups such as the Shadyside Action Coalition and the Baum Center Initiative to possibly develop a pilot wayfinding program for Negley Station.

GATEWAY IMPROVEMENTS AT NEGLEY AND BAUM

As already indicated, the Negley Avenue and Baum Boulevard intersection is an important access point for pedestrians traveling to Negley Station. In the long-term, the Port Authority should work with the University of Pittsburgh, the property owner, to consider improvements to the current property that includes a rental car facility. Improvements could include improved pedestrian access along the edges of the site, as well as potential conversion of the property as a public amenity.

POTENTIAL PEDESTRIAN BRIDGE CONNECTION FROM MARYLAND AVENUE TO CENTRE AVENUE

The busway presents a physical divide between the Baum Boulevard/Centre Avenue corridors and the station itself; a new pedestrian connection across the busway and rail lines at the end of Maryland Avenue would significantly improve circulation and access to Negley Station. Increased pedestrian traffic along Centre Avenue would also potentially improve commercial opportunities and street front leasing along portions of Centre Avenue that are currently underutilized. Due to the different stakeholders involved, including the railroad, a new pedestrian bridge at Maryland is considered a long-term opportunity.

POTENTIAL TRANSIT-ORIENTED DEVELOPMENT SOUTH OF PIERCE STREET

Given the proximity to other commercial districts (e.g. along Ellsworth Avenue), in addition to the proximity to the station, it is recommended that if the property located adjacent to Pierce Street (to the south) and adjacent to Maryland Avenue (to the west) is to be redeveloped, that it be developed as mixed-use TOD. It is recommended that potential development in this location focus on medium density residential close to the station, transitioning to commercial development along Maryland Avenue and approaching Ellsworth Avenue. It is also recommended that a new structured parking facility be considered in order to support the new TOD and also to accommodate users at shops and restaurants along Ellsworth Avenue. Additionally, green infrastructure could be incorporated along and adjacent to Maryland Avenue in order to capture street runoff and also as part of larger watershed efforts by the Pittsburgh Water and Sewer Authority to address stormwater issues along Maryland Avenue and south of Ellsworth Avenue. Since property ownership within this area is fragmented, we would suggest that the Port Authority continue to work with the relevant stakeholders to advocate for TOD moving forward. Large scale mixed-use development is complex and can take several years to come to fruition.

4.4 DESIGN

STATION AREA IMPROVEMENTS

The station area improvements proposed in this plan will continue to be vetted by the Port Authority. As part of this process, subject to budgeting approvals and limitations, the Port Authority will continue to prioritize and fund station design and TOD projects through future phases. Recommended themes which are central to the station area design include the following:

- A direct and pronounced pathway which connects Negley Avenue with Negley Station. The pathway should accommodate both pedestrians and bicycles and should extend to a length which safely accounts for the change in elevation from the Negley Bridge to the station. An expanded platform at Negley Avenue should announce the connection to the station and will also provide improved space for the bus stop location. It is also recommended that seat walls be incorporated into the design near the bottom of the pathway in order to deter users from crossing the busway outside of the designated crosswalk.
- Improvements near the station itself should include a covered waiting area near the existing traffic circle at the station, as well as a covered area for bicycle racks and the Connect Card booth location.
- Public art should be incorporated at and near the station platforms in order to increase visibility to the station itself.
- An outdoor seating area adjacent to the proposed TOD site (located to the east of the station area) should be considered in order to encourage and facilitate the development of commercial space adjacent to the station area itself.
- Improvements and enhancements should be made to the bus canopy structures at both the inbound and outbound platforms.

Similarly, several improvements are suggested for the busway, with a focus on improving safety as transit users cross the busway. Improvements proposed for the busway include:

- Construction of the stairway which previously linked the inbound platform with Negley Avenue.
- Construction of a new crosswalk and jersey barrier along a portion of the center of the busway.
- Introduction of new flashing beacons at the crosswalk.

COST ESTIMATE

Preliminary cost estimates for the projects enumerated above include the following (note that the cost estimates are for construction only and do not include costs for demolition, soft costs, contingency, and other agency coordination). It should be noted that these are cost estimates only and that more detailed estimates would be derived once the plans are advanced beyond conceptual design.

- Bus canopies (2): $500k - $600k
- Plaza shelter: $400k - $500k
- Site/Civil: $790k - $1M
- Stair structure (already prioritized for funding in PAAC Capital Improvement Plan): $1M - $1.25M

Negley Station Conceptual Plan

Station Area Perspective from upper plaza looking toward lower plaza.

4.5 FINANCING OPPORTUNITIES

OPPORTUNITIES TO FILL THE FUNDING GAP AND IMPROVE OVERALL PROJECT FEASIBILITY

Development costs can be reduced through the use of development subsidies, or grants. Project funding grants typically originate at the state or federal level under the auspices of various programs for infrastructure development, targeted economic development funds, etc. Grants are often used to fund a part of the project that is likely to produce public benefits, such as parking facilities and infrastructure. It may be possible to apply Federal Transit Administration (FTA) grants to help fund needed infrastructure improvements (e.g. parking structures) that might be included as part of the TOD at Negley Station.

Infrastructure is a key development hurdle and one of the most effective forms of increasing project feasibility is through public sector financing and construction of new infrastructure. Capital Improvement Program funding is a traditional source of financing for infrastructure associated with TOD, including improvements to the existing transportation network. The City of Pittsburgh would have to make transit-related improvements a priority among other necessary infrastructure improvements in order to ensure the infrastructure needed to support new TOD is funded through these kinds of competitive mechanisms.

Property taxes are one of the most important operating costs for developers. Tax abatement or tax exemption programs can be used to help defray operating costs. In many cases, property taxes will be phased in over time as the project becomes more successful. The City of Pittsburgh already has more than one program that offers tax abatements. The Local Economic Revitalization Tax Act District (LERTA) was designed as an economic development tool by reducing the immediate tax burden on new development, with 10-year abatements offered on the incremental increase in market value.

In addition to subsidies and abatements, risk reduction techniques include streamlining the development process.

FUNDING MECHANISMS AND INCENTIVES TO ENCOURAGE MIXED-INCOME HOUSING

TOD Fund

Other successful cities across the country have developed tools targeted to facilitating TOD. These can be helpful examples to look to as Port Authority and its partners consider ways to encourage TOD in the long-term.

The Denver TOD Fund was established to assist with the development of affordable housing near transit lines. The program in Denver was financed, in part, by a MacArthur Foundation grant (which was matched by the city). In the case of the Denver TOD, Enterprise Community Partners is the financial manager of the fund. Based in Columbia, Maryland, Enterprise is a non-profit that provides expertise for affordable housing by facilitating public-private partnerships with banks, governments, community organizations, and other appropriate partners. The Fund was established to take advantage of low real estate value near transit stations and preserve the opportunity for affordable housing before land values escalate. According to the Center for Transit-oriented Development, more than ten percent of low-income workers living near rail stations use transit as their primary commuter mode, or more than twice the rate of any other income group (National TOD Database, Analysis of US Census 2000).

Similarly, the Bay Area Transit-Oriented Affordable Housing (TOAH) Fund was established in the San Francisco area to provide financing for the development of affordable housing and community services near transit lines in the Bay Area. The Fund allows developers to secure affordable capital to purchase or improve land near transit stations for housing, retail, and other community services (e.g. child care).

The Port Authority could potentially look to work with other agencies such as Allegheny County and the City of Pittsburgh to look into establishing a TOD or similar fund to encourage affordable housing near transit locations. A first step could include meeting with Enterprise Community Partners to discuss the potential for establishing a similar fund in the county. In Denver, Enterprise provided grant funding and also invested through the Enterprise Community Loan Fund.

Inclusionary Zoning

The City of Pittsburgh Affordable Housing Task Force issued a report in 2016 which addressed housing affordability in the Pittsburgh region. According to the report, there is an affordability gap of 17,241 housing units for those households earning up to 50% of the median household income in the city.

The Affordable Housing Task Force recommended the adoption of “inclusionary housing mechanisms”, including inclusion of affordable units in all projects of 25+ housing units that receive some sort of public subsidy/benefit (e.g. tax abatements, density bonus, etc.). There may be an opportunity to stipulate affordable units when the Port Authority issues a Request for Proposal for Port Authority owned land.

As part of affordable housing inclusion in East Liberty (resulting in part from negotiations between residents of Penn Plaza and local government officials), the City and the Urban Redevelopment Authority (URA) have committed to requiring affordable housing units at the Mellon Orchard development on Euclid Avenue (20% of housing units at or below 50% Area Median Income (AMI) and 50% of the housing be at ranges of 30% to 120% AMI). The requirement is incentive based as the owners were given a zoning change for the development. The URA has also agreed to dedicate a portion of the increment created by the East Liberty Transit Revitalization District (ELTRIDA) to help finance the gap for development of funding of affordable housing in the greater East Liberty neighborhood.

Nationwide, the majority of inclusionary zoning laws apply to development of rental units that exceed a prescribed number and are typically triggered by some type of public benefit, which in many cases takes the form of a density bonus.

LIHTC

The Affordable Housing Task Force also recommended “increased utilization of the 4% Low Income Housing Tax Credit.” Based on a national survey of joint development projects that have produced affordable housing units (FRESC – formerly Front Range Economic Strategy Center, Enterprise Community Partners), the majority used Low-Income Housing Tax Credits (LIHTC) to finance a portion of the project. Tax credits are issued through the Pennsylvania Housing Finance Agency (PHFA) on a competitive basis to nonprofit and for-profit sponsors. All low-income projects must meet stated requirements regarding tenant income and the percent of units allocated to low income tenants.

There are two types of LIHTCs, depending on the type of construction. The 4% tax credit typically applies to rehabilitated housing and new construction that utilizes tax-exempt bonds, with the 9% credit used for new construction. The credit is claimed annually over a 10-year period and the credit is based on the project’s cost of construction. Since the process is typically lengthy (and complex), the cost of construction should be high enough to support the added cost. The credits are allocated through state housing agencies based on federally required allocation plans. Finally, the rental housing developers typically sell their credits to investors, who in turn receive equity in the project.

Other Programs

The Pennsylvania Department of Community and Economic Development offers several programs that assist with the financing of the development of low income housing, including the HOME program (which was used, in part, to help finance the East Liberty Place development). The program, which was established by the federal National Affordable Housing Act of 1990, finances construction, acquisition, and rehabilitation of rental and owner-occupied housing. Projects funded through the HOME program must meet federal HOME regulations.

A.

APPENDICES

A.1 GLOSSARY OF TERMS

Capitalization Rate

The ratio between the net operating income of a property and its fair market value or capital cost. The most common form of property valuation applies a capitalization (cap) rate to a property's income stream. The capitalization rate also reflects the perceived risk of the property's cash flow relative to other investments. For example, if a property is purchased for $900,000 and the property will generate $125,000 annually, the cap rate is $125,000/$900,000= 13.89%. However, if the property's value subsequently increases, the capitalization rate decreases as the property could be sold and the money invested elsewhere. Participants in the capital market seek out risk adjusted return across investments worldwide (reflected in the capitalization rate), while the property income stream, or NOI, depends only on what is happening in the local real estate market. In other words, property valuation or real estate value is derived from the intersection of the tenant space market and the investment capital market.

Floor Area Ratio (FAR)

The ratio of floor area to land area. It is determined by dividing the total floor area of the building by the area of the lot and is expressed as a percent or decimal.

Net Operating Income

Property income stream after property operating expenses have been paid or are deducted from gross income.

Pro Forma

A financial statement that projects gross income, operating expenses, and net operating income for a future period based on a set of specific assumptions.

Residual Land Value

The capitalized value of net revenues (or net operating income) minus development costs. The residual value represents the amount that the project could afford to pay for land.

Triple Net Rent

The lessee pays taxes, insurance, and maintenance, in addition to the base rent.

Wayfinding

Signs, maps, and other graphic, tactile, or audible methods used to convey location and directions to transit users.

A. Appendix

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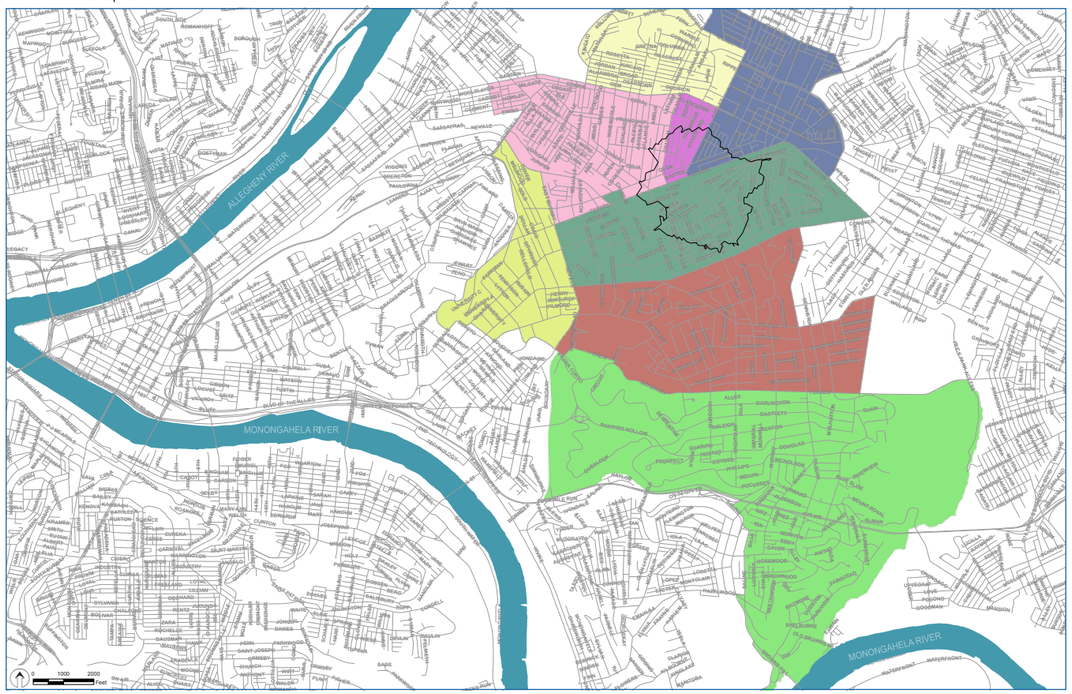
A.2 TOD REAL ESTATE MARKET SUPPORT

INTRODUCTION

The following real estate assessment is intended to provide a framework for what is feasible from a market perspective as transit-oriented development adjacent to or near Negley Station in Shadyside. The market assessment focuses on mixed-use, pedestrian friendly development which is consistent with TOD strategies and Port Authority's TOD Guidelines.

The assessment evaluates the region's competitive position and tests market potential for various land uses adjacent to the site. The analysis looks at the broader region, including the Squirrel Hill and North Oakland neighborhoods, as market influences often extend to the broader region. As part of the analysis, CSG looked at real estate indicators for commercial and residential land uses, spoke to brokers active in the area, and considered unique site requirements for TOD. The team also considered broader real estate issues, such as the implications of first floor commercial space.



[Figure 1] Negley Station Area Neighborhoods

Half Mile Walking Radius
East Liberty
Friendship
Bloomfield
Shadyside
North Oakland
Spring Hill North
Spring Hill South
Garfield

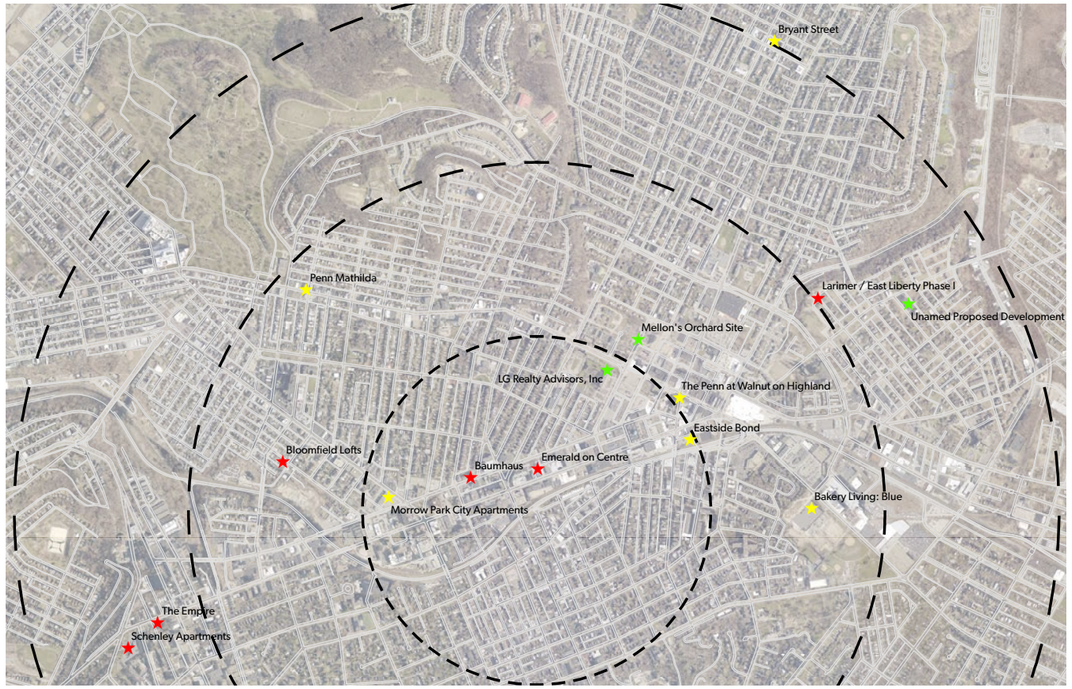
DEMOGRAPHIC TRENDS

Population Trends

The Negley Station area experienced a slight population decline of 0.04% from 2000-2010, which can largely be attributed to population declines in the East Liberty and Bloomfield neighborhoods. However, the Negley Station area stabilized between 2010-2016 and even experienced population growth across all of the neighborhoods associated with the larger Negley Station area. Population growth in this area is projected to continue through 2021 at rates similar to those experienced from 2010-2016.

Housing Trends

Squirrel Hill South and Shadyside are seeing small increases in total housing units. During this same time period, the area saw a decline in total vacant housing units, though in most cases the percent of vacant housing units increased. The percent of vacant housing units has continued to climb through 2016 in most neighborhoods within the Negley Station area. Vacant housing growth trends within these neighborhoods and the Negley Station area as a whole are projected to continue through 2021 at rates similar to those experienced from 2010-2016.



[Figure 2] New and proposed residential rental units located within 1.5 miles of Negley Station.

Half Mile - 1 Mile - 1.5 Mile Radius
Under Construction (2017)
Proposed Development (2017)
Newly Built (Last 2 Years) (2017)

Selected Geography	Population				Average Annual Growth Rate 2000-2010	Average Annual Growth Rate 2010-2016
	2000	2010	2016	2021		
Squirrel Hill North	11,395	11,363	11,576	11,611	-0.03%	0.05%
Squirrel Hill South	14,524	15,092	15,284	15,385	0.38%	0.11%
Shadyside	13,753	13,915	14,056	14,113	0.12%	0.07%
North Oakland	9,857	10,551	10,879	10,916	0.68%	0.06%
Bloomfield	9,089	8,442	8,716	8,884	-0.74%	0.32%
East Liberty	6,871	5,869	6,060	6,171	-1.56%	0.30%
Combined Total	**65,489**	**65,232**	**66,571**	**67,080**	**-0.04%**	**0.13%**

[Figure 3] Population Trends, Negley Station Area
Source: ESRI, GAI

TOD REAL ESTATE MARKET SUPPORT

Age Trends

As a whole, the Negley Station area is experiencing a shift in the age of its population which is projected to continue through 2021. This shift is moving from a younger population to an older population. In 2010, over 40% of the area's population was under the age of 24, that figure has fallen to just over 38% in 2016 and is projected to continue to decline into 2021 to 36%. While this trend may be partially attributed to the younger population aging in place, it may also be attributed to the college age population moving out of the area upon completion of its education. During the same time period (2010-2016) the age range of 25-44 and 65+ has seen small but steady increase, while the age range 45-64 has seen small but steady decrease.

Household Income Trends

The Negley Station area is projected to see household incomes increase over the next five years. Fifty-three percent of household incomes in the area were below $50,000 in 2016. This is projected to decrease to roughly 50% by 2021. The largest increase in household income is expected to be seen in the $100,000-$200,000 income range, which is projected to increase from 16.2% to 18.8%. The North Oakland and East Liberty neighborhoods have the highest percentages of their total populations, over 70%, earning less than $50,000 per year. Student populations can impact household incomes. Though students living in group quarters (campus housing) are not accounted for in household income values, students residing in off-campus apartments and other housing types are accounted for in household income.

Selected Geography	2000	2010	2016	2021	Average Annual Growth Rate 2000-2010	Average Annual Growth Rate 2010-2016
Squirrel Hill North						
Total Housing Units	3,968	3,892	3,958	3,986	-0.19%	0.28%
% Vacant Housing Units	5.2%	7.0%	7.8%	7.8%	2.77%	2.09%
Squirrel Hill South						
Total Housing Units	7,086	7,507	7,629	7,731	0.58%	0.27%
% Vacant Housing Units	4.1%	5.4%	5.2%	5.2%	3.50%	-0.62%
Shadyside						
Total Housing Units	8,451	8,610	8,780	8,896	0.19%	0.33%
% Vacant Housing Units	5.8%	6.7%	7.2%	7.5%	1.60%	1.73%
North Oakland						
Total Housing Units	4,003	3,761	3,775	3,789	-0.62%	0.06%
% Vacant Housing Units	9.1%	5.5%	5.0%	4.7%	-5.51%	-1.50%
Bloomfield						
Total Housing Units	5,432	5,136	5,368	5,511	-0.56%	0.74%
% Vacant Housing Units	10.8%	11.0%	11.3%	11.5%	-0.38%	1.26%
East Liberty						
Total Housing Units	4,062	3,519	3,681	3,787	-1.42%	0.75%
% Vacant Housing Units	14.2%	13.2%	14.3%	15.1%	-2.18%	2.21%
Combined Total						
Total Housing Units	**33,002**	**32,425**	**33,191**	**33,700**	**-0.18%**	**0.39%**
% Vacant Housing Units	**7.6%**	**7.7%**	**8.0%**	**8.2%**	**-0.10%**	**1.13%**

[Figure 4] Housing Unit Trends, Negley Station Area
Source: ESRI, GAI

Selected Geography	2010					2016					2021				
	0-14	15-24	25-44	45-64	65+	0-14	15-24	25-44	45-64	65+	0-14	15-24	25-44	45-64	65+
Squirrel Hill North	10.5%	42.2%	18.9%	16.8%	11.6%	9.9%	40.0%	21.5%	15.8%	12.8%	9.6%	38.8%	24.1%	14.1%	13.4%
Squirrel Hill South	13.8%	14.8%	32.6%	21.9%	16.9%	13.3%	13.1%	33.7%	20.9%	19.1%	13.4%	11.7%	34.5%	19.3%	21.1%
Shadyside	6.0%	26.0%	43.8%	13.7%	10.6%	5.8%	23.0%	46.2%	13.5%	11.5%	5.8%	18.9%	50.4%	12.6%	12.3%
North Oakland	1.2%	71.6%	10.6%	5.9%	10.8%	1.1%	71.5%	10.3%	5.7%	11.4%	1.1%	69.7%	10.7%	5.6%	12.9%
Bloomfield	7.9%	19.2%	38.3%	22.3%	12.3%	7.7%	17.5%	39.4%	21.6%	13.8%	7.7%	15.0%	42.1%	20.4%	14.9%
East Liberty	14.9%	14.7%	26.8%	28.5%	15.1%	15.7%	12.9%	27.5%	27.2%	16.7%	15.8%	11.9%	28.7%	25.4%	18.3%
Combined Total	**8.9%**	**31.7%**	**29.2%**	**17.3%**	**12.9%**	**8.6%**	**30.0%**	**30.6%**	**16.6%**	**14.2%**	**8.6%**	**27.8%**	**32.6%**	**15.5%**	**15.5%**

[Figure 5] Age Trends, Negley Station Area
Source: ESRI, GAI

Selected Geography	<15k	15-25K	25-35k	35-50k	50-75k	75-100k	100-150k	150-200k	200k+
Squirrel Hill North	10.5%	6.8%	6.4%	8.5%	11.6%	9.4%	14.1%	11.3%	21.3%
Squirrel Hill South	15.0%	9.7%	8.2%	9.5%	16.4%	10.4%	12.2%	6.4%	12.2%
Shadyside	17.8%	9.5%	8.5%	11.5%	11.0%	10.3%	13.1%	7.8%	10.5%
North Oakland	38.1%	12.9%	12.2%	10.4%	9.2%	4.4%	5.4%	3.1%	4.4%
Bloomfield	19.7%	14.1%	12.4%	14.6%	17.8%	11.0%	7.7%	2.0%	0.7%
East Liberty	30.0%	16.6%	16.4%	13.9%	9.8%	5.2%	4.4%	2.3%	1.7%
Combined Total	**20.2%**	**11.1%**	**10.0%**	**11.2%**	**13.1%**	**9.1%**	**10.4%**	**5.9%**	**9.0%**

[Figure 6] Household Income Trends, 2016, Negley Station Area Neighborhoods
Source: ESRI, GAI

Selected Geography	<15k	15-25K	25-35k	35-50k	50-75k	75-100k	100-150k	150-200k	200k+
Squirrel Hill North	9.3%	6.0%	7.6%	4.9%	11.1%	10.1%	15.2%	12.9%	22.9%
Squirrel Hill South	14.2%	8.9%	10.1%	5.2%	15.8%	10.4%	13.4%	8.3%	13.8%
Shadyside	16.8%	8.8%	11.5%	7.7%	9.7%	9.7%	14.6%	9.8%	11.5%
North Oakland	38.7%	11.8%	15.5%	7.0%	7.8%	4.8%	5.6%	4.3%	4.5%
Bloomfield	20.1%	13.1%	15.7%	10.9%	15.9%	11.6%	9.3%	2.5%	0.8%
East Liberty	29.3%	15.2%	22.5%	8.9%	8.8%	5.7%	5.0%	3.0%	1.7%
Combined Total	**19.6%**	**10.2%**	**13.0%**	**7.3%**	**12.0%**	**9.2%**	**11.5%**	**7.3%**	**9.9%**

[Figure 7] Household Income Trends, 2021, Negley Station Area Neighborhoods
Source: ESRI, GAI

TOD REAL ESTATE MARKET SUPPORT

RESIDENTIAL MARKET FINDINGS

Housing Tenure Trends

Housing in the Negley Station area is predominantly renter-occupied, a trend projected to continue through 2021. Nearby, Squirrel Hill North and Squirrel Hill South neighborhoods have historically experienced a more even distribution of owner and renter occupied housing compared to other neighborhoods within the area. However, both Squirrel Hill North and Squirrel Hill South have been experiencing increases in renter occupied housing in recent years.

Selected Geography	2000	2010	2016	2021
Squirrel Hill North	**3,761**	**3,620**	**3,650**	**3,675**
% Owner Occupied	56.4%	57.0%	53.9%	52.7%
% Renter Occupied	43.6%	43.0%	46.1%	47.3%
Squirrel Hill South	**6,795**	**7,098**	**7,235**	**7,327**
% Owner Occupied	43.6%	43.6%	40.8%	40.8%
% Renter Occupied	56.4%	56.4%	59.2%	59.2%
Shadyside	**7,962**	**8,037**	**8,145**	**8,227**
% Owner Occupied	26.1%	26.0%	23.4%	22.7%
% Renter Occupied	73.9%	74.0%	76.6%	77.3%
North Oakland	**3,638**	**3,554**	**3,586**	**3,610**
% Owner Occupied	24.2%	24.8%	22.8%	22.5%
% Renter Occupied	75.8%	75.2%	77.2%	77.5%
Bloomfield	**4,846**	**4,572**	**4,760**	**4,875**
% Owner Occupied	37.2%	33.8%	30.8%	30.4%
% Renter Occupied	62.8%	66.2%	69.2%	69.6%
East Liberty	**3,485**	**3,056**	**3,153**	**3,216**
% Owner Occupied	17.7%	16.1%	14.6%	14.5%
% Renter Occupied	82.3%	83.9%	85.4%	85.5%
Combined Total	**30,487**	**29,937**	**30,529**	**30,930**
% Owner Occupied	**34.3%**	**33.9%**	**31.3%**	**30.9%**
% Renter Occupied	**65.7%**	**66.1%**	**68.7%**	**69.1%**

[Figure 8] Renter vs. Owner Occupied Housing Trends
Source: ESRI, GAI

Building Permit Trends

While multi-family housing construction has picked up over the last three years in Pittsburgh, single-family housing construction has slowed. However, in 2015 and 2016 Pittsburgh captured a larger percentage of the multi-family and single-family housing construction activity in the county and the MSA than it has previously captured over the last 15 years. This indicates that higher density construction is shifting out of the suburban markets and into the urban market, and that lower density housing construction is slowing in the suburban markets.

	Pittsburgh, PA		Allegheny County		Pittsburgh MSA	
	SF	MF	SF	MF	SF	MF
2001	89	70	1,686	1,226	4,781	1,934
2002	145	496	1,898	1,508	5,232	1,896
2003	106	103	1,851	487	5,073	1,154
2004	131	15	1,850	613	5,484	1,301
2005	65	0	1,617	480	4,819	944
2006	123	6	1,750	393	4,377	1,329
2007	117	0	1,564	238	3,842	858
2008	185	0	1,241	214	2,965	512
2009	118	0	1,041	224	2,590	391
2010	147	0	1,201	27	3,185	225
2011	110	0	1,148	77	2,652	236
2012	291	0	1,453	254	3,138	579
2013	213	0	1,506	108	3,360	1,065
2014	89	249	1,352	1,243	3,095	1,450
2015	82	1,188	337	1,234	1,032	1,397
2016	63	373	332	408	999	510
Total	**2,074**	**2,500**	**21,827**	**8,734**	**56,624**	**15,781**
Avg Annual 2001-2016	**130**	**156**	**1,364**	**546**	**3,539**	**986**

[Figure 9] Building Permit Trends
Source: HUD, GAI

For Rent Apartment Market

The Shadyside and North Oakland neighborhoods account for almost 60% of the total rental apartment units in the area. The immediate Shadyside neighborhood recently added three new apartment properties; Eastside Bond completed its third building in September 2016 and is currently at 83% occupancy and actively leasing, Bakery Living Blue was completed in June 2016 and is currently at 78% occupancy and actively leasing, and Morrow Park was completed in August 2016 and is currently at 95% occupancy and actively leasing. The East Liberty neighborhood has the highest percentage of renter occupied housing units at 85%. Penn at Walnut on Highland was completed in June 2016 and is located in the East Liberty neighborhood and is currently at 85% occupancy.

The overall rental apartment market within the Negley Station area has a total occupancy close to 95%. The North Oakland rental apartment market has the lowest average vacancy rates within the Negley Station area, while the Squirrel Hill North neighborhood has the highest average rental rates. Throughout the Negley Station area rental apartment rates have been increasing over the last 3 years. The Bloomfield neighborhood has seen an increase of 38.30% in rental rates over the last 3 years, the largest increase of the Negley Station area neighborhoods, followed by Shadyside with an increase of 14.30%, North Oakland with an increase of 9.85%, East Liberty with an increase of 7.72%, Squirrel Hill North with an increase of 5.60%, and Squirrel Hill South with an increase of 1.64%. Overall, the Negley Station area has seen an increase in rental rates of 10.18% since the 4th quarter of 2013. This represents a relatively healthy growth rate and explains, in part, the significant new construction occurring in the area (as well as the move by developers to the rental market after the recession of 2008).

Apartment properties of 50 units or more within each of the Negley Station area neighborhoods are summarized in the table below. The East Liberty neighborhood has the most diverse mixture of unit types, 26% of the units are affordable, 26% of the units are mixed income, and 48% are market rate. East Liberty is also the only neighborhood within the Negley Station area to have mixed income apartments. Bloomfield, North Oakland and Squirrel Hill South have a mixture of market rate and affordable units, while Shadyside and Squirrel Hill North have only market rate units.

As shown in the table below, Forbes Terrace in the Squirrel Hill North neighborhood has the highest average rental rates at $2,391, the largest average unit size at 1,342 sf, is fully occupied and features 3 and 4 bedroom town-home style apartments. Fifth Neville in the Shadyside neighborhood has the highest average rent per square foot at $2.36 and is a traditional apartment building that features studios, one and two bedroom units. There are eight apartments included in the list below that are 100% occupied: Wendover in Squirrel Hill South, Forbes Terrace in Squirrel Hill North, Webster Hall Apartments in North Oakland, Fairfax Apartments in North Oakland, Pennsylvania in North Oakland, Melwood Center in North Oakland, Centre Court in Shadyside, and Georgian in Shadyside.

Market Area	Inventory	Total Vacancy	Units Under Construction	Avg. Rent
Squirrel Hill South				
4Q2016	1,952	6.4%	0	$1,118.00
4Q2015	1,952	5.4%	0	$1,141.00
4Q2014	1,952	6.8%	0	$1,133.00
4Q2013	1,952	6.8%	0	$1,100.00
Squirrel Hill North				
4Q2016	1,283	4.7%	0	$1,376.00
4Q2015	1,283	4.4%	0	$1,347.00
4Q2014	1,283	4.3%	0	$1,357.00
4Q2013	1,283	4.3%	0	$1,303.00
North Oakland				
4Q2016	3,976	3.3%	507	$1,048.00
4Q2015	3,976	3.6%	181	$1,030.00
4Q2014	3,976	3.9%	0	$993.00
4Q2013	3,976	4.3%	0	$954.00
Shadyside				
4Q2016	6,520	6.7%	0	$1,231.00
4Q2015	6,344	10.2%	176	$1,218.00
4Q2014	5,984	5.0%	360	$1,126.00
4Q2013	5,810	4.7%	174	$1,077.00
Bloomfield				
4Q2016	1,320	5.0%	18	$1,123.00
4Q2015	1,281	17.4%	39	$1,140.00
4Q2014	1,068	5.3%	213	$823.00
4Q2013	1,068	5.9%	0	$812.00
East Liberty				
4Q2016	1,803	4.7%	0	$1,047.00
4Q2015	2,043	5.7%	78	$993.00
4Q2014	2,043	6.1%	0	$979.00
4Q2013	1,991	5.5%	52	$972.00
Friendship				
4Q2016	634	5.2%	0	$894.00
4Q2015	634	4.6%	0	$927.00
4Q2014	634	4.7%	0	$926.00
4Q2013	634	4.7%	0	$919.00
Garfield				
4Q2016	406	2.4%	0	$784.00
4Q2015	406	7.7%	0	$780.00
4Q2014	406	2.6%	0	$755.00
4Q2013	406	2.9%	0	$751.00
Combined Area				
4Q2016	17,890	5.4%	0	$1,147.00
4Q2015	17,597	7.7%	293	$1,135.00
4Q2014	17,024	5.0%	573	$1,078.00
4Q2013	16,798	5.0%	226	$1,041.00

[Figure 10] Rental Market Indicators by Neighborhood, Negley Station Area.
Source: COSTAR, GAI

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Apartments with 50+ Units	Year Built	Units	Rent Type	Market	Vacancy	Avg Unit Size	Avg Eff Rent per Unit	Avg Rent per SF
Shadyside								
Fifth Neville	1950	78	Market	All	5.1%	542	$1,276	$2.36
5825 5th Ave	1968	125	Market	All	-	-	-	-
Woodland Manor Condominiums		67	Market	All	-	-	-	-
Arlington	1920	144	Market	All	2.1%	750	$1,156	$1.58
Shadyside Commons	1903	148	Market	All	6.8%	745	$1,461	$1.96
Amberson Gardens	1969	233	Market	All	5.2%	638	$993	$1.56
Hampshire Hall		50	Market	Student	6.0%	332	$570	$1.71
Centre Court	1946	61	Market	All	0.0%	448	$692	$1.55
Amberson Plaza	1972	138	Market	All	0.7%	702	$1,179	$1.68
Coronado		80	Market	All	5.0%	653	$851	$1.30
Gracen Court		118	Market	All	5.6%	-	-	-
The Kennilworth	1950	136	Market	All	7.4%	513	$784	$1.53
Centre Lofts	1890	88	Market	All	-	875	-	-
Claybourne Apartments		104	Market	All	1.9%	798	$1,036	$1.30
Devonshire Apartments		77	Market	All	2.6%	708	$702	$0.99
Cathedral Mansions		196	Market	All	3.6%	750	$1,038	$1.38
Georgian	1930	63	Market	All	0.0%	630	$994	$1.58
Ellsworth Towers	1963	50	Market	All	4.0%	585	$846	$1.45
Highwood	1935	57	Market	All	-	-	-	-
Frontenac Apartments		71	Market	All	5.6%	598	$976	$1.63
Bakery Living: Blue	2016	176	Market	All	21.6%	952	$1,112	$1.98
Bakery Living: Orange	2014	174	Market	All	10.3%	830	$1,745	$2.10
St. Regis		70	Market	All	5.7%	818	$1,224	$1.50
Amberson Towers Condominium		80	Market	All	-	-	-	-
Franklin West Apartments		411	Market	All	5.1%	-	$1,475	-
Kenmawr Apartments	1950	245	Market	All	2.0%	1,016	$1,676	$1.65
Morrow Park		213	Market	All	4.7%	684	$1,545	$2.26
Eastside Bond	2015	360	Market	All	16.9%	884	$1,822	$2.06
College Gardens		85	Market	Student	4.7%	1,000	$1,183	$1.18
East Liberty								
East Liberty Place	2011	54	Mixed	All	5.6%	818	$984	$1.20
Fairfield Apartments	2006	195	Mixed	All	1.0%	809	$777	$0.96
Essex House Apartments	1995	168	Market	All	0.6%	1,010	$1,430	$1.42
East Liberty Garden Apartments		127	Affordable	All	5.5%	-	-	-
The Penn at Walnut on Highland	2016	78	Market	All	15.4%	767	$1,614	$2.11
Walnut on Highland	2013	118	Market	All	4.2%	734	$1,687	$2.30
Mellons Orchard Apartments	1940	83	Market	All	4.8%	759	$526	$0.69
New Pennley Place		134	Affordable	All	4.5%	671	$878	$1.31
East Liberty Place South	2014	52	Mixed	All	9.6%	913	$1,202	$1.32
Penn Manor Apartments		74	Mixed	All	5.4%	613	$868	$1.33

[Figure 11] Apartment Project Real Estate Indicators, Negley Station Area Neighborhoods.
Source: COSTAR, GAI

Apartments with 50+ Units (continued)	Year Built	Units	Rent Type	Market	Vacancy	Avg Unit Size	Avg Eff Rent per Unit	Avg Rent per SF
Squirrel Hill South								
Beechwood Gardens		163	Market	All	4.9%	778	$753	$0.97
Forward Shady Apartments	1980	117	Affordable	Senior	3.4%	704	$867	$1.23
Walnut Towers at Frick Park	1970	100	Market	All	55.0%	933	$1,104	$1.18
Hempstead Properties	1930	90	Market	All	5.6%	840	$1,127	$1.34
Wendover	1928	175	Market	All	0.0%	755	$1,045	$1.38
Morrowfield	1920	190	Market	All	1.6%	585	$908	$1.54
Murray Towers		72	Affordable	All	5.6%	-	-	-
The Gateway at Summerset	2013	131	Market	All	5.3%	1,032	$1,605	$1.56
Squirrel Hill North								
5000 5th Ave	1985	140	Market	All	-	-	-	-
5100 5th Ave	1960	66	Market	All	-	-	-	-
5506 5th Ave		50	Market	All	6.0%	810	$1,402	$1.73
Claridge Apartments		67	Market	All	4.5%	1,009	-	-
Negley Court		82	Market	All	4.9%	532	$945	$1.78
Highmont	1950	55	Market	All	9.1%	432	$874	$2.02
Royal Gardens Apartments	1965	64	Market	All	4.7%	964	$1,402	$1.45
Colonial Terrace		63	Market	All	4.8%	750	$840	$1.12
Forbes Terrace		75	Market	All	0.0%	1,342	$2,391	$1.78
Maxon Towers	1966	144	Market	All	2.8%	917	$1,762	$1.92
5023 Frew St		108	Market	All	-	-	-	-
North Oakland								
Webster Hall Apartments	1920	172	Market	All	0.0%	820	$1,504	$1.83
Fairfax Apartments	1929	232	Market	All	0.0%	590	$1,200	$2.04
University Square #1		460	Market	All	-	-	-	-
King Edward 4601		90	Market	All	10.0%	1,040	$1,273	$1.23
King Edward 4609		160	Market	All	3.1%	907	$1,053	$1.16
Aberdeen Apartments		100	Market	All	5.0%	475	$790	$1.66
Bellefield Place	1986	115	Market	All	-	-	-	-
Royal York	1930	144	Market	All	6.3%	872	$1,425	$1.32
Bellefield Dwellings	1903	158	Affordable	All	2.5%	432	$721	$1.67
Schenley House		100	Market	All	1.0%	939	$1,315	$1.40
Sherwood Towers Apartments	1970	62	Market	All	1.6%	1,223	$1,662	$1.36
Moorhead Tower Apartments	1980	142	Affordable	All	4.2%	721	$878	$1.22
Dithridge Towers	1940	200	Market	All	-	-	-	-
Hampton Hall	1928	75	Market	All	-	-	-	-
Dithridge House	1972	200	Market	All	-	-	-	-
Camelot Apartments		99	Market	Student	5.1%	961	$655	$0.68
Pennsylvania	1928	55	Market	All	0.0%	626	$999	$1.59
The Atrium	1979	225	Market	All	-	-	-	-
Royal Windsor	1912	53	Market	All	5.7%	546	$951	$1.74
Wellington		100	Market	All	1.0%	769	$938	$1.22
Dakota		51	Market	All	2.0%	395	$720	$1.82
Melwood Center		66	Market	All	0.0%	600	$890	$1.48
Neville House	1972	100	Market	All	-	-	-	-
Bloomfield								
Ambassador Apartments		69	Market	All	4.4%	621	$873	$1.41
Morrow Park City Apartments	2015	213	Market	All	4.7%	684	$1,559	$2.28
Friendship Court	1955	74	Market	All	9.5%	774	$838	$1.08
Friendship								
Carlyle Arms		125	Market	All	4.8%	505	$874	$1.73
Garfield								
Garfield Commons	2009	225	Mixed	All	2.2%	1,162	$885	$0.76
Fairmont Apartments	2006	60	Affordable	Senior	0.0%	620	$491	$0.79

[Figure 12] Apartment Project Real Estate Indicators, Negley Station Area Neighborhoods (continued).
Source: COSTAR, GAI

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Rental units that are either under construction or planned, and located within 1.5 miles of Negley Station, are reflected in the table and map shown below. **The number of new units is significant – with a total of 1,300 reflected.** Of those either under construction or proposed, three projects include at least some affordable units (Larimer/East Liberty Phase I, Mellon Orchard site, and a third site located in Larimer).

Buildings Under Construction	Address	# of Units	Rent Type	Developer Name	# of Stories	Rentable Building Area	Style	Submarket Name
Larimer / East Liberty Phase I	6200 Auburn St	85	Market/ Affordable	McCormack Baron Salazar	NA	110,000	Hi-Rise	Larimer MF
Baumhaus	5522 Baum Blvd	103	Market	Vitmore	7	70,000	Mid-Rise	Friendship MF
Schenley Apartments	4101 Bigelow Blvd	180	Market		5	250,545	Mid-Rise	North Oakland MF
	4504 Centre Ave	326	Market	Park7 Group	17	587,133	Hi-Rise	North Oakland MF
Emerald on Centre	5739 Centre Ave	146	Market	Oxford Development Company	6	167,070	Mid-Rise	East Liberty MF
Bloomfield Lofts	4926 Cypress St	18	Market	Icon Construction Company	NA	200,000	Low-Rise	Bloomfield MF
Total		**858**						
Buildings Proposed	**Building Address**	**# of Units**	**Rent Type**	**Developer Name**	**# Of Stories**	**Rentable Building Area**	**Style**	**Submarket Name**
Mellon's Orchard Site	206 N Euclid Ave	206	Market/ Affordable	East Liberty Development, Inc.	4	75,000	Mid-Rise	East Liberty MF
	540 Larimer Ave	36	Affordable		3	65,000	Low-Rise	Larimer MF
	5704 Penn Ave	200	Market	LG Realty Advisors, Inc	NA	300,000	Low-Rise	East Liberty MF
Total		**442**						

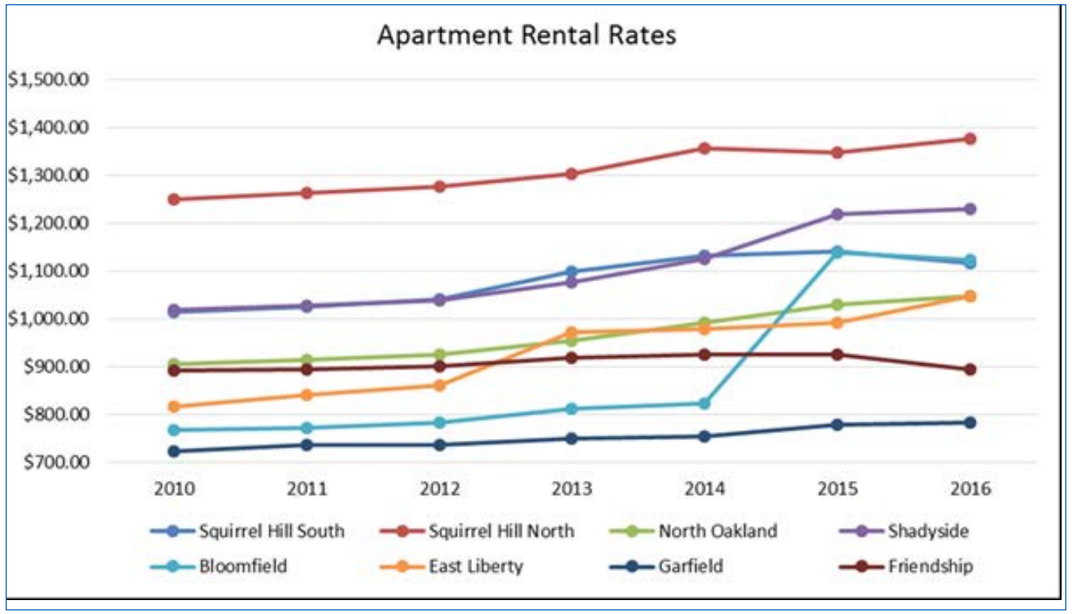
[Figure 13] Rental units that are under construction or proposed within 1.5 miles of Negley Station.
Source: GAI, COSTAR

Building Name	% Vacancy	# of Units	Est. # of Vacant Units	GLA	Average Unit SF	Average Asking/SF	% Average Concessions	Developer Name	# of Parking Spaces	# of Stories
Bryant Street	5.0%	6	0	10,000	NA	NA	NA	Arctecon	11	3
Morrow Park City Apartments	4.7%	213	10	272,000	684	$2.34	3.5%	Rycon Construction	213	6
Bakery Living: Blue	21.5%	176	38	140,000	952	$2.38	4.4%	Walnut Capital	361	5
Penn Mathilda	6.4%	39	2	35,000	672	$0.94	1.4%	Repal Construction	40	3
The Penn at Walnut on Highland	15.6%	78	12	65,000	767	$2.30	2.6%	Walnut Capital	NA	6
Eastside Bond	16.9%	360	61	385,454	884	$2.33	11.6%	The Mosites Company	579	6
Total		**872**	**124**	**907,454**						

[Figure 14] Rental units built within the last two years and located within 1.5 miles of Negley Station; Various Real Estate Indicators.
Source: GAI, COSTAR

Figure 13 shows various real estate indicators for those rental projects located within 1.5 miles of Negley Station and constructed within the last two years. As shown, **vacancy rates are relatively high at three of the six rental projects** (over 15%), with a total of 124 units estimated as vacant (about five to ten percent vacancy is considered stabilized). Relatively high concessions at Eastside Bond also reflect, in part, the high vacancies. Given the significant number of new units either proposed or under construction within close proximity of Negley Station, it is likely that the market rate rental market may be reaching saturation in the near term.

While average apartment rental rates in Squirrel Hill South, Friendship and Bloomfield saw slight decreases from 2015 to 2016, overall apartment rental rates in the neighborhoods within the Negley Station area have been stable and steadily showing slight increases since 2010. The lowest apartment rental rates are seen in the East Liberty neighborhood, this is likely related to the large number of mixed-income and affordable-housing units located within the East Liberty neighborhood. However, projects like East Liberty Place, which is a mixed-income project, are experiencing close to 100% occupancies and increasing rental rates.



[Figure 15] Apartment Rental Rate Trends, Negley Station Area.

TOD REAL ESTATE MARKET SUPPORT

The following table reflects an inventory of affordable housing projects (including projects which include both market and affordable housing units) located within 1.5 miles of Negley Station. While there is a significant inventory of affordable projects, the relatively low vacancy rates reflect continued demand for affordable units.

Community Builders, a non-profit developer, has been active in the East Liberty area, constructing just over 100 units as part of Liberty Place. Approximately 35% state/federal funding was used to help gap finance the development (HOME Investment Partnerships Funds provided $1.7 million in financing).

Affordable Buildings	Building Address	Year Built	# of Units	Building Status	Vacancy %	Owner Name
The Commons at North Aiken	5330 N Aiken Ct		12	Existing	5.0%	URA
	6200-6256 Auburn St		60	Existing	5.2%	The Housing Authority of the City of Pittsburgh
Emory Community Outreach	324 N Beatty St	2001	24	Existing	6.3%	Trek Development Group
Bellefield Dwellings	4400 Centre Ave	1903	158	Existing	2.8%	Allegheny Housing Rehabilitation Corporation
Moorhead Tower Apartments	375 N Craig St	1980	142	Existing	3.9%	Ralph A. Falbo, Inc.
East Liberty Garden Apartments	1 Dudley Ct		127	Existing	5.1%	Housing Authority Of City Of Pgh
Constantin Building	5720 Friendship Ave		37	Existing	NA	NA
Proposed	540 Larimer Ave	2018	36	Proposed	--	NA
	5803 E Liberty Blvd		6	Existing	5.0%	Dads House
	5815 E Liberty Blvd		6	Existing	5.0%	Leonard Feldman
Ansonia Apartments	652-654 Maryland Ave		8	Existing	5.0%	Valinsky Howard
Negley Commons	430 N Negley Ave		24	Existing	5.0%	Presbyterian Seniorcare
Negley Neighbors	774 N Negley Ave		41	Existing	5.1%	East Liberty Development, Inc.
York Commons	4003 Penn Ave	1950	102	Existing	2.1%	Presbyterian Senior Care
Penn Mathilda	4812-4836 Penn Ave	2016	39	Existing	6.4%	ACTION-Housing, Inc.
Fairmont Apartments	5461 Penn Ave	2006	60	Existing	0.0%	Urban Redev Authority Of Pitt
	5467-5481 Penn Ave		36	Existing	5.0%	The Housing Authority of the City of Pittsburgh
New Pennley Place	5601 Penn Ave		134	Existing	4.2%	The Community Builders, Inc.
Stanton Avenue	5635 Stanton Ave		8	Existing	5.0%	NDC Real Estate Management, Inc.
Total			**1060**			
Market and Affordable Buildings	**Building Address**	**Year Built**	**# of Units**	**Building Status**	**Vacancy %**	**Owner Name**
Larimer / East Liberty Phase I	6200 Auburn St	2017	85	UC	--	URA
East Liberty Place	115 N Beatty St	2011	54	Existing	5.4%	The Community Builders, Inc.
Fairfield Apartments	6201 Broad St	2006	195	Existing	0.6%	Mccormack Baron Regan Management Services, Inc.
Mellon's Orchard Site	206 N Euclid Ave	2019	206	Proposed	--	East Liberty Development, Inc.
Garfield Commons	242 Fern St	2009	225	Existing	2.4%	Kbk Four Properties Ltd
Columbia	328 S Mathilda St		6	Existing	5.0%	Leonard Feldman
East Liberty Place South	5836 Penn Ave	2014	52	Existing	9.4%	The Housing Authority of the City of Pittsburgh
Penn Manor Apartments	125 N Saint Clair St		74	Existing	5.7%	The Community Builders, Inc.
Total			**897**			

[Figure 16] Affordable housing units located within 1.5 miles of Negley Station.
Source: COSTAR, GAI

For Sale Condo Market

Condominium sale prices have been steadily climbing in the Negley Station area since 2010. In 2016 there were just under 200 condominium units sold with the highest sale price in the area being $900,000 for a 3,640 square foot condominium in the North Oakland neighborhood. The largest number of condominium units sold last year was in Shadyside at an average sale price of $228,732. The highest average sale prices per square foot were experienced in the Squirrel Hill North neighborhood at an average of $208 per square foot. The smallest number of condo units sold in the area in 2016 was in the East Liberty neighborhood which also had the lowest sale prices; this is consistent with a high percentage of rental units located in East Liberty (85%).

	# Units Sold	Average Sale Price	High Sale Price	Low Sale Price	Average SF	Average $ per SF
Squirrel Hill North	17	$345,730	$700,000	$170,000	1,653	$208
Squirrel Hill South	26	$227,844	$505,000	$44,250	1,633	$152
Shadyside	90	$228,732	$705,000	$57,000	1,229	$193
North Oakland	46	$195,554	$900,000	$47,171	1,440	$133
Bloomfield	14	$152,950	$330,000	$60,000	1,326	$124
East Liberty	5	$89,540	$176,000	$19,200	1,156	$75

[Figure 17] Condominium Sales Indicators, Negley Station Area.
Source: Zillow, GAI

[Figure 18] Average Annual Condominium Sales Price, Negley Station Area.

TOD REAL ESTATE MARKET SUPPORT

OFFICE MARKET

Office space in the Negley Station area demands healthy rents and has been experiencing strong occupancies over 90% since 2013. The largest concentration of office space within the Negley Station area is in the North Oakland neighborhood, with over 2 million square feet of office space and occupancy over 95%, it is a strong office market. While Squirrel Hill North has the smallest amount of office space in the Negley Station area, it also has the highest occupancy rate at 98.7%. Though the Shadyside neighborhood has seen a decline in average rental rates per square foot from 4th quarter 2015, Shadyside is still experiencing the highest average rental rates per square foot.

Market Area	Inventory	Total Vacancy	Total Net Absorption	Under Construction	Avg. Rent
Squirrel Hill South					
4Q2016	239,711	4.4%	0	0	$19.36
4Q2015	239,711	9.1%	(2,673)	0	$18.31
4Q2014	239,711	5.5%	100	0	$19.90
4Q2013	239,711	5.8%	(2,584)	0	$19.72
Squirrel Hill North					
4Q2016	117,557	1.3%	(1,477)	0	$20.59
4Q2015	117,557	1.0%	0	0	$22.00
4Q2014	117,557	1.0%	0	0	$18.64
4Q2013	117,557	1.8%	0	0	$18.64
North Oakland					
4Q2016	2,038,603	4.2%	3,116	0	$20.84
4Q2015	2,038,603	6.9%	2,500	0	$21.05
4Q2014	1,928,603	2.5%	(1,125)	110,000	$20.20
4Q2013	1,928,603	2.7%	300	0	$19.73
Shadyside					
4Q2016	1,090,190	2.1%	32,314	0	$27.84
4Q2015	1,090,190	5.9%	155,351	0	$35.32
4Q2014	880,946	1.5%	10,500	209,244	$38.37
4Q2013	880,946	2.2%	0	0	$24.23
Bloomfield					
4Q2016	1,495,707	5.6%	(3,900)	0	$16.17
4Q2015	1,495,707	5.8%	(2,578)	0	$16.13
4Q2014	1,495,707	5.6%	8,525	0	$16.14
4Q2013	1,495,707	4.3%	1,183	0	$16.17
East Liberty					
4Q2016	783,285	20.8%	(53,556)	0	$24.46
4Q2015	793,285	14.9%	(1,210)	0	$17.33
4Q2014	838,367	9.0%	5,640	0	$16.92
4Q2013	838,367	12.3%	13,150	0	$14.05
Combined Area					
4Q2016	5,765,053	5.4%	(23,503)	0	$22.62
4Q2015	5,775,053	7.1%	151,390	0	$23.82
4Q2014	5,500,891	3.9%	23,640	319,224	$30.84
4Q2013	5,500,891	3.5%	12,049	0	$18.68

[Figure 19] Office Market Indicators, Negley Station Area
Source: COSTAR, GAI

The East Liberty neighborhood has the highest vacancy rates of the Negley Station area, but has also seen a 74.1% increase in rental rates since 2013, which represents the largest increase of the Negley Station area neighborhoods.

Overall, the Negley Station area has seen a 21.1% increase in rental rates since 2013. The Negley Station area has become a desirable location for technology companies with the arrival of tech giants like Google and Uber over the last 5 years. This demand for space has aided in driving rental rates higher and keeping vacancy rates low. East Liberty has also experienced negative net absorption over the past year, likely due to the addition of new space.

With the exception of new construction at Bakery Square, the table below reflects little new office space built over the past seven years. However, what has been constructed is fairly well leased (with the exception of the renovated space located on North Craig Street).

New Office Development within Negley Station Area

Bakery Square opened in 2010, with Google and the University of Pittsburgh (UPMC Tech Development Center, University of Pittsburgh School of Engineering, and the University of Pittsburgh School of Health and Rehabilitation Sciences) serving as major anchor tenants. The rental rate at Bakery Square is relatively high, indicating in part the demand for new Class A office space in East Liberty. The success of the first phase of Bakery Square led to the development of Bakery Square II, with 218,000 square feet of office space (one-third leased by Google).

A popular trend in the East Liberty and Shadyside market is co-working space. The Beauty Shoppe and The Cube are two local examples of this prototype, with other examples up and running in Oakland. These spaces offer a type of incubator space for young companies, sometimes offering memberships for the use of office space, printing, conference rooms, etc.

Building Address	Rentable Building Area	Building Class	# of Stories	Owner Name	Percent Leased	Total Vacant Available	Submarket Cluster	Year Built
6425 Living Pl	209,244	A	6	Bakery Square 2 Agent	100.0%	200	Parkway East Corridor	2015
4420 Bayard St	110,000	A	7	The Elmhurst Group	94.0%	6,573	Greater Downtown	2015
428 N Craig St	26,136	B	4	Dykema Rubber Band	75.1%	6,518	Oakland	2013
5143-5171 Liberty Ave	6,900	B	1	REA Ventures LP	100.0%	0	Parkway East Corridor	2009
4824-4826 Liberty Ave	15,000	B	4	Albanese Daniel & Lorna Beth	100.0%	0	Parkway East Corridor	2009
6425 Penn Ave	275,000	A	7	Lionstone Investments	99.1%	2,390	Parkway East Corridor	2008
Total	**642,280**					**15,681**		

[Figure 20] Office space located within 2 miles of Negley Station and built since 2008. Note: The space located at 428 N. Craig Street is a renovation, not new construction.
Source: COSTAR, GAI

Building Name	Building Address	Average Weighted Rent	Building Class	Building Status	GLA	Submarket Name	Year Built
Expansion	5631 Baum Blvd	-	B	Proposed	57,000	Parkway East Corridor	2018
Two Sterling Plaza	203 N Craig St	37.59	A	Proposed	101,349	Oakland	2019
Two Sterling Plaza	225 N Craig St	-	B	Proposed	110,000	Greater Downtown	2018
	Forbes Ave	-	A	Proposed	425,000	Oakland	2018
	150 N Lexington St	25	B	Under Construction	24,000	Parkway East Corridor	2017
East Liberty Centre	6119-6123 Penn Ave	32	A	Proposed	60,000	Parkway East Corridor	2017
Building B	6420 Penn Ave	45	A	Proposed	234,000	Parkway East Corridor	2019
Total					**1,011,349**		

[Figure 21] New and proposed office space located within 1.5 miles of Negley Station.
Source: COSTAR, GAI

TOD REAL ESTATE MARKET SUPPORT

Co-working spaces also offer an opportunity to network with other early stage companies. The Beauty Shoppe opened in 2011 and offers 4,000 square feet of shared space. The Cube is a similar prototype, however, it targets more established firms. The Cube also include an event space and other services such as a gym. Similarly, Bakery Square 2 now also offers shared work space, with club membership at $239 per month, which includes business club access, wireless high-speed internet, and free access to seven other Pittsburgh locations.

There is a total of just over one million square feet of new office space planned for the area located within two miles of Negley Station. It should be noted, however, that a significant portion of this inventory is being constructed in the Oakland neighborhood, which has seen significant demand for office space, with nearly existing full occupancy. Nevertheless, there remains about 350,000 square feet of new office space slated for the East Liberty/Shadyside area.

[Figure 22] Proposed Office, 5631 Baum Blvd
Source: COSTAR

[Figure 23] Proposed Office, 6420 Penn Avenue
Source: COSTAR

[Figure 24] Proposed Office, 6119-6123 Penn Avenue
Source: COSTAR

[Figure 25] Proposed Office, Two Sterling Plaza, North Craig Street
Source: COSTAR

Market Area		Inventory	Total Vacancy	Total Net Absorption	Under Construction	Avg. Rent
Squirrel Hill South						
	4Q2016	592,525	2.7%	1,350	0	$7.14
	4Q2015	580,580	3.9%	600	0	-
	4Q2014	597,422	3.8%	4,230	0	$27.00
	4Q2013	597,422	4.7%	4,925	0	$27.00
Squirrel Hill North						
	4Q2016	108,333	0.0%	800	0	$17.12
	4Q2015	108,333	10.9%	0	0	$18.98
	4Q2014	108,333	14.8%	0	0	$15.00
	4Q2013	108,333	15.3%	(5,543)	0	$15.00
North Oakland						
	4Q2016	266,068	0.0%	0	0	$14.86
	4Q2015	266,068	0.3%	0	0	$18.35
	4Q2014	266,068	2.3%	(1,400)	0	$19.32
	4Q2013	266,068	1.2%	21,350	0	$12.64
Shadyside						
	4Q2016	1,030,221	2.1%	(1,680)	0	$22.44
	4Q2015	1,030,221	4.3%	(2,620)	0	$18.89
	4Q2014	1,061,782	6.8%	(30,200)	0	$18.26
	4Q2013	1,061,782	5.2%	(17,162)	0	$16.70
Bloomfield						
	4Q2016	1,080,386	1.9%	(1,360)	0	$18.74
	4Q2015	1,098,087	2.3%	1,050	0	$15.31
	4Q2014	1,098,872	1.5%	7,145	0	$15.32
	4Q2013	1,098,872	2.1%	1,050	0	$15.27
East Liberty						
	4Q2016	1,141,964	7.5%	7,130	0	$22.63
	4Q2015	1,141,964	10.7%	(42,898)	0	$19.22
	4Q2014	1,166,752	7.8%	(10,873)	0	$19.97
	4Q2013	1,166,752	6.7%	1,050	0	$18.35
Combined Area						
	4Q2016	4,219,497	3.4%	6,240	0	$19.20
	4Q2015	4,225,253	5.4%	(43,868)	0	$17.58
	4Q2014	4,299,229	5.2%	(31,098)	0	$17.83
	4Q2013	4,299,229	4.8%	5,670	0	$16.55

[Figure 26] Retail Market Indicators, Negley Station Area
Source: COSTAR, GAI

TOD REAL ESTATE MARKET SUPPORT

RETAIL MARKET

The Negley Station area currently has over 4.2 million square feet of retail space with over 95% occupancy. The largest concentration of retail space is in the East Liberty neighborhood, with Bloomfield and Shadyside having only slightly less retail space than East Liberty. While East Liberty has the largest amount of retail space, it also has the highest vacancy rate. Squirrel Hill North and North Oakland are both experiencing 100% occupancy of retail space.

Rental rates per square foot of retail space in the Negley Station area have increased 16% since 2013. However, Squirrel Hill South has seen a substantial decrease of 73.6% in rental rates since 2013. The highest increase in rental rates is seen in Shadyside where rates have increased 34.4% since 2013.

In order to better understand the immediate retail market, the CSG team looked at the retail market located within one-quarter mile of Negley Station, for both first floor retail and freestanding retail. It should be noted, however, that these figures do not reflect all of the first floor retail currently located in the area. Nevertheless, for primary retail buildings (which also includes freestanding automotive retail, as well as bank branches), total vacancy rates are low, with average rents increasing notably over the past quarter (given the relatively significant increase, this is likely an aberration). However, as reflected, ground floor retail spaces within one-quarter mile of Negley Station recorded relatively high vacancy rates.

Traditional Retail	Inventory	Total Vacancy	Total Net Absorption	Under Construction	Avg. Rent
0.25 Mile Radius					
4Q2016	380,681	0.6%	800	0	$23.34
4Q2015	380,681	2.2%	0	0	$11.40
4Q2014	384,371	1.8%	8,045	0	$11.40
4Q2013	384,371	2.5%	0	0	$14.84

[Figure 27] Retail Indicators, 1/4 mile from Negley Station, Primary Retail Buildings.
Source: COSTAR, GAI

Groundfloor Retail	Inventory	Total Vacancy	Avg. Rent
0.25 Mile Radius	24,742	21.4%	$18.50

[Figure 28] Retail Indicators, 1/4 mile from Negley Station, Ground Floor Retail.
Source: COSTAR, GAI

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A.3 FINANCIAL ANALYSIS

ECONOMIC OVERVIEW

The client team has identified a key catalytic TOD project just north of Pierce Street and adjacent to Negley Station. This project is intended as one of the primary vehicles for implementing the central strategic recommendations of the plan: that the Port Authority act to leverage publicly owned sites through public-private partnerships; and that the projects serve to demonstrate innovative approaches to development near the Port Authority stations, potentially increasing ridership and transit revenues.

It is to be expected that some of the projects will involve, to varying degrees, public incentives designed to mitigate the risk associated with unconventional development projects, or to help close potential financing gaps associated with maintaining affordability, overcoming site constraints, or other economic challenges.

These projects were chosen based on the review of market potentials completed in the first stage of the project. The market analysis process included interviews with relevant stakeholders, a review of existing and forecast economic conditions, and a review of the strengths, weaknesses, opportunities, and constraints offered at Negley Station. The proposed catalytic scheme has been presented in a public forum during the planning process.

DEVELOPMENT ECONOMICS

In order to better understand the overall feasibility of each project, the CSG team developed a residual land value analysis for the proposed TOD project. The analysis shows the relationship of project costs and revenues to overall development costs and is based on an understanding of current market conditions. The analysis is meant to show a relative comparison of options, with an understanding that the assumptions used will change as the project is refined. The analysis ultimately shows a residual value, which is the capitalized value of net revenues (or net operating income) minus development costs. Costs in this case exclude land, so the residual value represents the amount that the project could afford to pay for land. Capitalization allows an investor or other interested party to estimate value by discounting stabilized net operating income at an appropriate rate, or the capitalization rate. The capitalization rate reflects the perceived risk of the property's cash flow relative to other investments.

Suppose a property is offered for sale at $3,200,000. If the property generates a net operating income of $200,000, the implied cap rate would be the following: $200,000/$3,200,000 = 0.0625% x 100 = 6.25%

This means that if the property is purchased for $3,200,000 with no debt (unleveraged), and achieved a $200,000 NOI in the first year, the investor would receive a 6.25% return on equity. The cap rate is a common metric used by brokers, borrowers, lenders and appraisers in real estate and reflects the perceived risk of a property. Alternatively, the $3,200,000 could be invested in a certificate of deposit, with relatively little risk, and earn a return of 3.3%. The higher rate reflects the higher inherent risk in the property investment; the difference between the 3.3% and 6.25% compensates the buyer for the risk of the transaction.

The operating assumptions applied throughout the financial analysis are summarized in the following table. Average rents and sales prices reflect the findings of the market analysis completed during Phase I of the study and reflect new housing or commercial development pricing in current dollars. Operating costs are based on commonly accepted costs for similar development types (e.g. an operating cost of 30% of total revenues for rental apartments). Retail rents are reported as triple net rents, or less taxes, insurance, and maintenance (net rent). Conversely, office rents are reported as gross rents (operating expenses are estimated at 25% of total revenues).

The CSG team also estimated construction costs based on current construction data for new mixed-use developments in the area. Cost estimates were derived for town-homes, apartments, commercial, and larger-scale mixed-use development.

RESULTS OF FINANCIAL ANALYSIS

The financial analysis for Negley station reflects two scenarios: the first scenario incorporates all market rate housing, while the second scenario includes one-half of the units as affordable housing.

As shown in the following table, the financial analysis for the first scenario (100% market rate housing) yields a minimal positive residual value of about $62,000. It is assumed that the residual value would have to pay for land acquisition and infrastructure, indicating that there is a likely funding gap for the development. While we do not have detailed cost estimates for the infrastructure component, if we assume that infrastructure costs account for 15% of the total development cost ($2.8 million) and land costs are over $500,000 (.65 acres at over $20 per square foot), it would appear that the residual land value would not cover the additional costs without a public subsidy or other method to finance the gap (e.g. charge premium rents, reduced development fees, etc.).

As might be expected, the second scenario (50% affordable housing) results in a significantly larger funding gap (-$3.3 million). As mentioned earlier, Low Income Housing Tax Credits are often used to help finance affordable housing.

With both of the above options, it will be important to also quantify the public benefits that will accrue as a result of new development, including job creation and potential tax revenues.

Housing Units - Rental		
Monthly Rent - Market Rate Housing	$2.30	per SF
Monthly Rent - Work Force Housing	$1.30	per SF
Vacancy Factor	5%	
Operating Expenses	30% of revenue	
Retail Space		
Rent Type	NNN	
Average Annual Rent per SF	$22.00	
Vacancy Factor	5%	
Office Space		
Rent Type	Full Service Gross	
Average Annual Rent per SF	$25.00	
Operating Expenses	25% of revenue	
Parking - Structured Garage		
% Spaces Monthly	90%	
% Spaces Daily	10%	
Parking Rates		
Monthly Rate	$50.00	
Ave Daily Transient Rate	No charge	
Operating Expenses	25% of revenue	

[Figure 1] Underlying Economic Assumptions

Program	No. of Units	Average GSF per Unit	Total Net SF	Efficiency Factor	Total Gross SF
Retail and Service	-	-	10,000	85%	11,765
Residential (Apartments)	45	*1,200*	54,000	85%	63,502
Parking (Garage)	45				

[Figure 2] Programming Assumptions, TOD, North of Pierce

FINANCIAL ANALYSIS: TOD SCENARIOS

Development Cost	Retail and Service	Apartment Units	Total	Parking	Total w/ Parking
Leasable Commercial Space	10,000	54,000	64,000	--	64,000
Stabilized Vacancy Factor	5%	5%	--	--	--
Total Leased Space	9,500	51,300	60,800	--	60,800
Total Gross Square Feet	11,765	63,502	75,267	18,000	93,267
Development Cost Per Square Foot	--	--	--	--	$200.00
Parking					
Number of Parking Spaces - Structured				45	
Cost Per Space (structured parking)				$20,000	
Total Cost - Structured Parking				$900,000	
Total Building Development Cost	--	--	--	--	$18,653,341
Revenues and Expenses					
Monthly Rent Per Square Foot	--	$2.30			
Annual Rent Per Square Foot	$22.00	$27.60			
Total Annual Rent	$209,000	$1,415,880			
Operating Expenses as % of Revenue	--	30%			
Total Operating Expenses	--	$424,764			
Total Net Rent	$209,000	$991,116	$1,200,116		$1,216,519
Monthly Parking - Structured					
% of Spaces Monthly				90%	
Total Monthly Spaces				41	
Monthly Rate				$50.00	
Utilization Rate - Stabilized				90%	
Estimated Revenues				$21,870	
Operating Expenses as Percent of Revenue				25%	
Annual Net Operating Income				$16,403	
Capitalization Rate					6.5%
Indicated Value					$18,715,669
Residual Value					$62,328
Residual Value per FAR Square Foot					$0.67

[Figure 3] Proposed Negley Station TOD, Residential Land Value Analysis, 100% Market Rate Housing.

Note: Costs include labor, materials, and installed components for buildings. Costs do not include site preparation or infrastructure.

Source: Area Comparables, GAI.

Potential Funding Sources or Actions to Address Funding Gap:

- Charge premium rents
- CIP funding for infrastructure
- Streamline approval process
- Reduced development fees

Development Cost	Retail and Service	Apartment Units	Total	Parking	Total w/ Parking
Leasable Commercial Space	10,000	54,000	64,000	--	64,000
Stabilized Vacancy Factor	5%	5%	--	--	--
Total Leased Space	9,500	51,300	60,800	--	60,800
Total Gross Square Feet	11,765	63,502	75,267	18,000	93,267
Development Cost Per Square Foot	--	--	--	--	$200.00
Parking					
Number of Parking Spaces - Structured				45	
Cost Per Space (structured parking)				$20,000	
Total Cost - Structured Parking				$900,000	
Total Building Development Cost	--	--	--	--	$18,653,341
Revenues and Expenses					
Monthly Rent Per Square Foot - Affordable	--	$1.30			
Monthly Rent Per Square Foot - Market Rate		$2.30			
Annual Rent Per Square Foot - Affordable	$22.00	$15.60			
Annual Rent Per Square Foot - Market Rate		$27.60			
Total Annual Rent	$209,000	$1,108,080			
Operating Expenses as % of Revenue	--	30%			
Total Operating Expenses	--	$332,424			
Total Net Rent	$209,000	$775,656	$984,656		$1,001,059
Monthly Parking - Structured					
% of Spaces Monthly				90%	
Total Monthly Spaces				41	
Monthly Rate				$50.00	
Utilization Rate - Stabilized				90%	
Estimated Revenues				$21,870	
Operating Expenses as Percent of Revenue				25%	
Annual Net Operating Income				$16,403	
Capitalization Rate					6.5%
Indicated Value					$15,400,900
Residual Value					$(3,252,441)
Residual Value per FAR Square Foot					$(34.87)

[Figure 2] Proposed Negley Station TOD, Residential Land Value Analysis, 50% Affordable Housing.

Note: Costs include labor, materials, and installed components for buildings. Costs do not include site preparation or infrastructure.

Source: Area Comparables, GAI.

Potential Funding Sources or Actions to Address Significant Gap:

- CIP funding for infrastructure
- Streamline approval process
- Consider project TIF
- Consider State or Federal grants for infrastructure (FTA)
- Consider tax exemptions program
- Reduced development fees
- Low Income Housing Tax Credits for affordable housing
- Federal Home Loan Bank Affordable Housing Program for affordable housing
- HOME program for affordable housing

A.4 TRANSPORTATION PLANNING

PEDESTRIAN AND BICYCLE SAFETY EVALUATION

Similar to FHWA's formal Road Safety Audit (RSA) program, the TOD team performed a safety assessment within the Negley Station's half mile walkshed. The team reviewed crash data for all intersections within the past five years of available data (2011 – 2015) to determine if there were instances of crash clusters, defined as five crashes within a 12 month period with similar causation factors. Additionally, the team performed a field visit of these intersections in February and March of 2017 to observe pedestrian safety hazards throughout the walkshed. Pedestrians that feel safer walking to transit stations are more likely to use them, so this report identifies opportunities to improve pedestrian safety. Recommendations for improvements within PAAC-owned property have been incorporated into the station's redesign in this report. Recommendations beyond the station area are not intended to be implemented for the Negley Station project itself, but are offered for consideration for incorporation when other projects are planned within the station's walkshed (by city and state agencies, private developers, utilities, etc.).

Crash Data Review

GAI requested reportable and available non-reportable crash records from the Pennsylvania Department of Transportation for the last five years of available crash data, from 2011 through 2015 (inclusive). Reportable crashes are defined as crashes involving injury (an ambulance) and/or towing. Minor crashes, such as low speed rear-ends and broken mirrors, or pedestrian crashes in which pedestrians refused treatment, are not reportable crashes and are not reflected by the crash data analysis. Crash data was requested for the following locations:

- Baum Boulevard (SR 0400) from Liberty Avenue to S Euclid Avenue
- Centre Avenue from Cypress Street to S Euclid Avenue
- Ellsworth Avenue from S Aiken Street to Spahr Street
- S Negley Avenue from Walnut Street to Baum Blvd
- Roup Avenue from S Negley Street to Harriet Street/ Fairmount Street
- S Graham Street from Centre Avenue to Ellsworth Street
- Maryland Avenue from Pierce Street to Walnut Street
- College Street from Pierce Street to Alder Street
- S Euclid Ave from Baum Blvd (SR 0400) to Centre Avenue
- Liberty Ave from Baum Blvd (SR 0400) to Centre Avenue
- S Aiken St from Centre Ave to Ellsworth Ave
- Claybourne Street (entire length)
- Pierce Street (entire length)
- Summerlea Street (entire length)

All roads within the study area experienced reportable crashes except for Pierce Street.

During the study period, there were a total of 171 crashes within the study area, 19 of which (11 percent) involved pedestrians. Almost half (48 percent) of crashes were angle crashes and a fifth (20 percent) were rear-end crashes. Driver actions that contributed to the crashes were 18 percent turning improperly or carelessly, 14 percent red light running, 9 percent proceeding without clearance, 9 percent driving distractedly, and the remainder were improper driving or unknown actions. No fatalities were reported.

The [Figure 1.1] **Summary of Intersection Crash Data** provides a summary of crash data by intersection, ranked by crash frequency and then severity. The table describes the most common contributing driver action and the most common collision type. Note that some crashes have multiple contributing driver actions.

Intersection	Number of Crashes Veh (Ped)	Most Common Driver Action (%)	Most Common Collision Type (%)	Moderate or Major Injury (%)
Baum Blvd & Liberty Ave, Atlantic Ave	17 (3)	Improper/Careless Turn (35%)	Angle (35%)	3 (18%)
Centre Ave & Negley Ave	16 (3)	Improper/Careless Turn (25%)	Angle (44%)	0 (0%)
Negley Ave & Walnut St	15 (1)	Running Red Light (50%)	Angle (67%)	2 (13%)
Baum Blvd & Roup Ave	15 (1)	Running Red Light (29%)	Angle (67%)	1 (7%)
Centre Ave & Aiken Ave	12 (3)	Improper/Careless Turn (36%)	Angle (42%)	1 (8%)
Ellsworth Ave & Aiken Ave	11 (2)	Improper/Careless Turn, Other Improper Driving (tie) (20%)	Angle (64%)	2 (18%)
Baum Blvd & Negley Ave	11 (0)	Distracted Driver, Proceed without Clearance, Running Red Light (tie) (18%)	Angle, Rear-end (tie) (36%)	0 (0%)
Baum Blvd & Graham St	11 (0)	Running Red Light (27%)	Rear-end	0 (0%)
Negley Ave & Elmer St	9 (0)	Proceed without Clearance (33%)	Angle (67%)	0 (0%)
Ellsworth Ave & Negley Ave	6 (1)	Physical Condition, Improper/ Careless Turn, No Contributing Action, Running Red Light, Other Improper Driving (tie) (17%)	Angle (67%)	1 (17%)
Baum Blvd & Aiken Ave	6 (0)	Other Improper Driving (57%)	Hit Fixed Object (50%)	1 (17%)
Aiken Ave & Claybourne St	6 (0)	Improper/Careless Turn (50%)	Angle (67%)	0 (0%)
Centre Ave & Graham St	5 (2)	Other Improper Driving (50%)	Pedestrian, Rear-end (tie) (40%)	1 (20%)
Baum Blvd & Euclid Ave	5 (1)	Other Improper Driving (60%)	Angle, Head-on, Hit Fixed Object, Pedestrian, Rear-end (tie) (20%)	1 (20%)
Centre Ave & Euclid Ave	4 (0)	Careless Pass/Lane Change, Distracted Driver, Other Improper Driver, No Contributing Action (tie) (25%)	Rear-end (75%)	0 (0%)
Elwood St & Summerlea St	3 (0)	Proceed without Clearance (67%)	Angle (100%)	0 (0%)
Walnut St & Maryland Ave	2 (0)	Proceed without Clearance (40%)	Angle (100%)	1 (50%)
Baum Blvd & Stamar Way	2 (0)	Proceed without Clearance (100%)	Angle, Head-on (tie) (50%)	1 (50%)
Baum Blvd & Fairmount St	2 (0)	Distracted Driver, Improper/Careless Turn (Tie) (50%)	Angle, Rear-end (tie) (50%)	1 (50%)
Baum Blvd & Amber St	2 (0)	Improper/Careless Turn (50%)	Angle, head-on (tie) (50%)	0 (0%)
Ellsworth Ave & Filbert St	1 (1)	Other Improper Driving (100%)	Pedestrian (100%)	1 (100%)
Ellsworth Ave & Summerlea St	1 (1)	Other Improper Driving (100%)	Pedestrian (100%)	0 (0%)
Ellsworth Ave & Maryland Ave	1 (0)	Improper/Careless Turn, Other Improper Driving (tie) (50%)	Angle (100%)	0 (0%)
Ellsworth Ave & Bellefonte St	1 (0)	Unknown (100%)	Head-on (100%)	0 (0%)
Ellsworth Ave & Graham St	1 (0)	Improper/Careless Turn, Tailgating, Other Improper Driving (tie) (100%)	Rear-end (100%)	0 (0%)
Ellsworth Ave & Ivy St	1 (0)	Physical Condition (100%)	Same direction Sideswipe (100%)	0 (0%)
Ellsworth Ave & Myrtle Way	1 (0)	Improper/Careless Turn (100%)	Angle (100%)	0 (0%)
Baum Blvd & St Clair St	1 (0)	Proceed without Clearance (100%)	Angle (100%)	0 (0%)
Baum Blvd & Vintage Way	1 (0)	Speeding (100%)	Angle (100%)	0 (0%)
Roup St & Stratford Ave	1 (0)	Other Improper Driving (100%)	Same Direction Sideswipe (100%)	0 (0%)
Maryland Ave & Elwood St	1 (0)	Proceed without Clearance (100%)	Angle (100%)	0 (0%)

[Figure 1.1] Summary of Intersection Crash Data

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Refer to the [Figure 1.5] **Intersection Crash Occurrences (2011 – 2015)** for graphical summary of crashes at each location.

The crash data review did not identify any specific crash clusters. Roadways with the highest number of crashes corresponded with the busiest roads: Baum Blvd, Centre Avenue, and Negley Avenue. There were five intersections that experienced multiple pedestrian crashes, including at the intersection of Centre Avenue and Negley Avenue, one of the closest intersections to the station. The intersection experienced three pedestrian crashes (tied for highest) and 16 vehicular crashes (second highest).

Reviewing crash data based on crash occurrences alone can be misleading, since busier roads generally experience more crashes. Adjusting for traffic volume, intersection crash rates were calculated using the following formula to give an intersection crash rate (R(i)) per million entering vehicles (MEV):

R(i) = (Number of Crashes x 1,000,000) / (365 days x 5 years x ADT)

PennDOT conducts average daily traffic volume (ADT) counts for state-owned highways and higher volume municipal roads, and counts were most recently conducted in 2016. Baum Boulevard (SR 0400) has the highest traffic volume with an average daily traffic (ADT) of 17,693 vehicles per day. Aiken/ Liberty Avenue's ADT is 11,538, Centre Avenue's ADT is 10,940, Negley Avenue's ADT is 8,851, Ellsworth Avenue's ADT is 6,150, and Walnut Street's ADT is 2,997. The [Figure 1.2] **Available Intersection Crash Rate** that follows summarizes the crash rate for intersections with available traffic data.

Intersection	ADT	Number of Crashes	Crash Rate (MEV)
Baum Blvd & Aiken Ave / Liberty Ave	29,231	17	0.32
Centre Ave & Negley Ave	19,791	16	0.44
Negley Ave & Walnut St	11,848	15	0.69
Centre Ave & Aiken Ave	22,478	12	0.29
Ellsworth Ave & Aiken Ave	17,688	11	0.34
Baum Blvd & Negley Ave	26,544	11	0.23
Negley Ave & Ellsworth Ave	15,001	6	0.22

[Figure 1.2] Available Intersection Crash Rates

The intersection of Negley Avenue and Walnut Street had the highest crash rate, 0.69 MEV, approximately three times higher than the lowest calculated rate at Negley Avenue and Ellsworth Street. Walnut Street is one of Shadyside's main shopping streets, and Negley Avenue links the Walnut Street business district with Negley Station. This is an important intersection for transit users.

The intersection of Negley Ave and Centre Ave had the second highest crash rate, 0.44 MEV, approximately two times higher than the lowest calculated rate. This is one of the most well used intersections for Negley Station transit riders, since all pedestrians and bicyclists coming from the Friendship, Bloomfield, and East Liberty neighborhoods walk through this intersection.

Unlike computing vehicular crash rates per location, pedestrian crashes typically occur too infrequently to calculate statistically-significant rates; in the past five years, the variation between the highest and lowest intersection crash occurrences was three. Pedestrian crashes may also occur when pedestrians are third parties to vehicular crashes. Therefore, this assessment focuses recommending improvements to make intersections as safe as possible for all users to prevent situations that may lead to future crashes, regardless of past pedestrian crash occurrences. Vehicular safety improvements, especially ones that slow traffic volumes or reduce aggressive driving, will also help to lower pedestrian crash risks.

Since signalized intersections typically experience higher traffic volumes, they typically experience the greatest number of both pedestrian and vehicular crashes. Three ways of reducing aggressive driving at signalized intersections include installing exclusive turn lanes, adding advance exclusive turn arrows, and actuating the signals for vehicles. At uncontrolled locations, improving sight distance, signage, and crosswalk markings may reduce the risk of pedestrian crashes.

Considering crash rates and occurrences, the most critical intersections for vehicular and pedestrian safety improvements are as follows:

- Negley Ave & Walnut Street
- Centre Ave & Negley Ave
- Baum Blvd & Aiken Ave / Liberty Ave / Atlantic Ave
- Centre Ave & Aiken Ave
- Ellsworth Ave & Aiken Ave
- Centre Ave & Graham St

This report provides recommendations for making improvements along these roadways to improve pedestrian safety within the Negley Station's walkshed.

Speed Study

As part of a safety analysis, the project team performed a spot speed study along the East Busway to determine whether speeding is a perceived or actual risk to user safety. This informal study is based on video observations taken on Tuesday, March 8, 2017. Per PAAC policy, all vehicles passing through the station area must slow to 25 mph and turn on their hazard lights. The following [Figure 1.3] **Observed Bus Speed at the Negley Station** shows the results of the speed study for buses and the [Figure 1.4] **Observed Non-Transit Vehicle Speeds at the Negley Station** table show speeds for other vehicles using the busway.

Time	7:10 AM	9:01 AM	4:52 PM	5:10 PM	5:29 PM	5:30 PM
Direction	Outbound	Inbound	Inbound	Outbound	Inbound	Outbound
Speed (mph)	23	30	24	22	21	23
Average Speed	24 mph					
85th Percentile Speed	26 mph					

[Figure 1.3] Observed Bus Speed at the Negley Station.

Time	7:12 AM	8:54 AM	9:00 AM	3:01 PM	3:25 PM	4:18 PM	4:21 PM	4:33 PM	5:12 PM	5:32 PM	5:42 PM
Direction	OB	IB	IB	OB	IB	IB	OB	OB	IB	IB	OB
Vehicle	Ambulance	Ambulance	Police	Car	Car	Car	Police	Police	Pickup	Police	Police
Speed (mph)	26	38	44	36	27	46	33	31	46	27	41
Average Speed	36 mph										
85th Percentile Speed	45 mph										

[Figure 1.4] Observed Non-Transit Vehicle Speeds at the Negley Station.

TRANSPORTATION PLANNING

INTERSECTION CRASH OCCURRENCES

[Figure 1.5] Reportable Crashes from 2011 to 2015

SAFETY ASSESSMENT OBSERVATIONS

LEGEND

- (A) - Add Curb Ramp(s)
- (B) - Upgrade Curb Ramp(s)
- (C) - Install Crosswalk Marking(s)
- (D) - Upgrade Crosswalk Marking(s)
- (E) - Add/Reposition Stop Sign or Stop Bar(s)
- (F) - Add Barrier to Prevent Jaywalking
- (G) - Realign Crosswalk(s)
- (H) - Improve Tripping/Drop-off Hazard(s)
- (I) - Upgrade Signals (Phasing, Signage, etc.)
- (J) - Add Pedestrian Signals
- (K) - Upgrade Pedestrian Signals
- (L) - Install Speed-Reducing Devices
- (M) - Widen Sidewalk/Remove Obstructions
- (N) - Rebuild/Improve Sidewalk
- (O) - Improve Drainage
- (P) - Increase Pedestrian Visibility/Restrict Parking
- (Q) - Adjust Road Operations and/or Replace Signage
- (R) - Improve Bicycle Accommodations

[Figure 1.6] Summary of Safety Improvement Strategies

TRANSPORTATION PLANNING

The results of the spot speed study indicates that while bus drivers are almost fully compliant with busway operating speeds, non-transit drivers are not always compliant. This indicates the need for speed control at the Negley Station.

Intersection Observations

The GAI/CSG team performed field observations of all roadways in the highlighted pedestrian walkshed area to observe safety deficiencies. The field observations were conducted in February and March, 2017, prior to the Negley Avenue bicycle lane improvement installed in the fall of 2017. Common issues observed included missing and non-ADA compliant curb ramps, missing or faded crosswalk markings, misaligned crosswalks, stop signs and/or stop bars located too close or within crosswalks, jaywalking across the busway, deteriorated sidewalks, narrow sidewalks, tripping hazards, and drainage issues that could result in ponding water on sidewalks and crosswalks. Additionally, specific to signalized intersections, common issues observed included inefficient signal phasing/timing, the lack of turn lanes which lead to jaywalking and aggressive driving, the lack of ADA-compliant pedestrian signals, and faded signage and markings.

The following paragraphs describe general safety improvement recommendations along with specific examples of why such improvements are needed. These suggested safety improvements are summarized in the [Figure 1.6] **Safety Assessment Observations**. The letters denoting each type of safety observation in the figure corresponds with the following report recommendations below. Since these are not formal audits they are not intended to be a complete and exhaustive list at all intersections.

RECOMMENDATION A: ADD CURB RAMPS

Intersection observations revealed missing curb ramps at some of the intersections. Often these were due to utility conflicts within a direct crossing path, such as a catch basin, manhole, or utility pole. Other common locations with missing curb ramps were at depressed driveway crossings, where larger driveways intersected the street like an intersection approach (i.e. where the driveway was at street level and the sidewalk was cut for the driveway). This configuration suggests the driveway may have originally been a street or an alley. The project team recommends installing missing curb ramps to fix these deficiencies and help create accessible paths to the station.

Within the area immediately surrounding the Negley Station, several missing curb ramps were noted. There are no curb ramps from Pierce Street across Summerlea Street (on the north side). Due to a utility conflict, there is a missing curb ramp on the northeast intersection corner, so pedestrians needing to use the curb ramp have an indirect accessible path across Pierce Street. The project team recommends installing full ADA-compliant curb ramps at this intersection as part of station area reconstruction. Other missing curb ramps near the station that should be installed are at the northeast corner of the intersection of Maryland Avenue and Pierce Street and the northeast corner of Ellsworth Avenue at Summerlea Street.

Guidance for curb ramp installation with photographs of specific examples are below:

RECOMMENDATION A

Guidance:

Install curb ramps in the direction of pedestrian flow.

Example:

Ellsworth Avenue at Summerlea Street

RECOMMENDATION A

Guidance:

Install curb ramps in the direction of pedestrian flow.

Example:

Maryland Avenue at Pierce Street

RECOMMENDATION A

Guidance:

Install curb ramps to minimize pedestrian crossing distance.

Example:

Summerlea Street at Pierce Street

RECOMMENDATION A

Guidance:

Larger driveways with curb cuts (legacy streets) lack crosswalks or stop signs on driveways. Add/update curb ramps where needed and mark crossings to provide visibility to pedestrians and drivers.

Example:

Negley Avenue South of Ellsworth Avenue

TRANSPORTATION PLANNING

RECOMMENDATION B: UPGRADE CURB RAMPS

Many of the curb ramps in the study area were installed prior to current ADA-standards, so they lack detectable warning surfaces and may have excessive slopes. Corners were observed to often have one shared ramp for two crossing directions, though the ramps may not be angled properly or the radius may not be large enough to permit on-street wheelchair turning movements outside of vehicular wheel paths. Shared ramps should only be used for larger radii.

Many curb ramps have been upgraded recently, though most intersections only had partial curb ramp replacements. This is true of almost all of the intersections near the Negley Station, such as along Ellsworth Avenue at Negley Avenue, Summerlea Street, and Maryland Avenue, as well as the intersection of Maryland Avenue and Pierce Street. Therefore, the project team suggests upgrading all remaining and curb ramps to be ADA-compliant.

RECOMMENDATION B

Guidance:

Upgrade curb ramps to be ADA compliant and to point in the direction of pedestrian travel. Limit slopes to ADA maximums where possible.

Example:

Negley Avenue at Market District Driveway

RECOMMENDATION B

Guidance:

Avoid the use of combined curb ramps when possible. If used, ensure pedestrians have adequate space for turning movements within crosswalks, per ADA standards.

Example:

Centre Avenue at Aiken Avenue

RECOMMENDATION C: INSTALL CROSSWALK MARKINGS

Smaller intersections were observed to lack crosswalk markings. While crosswalk markings are not required at all intersections, especially for low volume roads, they should be painted for all crossings that might be confusing to either drivers or pedestrians, such as at intersections with angled approaches or having curb ramps that are misaligned due to utility conflicts. Likewise, any location in which drivers may not expect pedestrians should have marked crosswalks located a minimum of four feet behind a corresponding stop bar. Markings should be installed on routes with heavy pedestrian movements, such as at Pierce Street at Summerlea Street and Maryland Avenue near the Negley Station. Graham Street has a footbridge over the Busway, so the project team suggests installing markings at intersections along Graham Street between Centre Avenue and Ellsworth Avenue.

Discretion should be used when marking crosswalks at uncontrolled locations, since marked crosswalks have been shown to give pedestrians a false sense of security. Marked midblock crosswalks were observed across Negley Avenue at Elmer Street and across Ellsworth Avenue at Filbert Street, both along pedestrian routes to Pittsburgh Liberty Elementary School. When uncontrolled crossings are used at intersections, they should have painted crosswalks across both sides of the uncontrolled roadway with as corresponding stop bars (or yield triangles) and advance warning signage. The project team suggests investigating the feasibility of painting the missing crosswalk at Negley Avenue and Elmer Street with matching high-visibility markings. The project team does not recommend installing painted midblock markings at other locations. Midblock and uncontrolled crosswalks should never be installed unless recommended by a specific safety study.

The project team noticed two locations with missing crosswalk markings on heavily traveled roadways near the station. At the signalized intersection of Negley Avenue and the Market District Driveway, the northbound Negley Avenue sidewalk was continuous across the Centre Commons signalized driveway approach, lacking crosswalk markings. Pedestrians may not be aware that they are crossing a driveway, especially a signalized one, due to the continuous sidewalk. At the intersection of Baum Boulevard and Negley Avenue, the project team observed a missing crosswalk along the north side of Baum Boulevard. The crossing distance at this location is approximately 100 feet, making crosswalk installation difficult; signs are posted prohibiting pedestrian crossings. The project team suggests installing a channelized right turn with a pedestrian refuge island to reduce the crossing distance to allow pedestrians to cross here.

While standard parallel-style markings are acceptable for lower volume crosswalks, midblock or high traffic locations should have highly visible, piano key-style markings, such as the crosswalks painted during fall 2017 Negley Avenue project.

TRANSPORTATION PLANNING

RECOMMENDATION C

Guidance:

Install crosswalks markings across all signalized and stop-controlled intersection approaches.

Example:

Negley Avenue at Market District Driveway (Across Centre Commons Driveway Approach)

RECOMMENDATION C

Guidance:

At existing uncontrolled locations, upgrade crosswalk markings with high-visibility piano key markings. At uncontrolled intersections, mark crosswalks across all approaches and add stop bars or yield triangles to supplement the advance signage.

Example:

Missing crosswalk at Negley Avenue and Elmer Street

RECOMMENDATION C

Guidance:

Install crosswalks at intersections where pedestrian paths may not be apparent.

Example:

Intersection of Roup Avenue, Fairmount Street, and Harriet Street

RECOMMENDATION C

Guidance:

Install crosswalks along main streets and side streets intersecting main streets with high vehicular and pedestrian volumes.

Example:

Negley Avenue and Elwood Street

RECOMMENDATION C

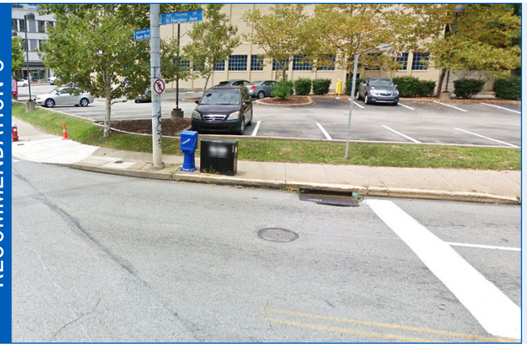
Guidance:

Install crosswalks at locations with high pedestrian volumes.

Example:

Intersection of Graham Street and Potter Street at the Graham Street Footbridge

RECOMMENDATION C



Guidance:

Install missing crosswalks across all signalized intersection approaches. Modify approaches to make these crossings safe, such as installing a right turn channelizing island that can serve as a pedestrian refuge island.

Example:

Intersection of Baum Boulevard and Negley Avenue

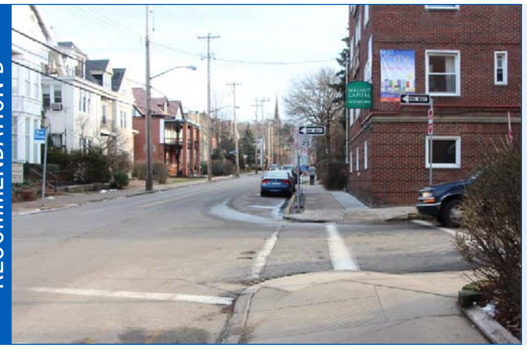
TRANSPORTATION PLANNING

RECOMMENDATION D: UPGRADE CROSSWALK MARKINGS

Stop-controlled and signalized intersections were generally observed to all have parallel-style crosswalk markings (when used), and smaller intersections and curb cuts with larger driveways often had no markings. Many of the crosswalk markings were observed to be faded. The project team suggests regular inspection intervals for crosswalk markings. A Supplemental Notice of Proposed Amendment (SNPA) proposes a revised set of standards to be incorporated in the Manual on Uniform Traffic Control Devices (MUTCD). When made available, refer to MUTCD Section 3A.03, “Maintaining Minimum Pavement Marking Retroreflectivity.”

Piano key-style crosswalk markings, such as the ones installed in late 2017 along Negley Avenue, have been shown to be more visible, and require less maintenance as they are typically placed outside of vehicle wheel paths. The project team recommends upgrading parallel markings to piano key-style markings, especially at high-volume and midblock locations, such as crossing the East Busway at the Negley Station.

RECOMMENDATION D



Guidance:

Upgrade crosswalk markings, especially at midblock locations and near schools (with high visibility, ladder-style markings.

Example:

Intersection of Negley Avenue and Elmer Street (The crosswalk across Negley Avenue was upgraded in the Fall of 2017)

RECOMMENDATION D

Guidance:

Maintain and repaint faded crosswalk markings.

Example:

Intersection of Negley Avenue and Market District Driveway

RECOMMENDATION E: ADD OR REPOSITION STOP SIGN STOP BARS

Many of the stop-controlled intersection approaches have stop signs mounted on the nearest existing utility pole. At some of the locations, such as Negley Avenue and Elwood Street or Summerlea Street and Alder Way, the stop signs are placed between the curb ramp and the intersection. At Alder Way, the stop sign is mounted on the left side of the roadway. At the Claybourne Street approach to Aiken Avenue, the stop sign is mounted high on the pole. At Baum Boulevard and Fairmount Street, the stop sign is placed a car length back from the crosswalk. Reposition stop signs to be MUTCD-compliant, a minimum of four feet in front of all marked or unmarked crossing locations.

To promote pedestrian safety, stop bars should be marked in front of locations with pedestrian traffic, and they should be placed a minimum of four feet in advance of marked and unmarked crosswalks. Examples include the intersection of Ellsworth Avenue and Filbert Street and the intersection of Maryland Avenue and Ellsworth Avenue. Paint or reposition stop bars to be compliant.

Some of the smaller intersections with alleys do not have stop signs, such as along Graham Street at Japonica Way and Brownell Street. Stop signs should be installed at all appropriate intersection approaches to alert drivers and protect pedestrians.

RECOMMENDATION E

Guidance:

Mount stop signs on the right side of all intersections.

Example:

Intersection of Summerlea Street and Alder Way

RECOMMENDATION E

Guidance:

Mount stop signs and corresponding stop bars four feet before curb ramps and marked and unmarked crosswalks.

Example:

Intersection of Negley Avenue and Summerlea Street

TRANSPORTATION PLANNING

RECOMMENDATION E

Guidance:

Reposition existing stop bars to be at least four feet from marked crosswalks and align them with stop signs.

Example:

Intersection of Ellsworth and Filbert Street

RECOMMENDATION E

Guidance:

Place stop signs in optimal locations. This image shows a stop sign on a utility pole (a car length away from the crosswalk, causing the driver to use the crosswalk like a stop bar.

Example:

Intersection of Baum Boulevard and Fairmount Street

RECOMMENDATION E

Guidance:

Mount stop signs on separate installations to line up with stop bars.

Example:

Intersection of Ellsworth Avenue and Maryland Avenue.

RECOMMENDATION F: ADD BARRIER TO PREVENT JAYWALKING

Pedestrians were observed to jaywalk to the inbound bus platform at the Negley Station, crossing approximately 190 feet beyond the Negley Avenue Bridge. Due to a horizontal curve, there is limited sight distance in advance of the bridge abutment. Stopping sight distance for vehicles at 25 mph is 147 feet. Stopping sight distance is 196 feet when vehicles travel 30 mph and 249 feet when vehicles travel 35 mph. According to the spot speed study, non-transit vehicles were observed to speed on the busway. Since there is inadequate stopping sight distance when vehicles speed and when pedestrians jaywalk, add a barrier to prevent jaywalking by channelizing pedestrians to the preferred crossing location.

RECOMMENDATION F

Guidance:

Add a barrier in the East Busway's median to prevent jaywalking.

Example:

East Busway at Negley Station

RECOMMENDATION F

Guidance:

Reconfigure Negley Station to avoid sidewalks (including the Negley Street Pedestrian Ramp) leading to locations where pedestrians will jaywalk. Align sidewalks and station furniture to guide pedestrians to safe crossing locations.

Example:

Sidewalks from Summerlea Street and the Negley Avenue at Negley Station

TRANSPORTATION PLANNING

RECOMMENDATION G: REALIGN CROSSWALKS

Crosswalks and curb ramps at various intersections were observed to be misaligned. While this is typically due to utility conflicts, such as traffic signal poles, inlets, utility poles, fire hydrants, etc., misaligned crosswalks lead to pedestrian non-compliance and low driver visibility. Crosswalks too far back were observed to be obscured by buildings, parked cars, and vegetation. Realign crosswalks to increase visibility and compliance.

RECOMMENDATION G

Guidance:

Realign crosswalks to line up with pedestrian movements and improve pedestrian visibility where possible.

Example:

Intersection of Negley Avenue and Walnut Street

RECOMMENDATION G

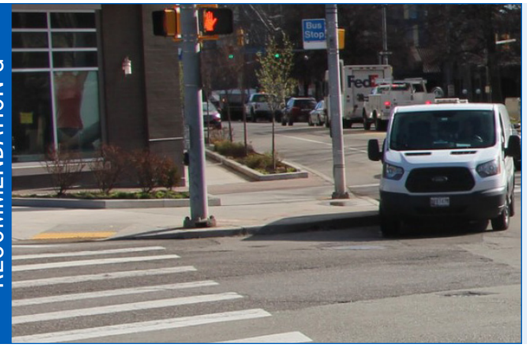
Guidance:

Straighten crosswalks or paint with high visibility markings when they are skewed to avoid utility conflicts.

Example:

Intersection of Ellsworth Avenue and Bellefonte Street

RECOMMENDATION G



Guidance:

Align crosswalks along the approaching roadways to improve visibility for drivers.

Example:

Intersection of Baum Boulevard and Liberty Avenue

RECOMMENDATION G

Guidance:

Align crosswalks to match pedestrian movements at complex intersections.

Example:

Intersection of Baum Boulevard, Euclid Avenue, and Friendship Avenue

RECOMMENDATION G

Guidance:

Keep painted crosswalk markings straight through intersections, and place markings so detectable warning surfaces are within the markings.

Example:

Intersection of Ellsworth Avenue and Ivy Street

TRANSPORTATION PLANNING

RECOMMENDATION H: IMPROVE TRIPPING AND DROP-OFF HAZARDS

Deterioration and improper sidewalk maintenance results in tripping and drop-off hazards. Sidewalks along Negley Avenue from Ellsworth Avenue to the Market District Driveway had several observed hazards, including deteriorated bridge expansion joints, sidewalk transitions, and rutted street furniture areas from delivery vehicles, senior-center shuttles, and maintenance vehicles, that pull onto the sidewalks. Since the field observations were conducted, some of the sidewalks have been replaced and conditions restored (fall of 2017), though regular maintenance checks are needed to keep conditions safe. The project team suggests property owners replace sidewalks and prevent vehicles from driving in these areas.

Other hazards observed included damage from tree pits, landscaping intruding into sidewalks, and other deterioration. Some of the most deteriorated sidewalks observed were along Pierce Street and Summerlea Street in the vicinity of the station.

RECOMMENDATION H

Guidance:

Coordinate with the City, utility companies, and private property owners to avoid tripping hazards.

Example:

Summerlea Street Near Ellsworth Avenue

RECOMMENDATION H

Guidance:

Eliminate tripping hazards at bridge approaches and expansion joints.

Example:

Negley Avenue Bridge

RECOMMENDATION H

Guidance:

Replace damaged sidewalks, fill unpaved areas that may have drop-offs, and prevent vehicles from creating this condition in the future.

Example:

Negley Avenue North of Ellsworth Avenue (Note: The pictured example has since been corrected.)

RECOMMENDATION H

Guidance:

Remove sidewalk obstructions and damage from tree roots.

Example:

Ellsworth Avenue between Bellefonte Street and Telegraph Way

RECOMMENDATION H

Guidance:

Sidewalks were observed to be deteriorated or damaged where intersected by utility structures. Ensure proper maintenance of sidewalks and replace impacted sections of sidewalks promptly after utility work has been completed.

Example:

Intersection of Ellsworth Avenue and Ivy Street

TRANSPORTATION PLANNING

RECOMMENDATION I: UPGRADE SIGNALIZED INTERSECTIONS (PHASING, SIGNAGE, ETC.)

Many of the traffic signals in the traffic area appear to be beyond their design life, such as along Negley Avenue at Walnut Street, Ellsworth Avenue, and Baum Boulevard; along Aiken Avenue at Ellsworth Avenue and Centre Avenue; and along Graham Street at Centre Avenue and Baum Boulevard. Intersections have (or had when the crash data was recorded) pre-timed signals without actuation. Available crash data was reviewed through 2015; signals along Baum Boulevard and Centre Avenue were upgraded with adaptive signal technology in October 2015. (The impact of this adaptive signal control was not available for analysis for this report). Signals along Negley and Ellsworth avenues still function as pre-timed signals at the time of this study's preparation (2017/2018). Actuated signals are programmed to reduce the chance of changing in the "dilemma zone" (when the driver experiences the dilemma of either going through the yellow indication or stopping quickly). Pre-timed signals change based on specific timing patterns and not based on traffic flows.

Most signalized intersections in the study area have movements that lack exclusive turning lanes and/or turn phases. The high-crash rate intersection of Negley Avenue and Walnut Street has neither turn lanes nor turn arrows.

Previously, signal phasing only gave the option of pedestrians walking concurrently with traffic flows or separately in their own exclusive phase. While an exclusive pedestrian phase (existing at the intersection of Negley Avenue and Centre Avenue) theoretically should prevent pedestrian crashes, it extends the cycle length so pedestrians may be less likely to wait for a walk signal. Pedestrians are accustomed to cross during green indications so they may think they do not need to wait for the walk indication. Many signals both locally and nationally are now being programmed with leading pedestrian intervals (LPIs) that give pedestrians a head start of three to five sections of exclusive crossing time prior to concurrent vehicular green indications with lagging turn arrows. The project team suggests studying changing the phasing at Negley Avenue and Centre Avenue to use LPIs.

RECOMMENDATION I

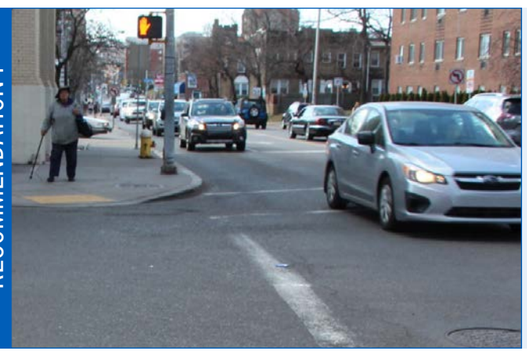
Guidance:

Replace faded signs, install overhead lane control, and place appropriate pavement markings at intersection approaches. Keep pedestrian crossing distances as short as possible and install refuge islands as applicable.

Example:

Intersection of Negley Avenue and Market District Driveway

RECOMMENDATION I



Guidance:

Review pedestrian crossing phases, especially the exclusive pedestrian phase at Negley Ave and Centre Ave. Exclusive phases lead to non-compliance. Review turn arrow use and applicability at intersections, such as Negley Ave and Centre Ave. Leading pedestrian intervals and lagging flashing yellow left turn arrows are safer for pedestrians and more efficient for drivers.

Example:

Intersection of Negley Avenue and Centre Avenue

RECOMMENDATION J: ADD PEDESTRIAN SIGNALS

Many of the older signalized intersections use vehicular signal heads to control pedestrian movements, lacking pedestrian signal heads. This presents confusing situations (especially along the eastbound Ellsworth Avenue approach at Negley Avenue) in which the pedestrians have a red signal while vehicles heading in the same direction have a green left turn signal. Add ADA-compliant pedestrian signals at all intersections that lack them, such as along Negley Avenue at Walnut Street, Ellsworth Avenue, and Baum Boulevard; along Aiken Avenue at Centre Avenue and Ellsworth Avenue, and along Graham Street at Centre Avenue and Baum Boulevard. Older pedestrian indications are not ADA compliant, and they do not warn pedestrians when it is no longer safe to cross.

Note that the intersection of Negley Avenue and Walnut Street has the highest crash rate per intersection. It lacks pedestrian signals, left turn lanes, and left turn arrows.

RECOMMENDATION J

Guidance:

Add ADA-compliant pedestrian signals with countdown timers. The attached photograph shows pedestrians crossing when the signal indication changed, as well as a red signal and a green arrow facing the same direction.

Example:

Intersection of Ellsworth Avenue and Negley Avenue

RECOMMENDATION J

Guidance:

Add ADA-compliant pedestrian signals with push buttons and countdown timers.

Example:

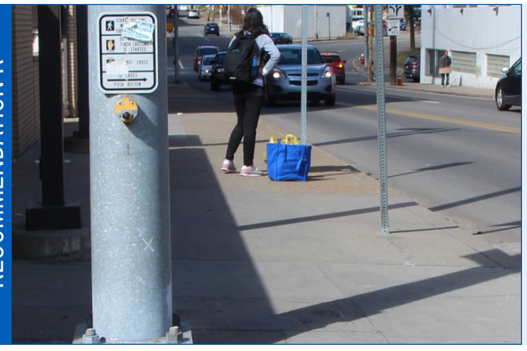
Intersection of Negley Avenue and Walnut Street

TRANSPORTATION PLANNING

RECOMMENDATION K: UPGRADE PEDESTRIAN SIGNALS

Modern, pedestrian signals have countdown timers and ADA-compliant features such as pushbuttons with vibrotactile arrows and audible pedestrian indications. Upgrade the intersections at Negley Avenue and Market District Driveway, Centre Avenue and Euclid Avenue, and Baum Boulevard and Euclid Avenue and Friendship Avenue to have ADA-compliant pedestrian signals.

RECOMMENDATION K



Guidance:

Upgrade existing pedestrian signals to have ADA-compliant features, such as pushbuttons with vibrotactile arrows and audible pedestrian indications.

Example:

Intersection of Negley Avenue and Market District Driveway

RECOMMENDATION K

Guidance:

Upgrade existing pedestrian signals to have countdown timers.

Example:

Intersection of Baum Boulevard, Euclid Avenue, and Centre Avenue

RECOMMENDATION L: INSTALL SPEED REDUCING DEVICES

Observations and the spot speed study revealed that some pass-through, non-transit vehicles using the busway such as emergency vehicles and unmarked passenger cars do not slow to the 25 mph posted speed limit within the Negley Station. Spot speed observations noted an 85th percentile speed of 45 mph for non-buses on the busway. With the at-grade pedestrian crosswalk and sight distance limitations, it is important that vehicles slow to the posted speed limit. Strategies such as rumble strips are not feasible due to noise concerns in the surrounding residential area and rider comfort concerns for bus riders.

RECOMMENDATION L

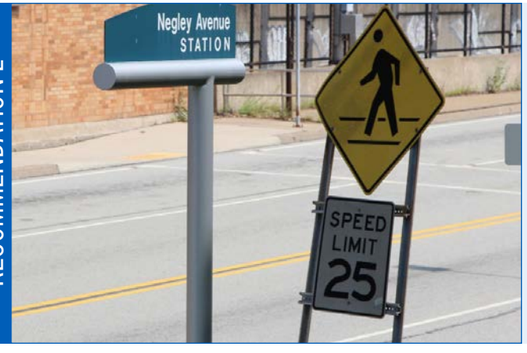
Guidance:

Consider use of signing and pavement marking improvements, such as rectangular rapid flashing beacons, speed minder signs, pavement markings, and signs that alert drivers when pedestrians are in the crosswalk Also, regular maintenance/tree trimming may be necessary to maintain open sight lines to advance signage.

Example 1:

Existing Pedestrian Warning Signs Approaching the Negley Station

RECOMMENDATION L



Example 2:

Existing Pedestrian Warning Signs Approaching the Negley Station

TRANSPORTATION PLANNING

RECOMMENDATION M: WIDEN SIDEWALK AND REMOVE OBSTRUCTIONS

Some of the streets within the study area, such as Pierce Street and Graham Street were observed to have narrow sidewalks, some less than four feet wide. Tree pits along streets in the study area, most commonly along Ellsworth Avenue and Summerlea Street, intrude into the sidewalk, reducing width to less than four feet. Utilities intrude into the sidewalk areas on many of the streets. While property lines limit options and configurations, the team recommends providing minimum four foot wide sidewalks where possible and suggests strategies for encouraging property owners properly to adequately maintain sidewalks.

RECOMMENDATION M

Guidance:

Widen sidewalks around tree pits

Example:

Ellsworth Avenue West of Negley Avenue

RECOMMENDATION M

Guidance:

Trim vegetation along sidewalks.

Example:

Summerlea Street between Ellsworth Avenue and Pierce Street

RECOMMENDATION M

Guidance:

Remove obstructions; relocate utilities that block the sidewalk.

Example:

Intersection of Graham Street and Japonica Way

RECOMMENDATION M

Guidance:

Widen narrow sidewalks

Example:

Graham Street between the footbridge and Ellsworth Avenue

RECOMMENDATION M

Guidance:

Building and other construction projects were observed to result in sidewalk closures and obstructions with little warning to pedestrians. Provide adequate pedestrian accommodations during projects, such as temporary walkways and properly-signed ADA-compliant pedestrian detours.

Example:

Intersection of Baum Boulevard and Graham Street.

TRANSPORTATION PLANNING

RECOMMENDATION N: REBUILD OR IMPROVE SIDEWALK

Some existing sidewalks should be rebuilt entirely. The sidewalk from Negley Avenue to the Negley Station zag-zags back and forth and has hand rails on both sides. Since it is only about five feet wide, cyclists must walk their bikes pass pedestrians. The team recommends replacing this sidewalk with a wider, more welcoming sidewalk with sufficient space for pedestrians of all abilities.

The project team did not observe locations along public streets that lacked sidewalks near the station, though some of the sidewalks along Pierce Street between the Negley Station and Marlyand Avenue were overgrown and should be replaced. Sidewalks that experience a lot of delivery vehicle encroachment, such as along Negley Avenue between Ellsworth Avenue and the Negley Avenue Bridge, were deteriorated and rebuilt in late 2017, but should be designed to prevent delivery vehicles from encroaching onto the sidewalk.

RECOMMENDATION N

Guidance:

Widen the connection from Negley Avenue to Negley Station with a wider, straighter sidewalk that reduces bicycle/pedestrian conflicts.

Example:

Sidewalk and Stairs from Negley Avenue to Negley Station

RECOMMENDATION N

Guidance:

Replace deteriorated sidewalks.

Example:

Pierce Street between Summerlea Street and Maryland Avenue

RECOMMENDATION O: IMPROVE DRAINAGE

Ponding was observed at some of the intersections, especially along Baum Boulevard, Ellsworth Avenue, and Walnut Street, in which pools of water blocked curb ramps. Curb ramps showed evidence of improper drainage, with sediment on the ramps themselves. This also creates icing hazards in the winter months. The team suggests improving drainage structures and street paving to make sure water is draining appropriately and configuring curb ramps to reduce ponding. Due to the angular geometry of Baum Boulevard intersections, drainage problems were observed at many of these intersections.

RECOMMENDATION O

Guidance:

Upgrade street drainage design and/or inlet locations to prevent ponding water from blocking curb ramps.

Example:

Intersection of Walnut Street and Summerlea Street

RECOMMENDATION O

Guidance:

Improve curb ramp design to eliminate ponding / icing and mud accumulation.

Example:

Intersection of Ellsworth Street and Telegraph Way

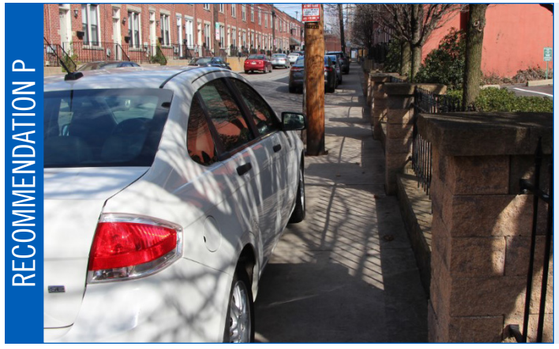
TRANSPORTATION PLANNING

RECOMMENDATION P: INCREASE PEDESTRIAN VISIBILITY/RESTRICT PARKING

Pedestrians are at risk whenever drivers cannot see them. Beyond misaligned crosswalks discussed previously, drivers may park at unsignalized T-intersections blocking unmarked crosswalks, as shown in the appendix. Even if crosswalks are unmarked, pedestrians cross at these locations, so the project team suggests a comprehensive review of parking restrictions in the walkshed. Due to limited parking and high parking demand along Pierce Street between Maryland Avenue and College Street, vehicles typically park on the sidewalk. The project team recommends exploring centralized/off-site parking as part of future development in this area to provide an alternative area to park. The team suggests prohibiting sidewalk parking and encourages parking enforcement.

At the exit of the Aldi parking garage along Roup Avenue, the sidewalk extends to the side of the building/garage door; drivers exiting the garage must encroach onto the sidewalk to see pedestrians. The street-facing pedestrian door opens outwards. The project team observed cones and plastic surface-mount delineators on the sidewalk to prevent pedestrians from walking too close to garage doors and pedestrian door. The team suggests a more appropriate, permanent solution, such as installing a planter area along the sidewalk or an alert system (such as driver signage or an audible alert) for vehicles exiting the garage.

RECOMMENDATION P



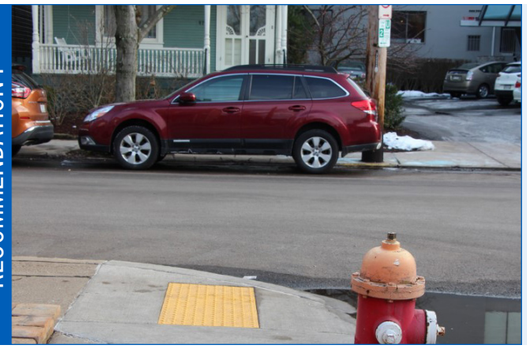
Guidance:

Prohibit vehicles from parking along sidewalks; enforce parking restrictions. Consider centralized parking for locations where parking demand exceeds supply.

Example:

Pierce Street between Maryland Avenue and College Street

RECOMMENDATION P



Guidance:

Prohibit parked vehicles from blocking pedestrian crossing paths

Example:

Intersection of Walnut Street and Summerlea Street

RECOMMENDATION P

Guidance:

Provide buffer space from garages, driveways, and alleys where buildings block sight distance to sidewalks. Prevent swinging doors from opening onto active sidewalk paths. Where adequate buffers cannot be achieved, consider warning signage and devices such as audible alerts, mirrors, etc. to improve sight distance limitations.

Example:

Intersection of Roup Avenue and the Aldi Garage

RECOMMENDATION P

Guidance:

The existing Negley Avenue Bridge has structural members between the roadway and sidewalks which reduce visibility. Pedestrians were observed to jaywalk across Negley Avenue south of the bridge at the pedestrian entrance to Negley Station. Use strategies such as wayfinding signage to encourage pedestrians to cross Negley Avenue at the Market District Driveway signalized intersection to reach the station.

Example:

Negley Avenue Bridge at the Negley Station Pedestrian Ramp

TRANSPORTATION PLANNING

RECOMMENDATION Q: ADJUST ROAD OPERATIONS AND/OR REPLACE SIGNAGE

The project team suggests upgrading signage wherever possible to improve safety and visibility for all users. Overhead signs should be used for lane control at busier signalized intersections where feasible.

In addition to deficiencies noted before, signage was observed to be especially confusing at the unsignalized intersection of Claybourne Street and Aiken Avenue, a location that experienced six angle crashes in the past five years. Stop signs and one way signs are mounted atypically high on Claybourne Street (though may be necessary for visibility). Along Aiken Avenue, there are various driveways to and from Shadyside Hospital which are confusing to some drivers (some are one-way). An exit-only driveway lines up facing the opposing one-way Claybourne Street approach. Meanwhile, since Aiken Avenue is two lanes approaching Centre Avenue, vehicles in the right lane (traffic queues or delivery vehicles) block sight distance, as shown in the attached photograph. The project team suggests additional "no parking, stopping, or standing" signage 150 feet from Claybourne Street and performing a roadway lane modification study along Aiken Avenue in the long term to reduce vehicular speeds and improve sight distance.

At the intersection of Pierce Street and Summerlea Street, temporary bollards were placed to block through traffic movement. Additional field visits revealed that some of these bollards were moved to allow vehicle flow. Neither street has "No Outlet" signs posted, suggesting they are through streets. Summerlea Street is approximately 30 feet wide, used as two seven-foot parking lanes and two eight-foot travel lanes. Pierce Street is approximately 20 feet wide, which is only wide enough for a parking lane and bi-directional lane. Both are narrow enough to be considered yield streets. To maintain the current configuration, either install "No Outlet" signs or permanently remove the bollards between the streets. Consider exploring the feasibility of converting the streets to be one-way to eliminate conflicts from passing vehicles and improving circulation.

RECOMMENDATION Q

Guidance:

Replace faded signs in accordance with Manual on Uniform Traffic Control Devices (MUTCD) standards. Use overhead lane control signs at busy intersections. Prohibit parking, stopping, and standing at uncontrolled locations where stopped vehicles may block sight distance.

Example:

Intersection of Aiken Avenue and Claybourne Street

RECOMMENDATION Q

Guidance:

Replace faded signs in accordance with Manual on Uniform Traffic Control Devices (MUTCD) standards. Use overhead lane control signs at busy intersections. Prohibit parking, stopping, and standing at uncontrolled locations where stopped vehicles may block sight distance.

Example:

Intersection of Aiken Avenue and Claybourne Street

RECOMMENDATION Q

Guidance:

Improve consistency of circulation between Pierce and Summerlea Streets. Consider the applicability of converting them to a one-way flow from Maryland Avenue to Ellsworth Avenue to simplify traffic patterns and eliminate conflicts from current yield-street configurations.

Example:

Bollards at the intersection of Pierce Street and Summerlea Street

RECOMMENDATION Q

Guidance:

Improve consistency of circulation between Pierce and Summerlea Streets. Consider the applicability of converting them to a one-way flow from Maryland Avenue to Ellsworth Avenue to simplify traffic patterns and eliminate conflicts from current yield-street configurations.

Example:

Bollards at the intersection of Pierce Street and Summerlea Street

TRANSPORTATION PLANNING

RECOMMENDATION R – IMPROVE BICYCLE ACCOMMODATIONS

The City of Pittsburgh reconfigured Negley Avenue to be bicycle friendly as of the fall of 2017 (after field audits were conducted in the winter of 2017), which improved safe bicycle access to Negley Station. Other streets accessing the Negley Station are currently two narrow for bicycle infrastructure, though additional options could be considered as part as a study to determine the applicability of one-way flow.

The project team observed that while many of the inlets in the Negley Station's walkshed were replaced with bicycle safe grates, a few locations still retained the old-style grates, such as along Graham Street and Ellsworth Avenue. Other curbs retain the old-style inlets with a curb opening. The project team suggests replacing all old-style grates with bicycle-safe grates. The team also suggests installing bike racks (or working with private property owners to install bike racks) at locations with bicycle use, such as businesses and apartment buildings.

Additional bicycle infrastructure is recommended at the Negley Station as part of the station design process.

RECOMMENDATION R

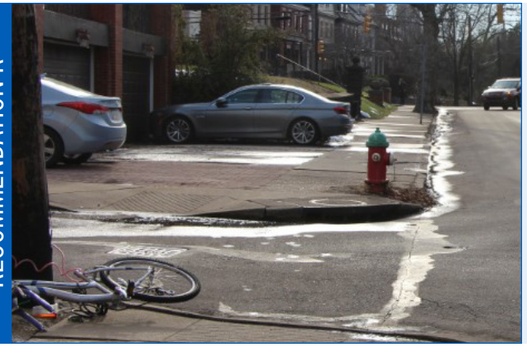
Guidance:

Use bicycle safe grate designs, especially along marked bicycle routes.

Example:

Intersection of Ellsworth Avenue and Bellefonte Street

RECOMMENDATION R



Guidance:

Install bicycle racks at locations with bicycle parking demand, such as at businesses and apartment buildings. Replace open-curb drainage structures.

Example:

Intersection of Ellsworth Avenue and Copeland Street

NEGLEY STATION SURVEY ANALYSIS

In the fall of 2016, the PAAC conducted a user survey at Negley Station. Riders had the opportunity to describe what they would like to see to make the station better as well as to specify their barriers and obstacles to using the station. Responding to what they would like to see to make Negley Station better, 24.5 percent responded safety and 16.1 percent responded pathways. Both of these responses are related. The station originally had stairs from the Negley Avenue Bridge to the station's inbound platform, which were barricaded around 2007 and later removed. Pedestrians were rerouted across the Negley Avenue Bridge, down the ramp to the outbound platform, and across the Busway at grade. Noted in the study, while this marked crosswalk is 250 feet from the Negley Avenue Bridge, pedestrians were observed to jaywalk to the inbound platform across from the end of the ramp, approximately 190 feet from the bridge. Stopping sight distance for vehicles at 25 mph is 147 feet, but increases to 196 feet for vehicles traveling 30 mph and 249 feet for vehicles traveling 35 mph. Therefore, both speeding vehicles and jaywalking pedestrians create sight distance-related crash risks. Therefore, the project team recommends replacing the inbound stair connection to the Negley Avenue Bridge. Since the City of Pittsburgh is planning to rehabilitate or replace the bridge in the early 2020s, reinstalling this pathway should be done in coordination with the bridge project.

Responding to the question about barriers and obstacles to station use, 18.1 percent reported traffic danger and 8.4 percent reported crosswalks, which is greater than 25 percent of respondents. Approximately 25 percent of respondents said they had greater than a one mile travel distance to the station, indicating the importance of safe intersections not just at the station itself but in the surrounding roadway network.

SAFETY EVALUATION SUMMARY

The safety evaluation analyzed high-crash locations, performed spot speed observations along the busway, field viewed the station's walkshed, and reviewed station user safety results. Per the Safety Assessment Observations figure, safety recommendations for the station's walkshed included:

- Adding and upgrading curb ramps
- Installing, upgrading, and realigning crosswalk markings
- Adding or repositioning stop sign or stop bars
- Adding a barrier to prevent jaywalking
- Widening or rebuilding sidewalks to remove obstructions and eliminating tripping and drop-off hazards
- Upgrading traffic signals and signalized intersections, including installing or upgrading pedestrian signals to be ADA-compliant
- Installing speed-reducing devices
- Improving drainage
- Restricting parking to increase pedestrian visibility at intersections
- Improving road operations and upgrade or replace signage
- Improving bicycle accommodations

The results of these analyses will serve to improve the safety and security of Negley Station users, as well as the traveling public in general. While most of these improvements are outside of the PAAC's control, they can be applicable to future City, State, utility, and private development projects near the station.

TRANSPORTATION PLANNING

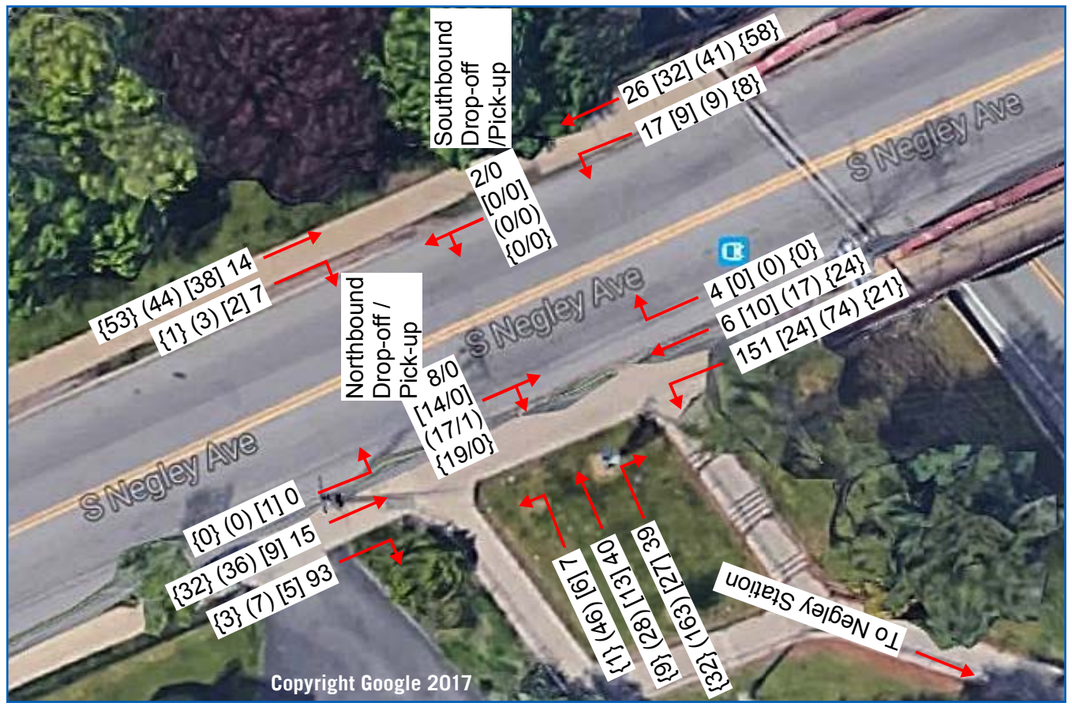
OPERATIONS ANALYSIS

Any appropriate station redesign should analyze how a station is currently being used in order to maximize its utility for future use. This study incorporated pedestrian, vehicular, and parking data collection observations to create recommendations for station redesign.

Summary of Data Collection at Negley Station

In order to understand how the existing Negley Station performs operationally, the project team performed data collection capturing pedestrian, bicycle, and vehicular movements in and around the Negley Station. The project team contracted with Miovision Traffic Data Online to perform continuous video counts from 5:00 AM to 1:00 AM at Negley Avenue by the pedestrian ramp to the station and at the Negley Station by Summerlea Street and by Pierce Street. Counts were conducted on Saturday March 4, 2017 and Tuesday, March 7, 2018 to capture a typical weekday and weekend.

The project team performed more detailed reviews of the video collected during the 7:00 AM to 9:00 AM morning weekday peak period, the 11:00 AM to 1:00 PM weekday midday peak period, the 4:00 PM to 6:00 PM afternoon weekday peak period, and the 1:00 PM to 3:00 PM Saturday midday period to determine peak pedestrian movements throughout the station area. Refer to the [Figure 2.1] **Negley Avenue Pedestrian Movement Count** for a summary of the pedestrian movements in the vicinity of Negley Avenue and the pedestrian ramp to the station and to the [Figure 2.2] **Negley Station Pedestrian Movement Count** for a summary of the pedestrian movements in the vicinity of the intersection of Summerlea Street and Pierce Street in near the station. Pedestrian movements per the entry/exit point of the station realm are summarized in the [Figure 2.3] **Peak Period Pedestrian Count Summary**.



LEGEND

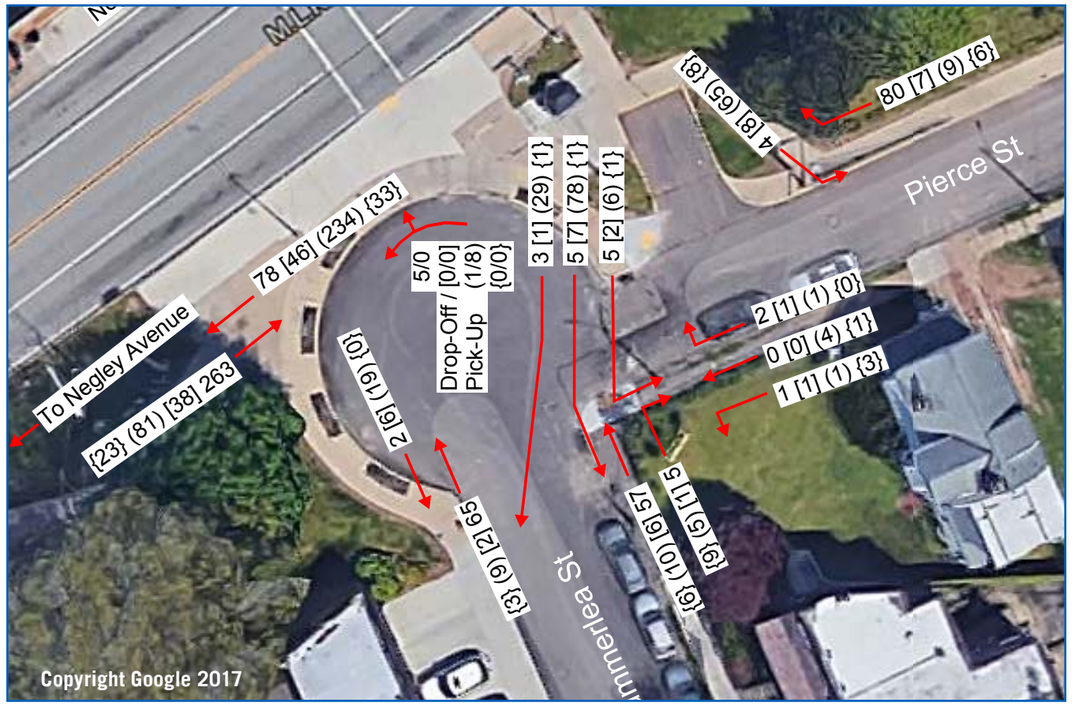
12 - AM Peak Period Count, 7:00AM to 9:00 AM

[12] - Midday Peak Period Count, 11:00AM to 1:00PM

(12) - PM Peak Period Count, 4:00PM to 6:00PM

{12} - Saturday Midday Peak Period Count, 1:00PM to 3:00PM **NOT TO SCALE**

[Figure 2.1] Negley Avenue Pedestrian Movement Counts



LEGEND

12 - AM Peak Period Count, 7:00AM to 9:00 AM

[12] - Midday Peak Period Count, 11:00AM to 1:00PM

(12) - PM Peak Period Count, 4:00PM to 6:00PM

{12} - Saturday Midday Peak Period Count, 1:00PM to 3:00PM **NOT TO SCALE**

[Figure 2.2] Negley Station Pedestrian Movement Counts

Peak Period	Entering/Exiting			Drop-offs/Pick-ups		Total
	Summerlea	Pierce	Negley	Summerlea	Negley	
AM Weekday 7:00 AM – 9:00 AM	122/10	82/9	253/78	5/0	10/0	472/97
Midday Weekday 11:00 AM – 1:00 PM	8/14	8/10	24/46	0/0	14/0	54/70
PM Weekday 4:00 PM – 6:00 PM	19/126	10/71	64/233	1/8	17/1	111/439
Saturday Weekend 1:00 PM – 3:00 PM	9/2	6/9	4/33	0/0	19/0	38/44

[Figure 2.3] Peak Period Pedestrian Count Summary.

TRANSPORTATION PLANNING

The table shows that 1,243 pedestrians were counted during the six hour peak period of a typical weekday. With 637 entering pedestrians and 606 exiting pedestrians during that time, the distribution was nearly even. That result is expected since the majority of transit users take round trips. Likewise, AM and PM peak period volumes showed that most trips were round trips, with 472 entering in the morning and 439 exiting in the evening, and 97 exiting in the evening and 111 entering in the evening. This suggests transit users commute both from the station and to the station, which is to be expected given the residential, commercial, and institutional land uses in the station's walkshed

Data collection observations showed 60 drop-offs on Negley Avenue (91 percent) and six drop-offs at the end of Summerlea Street (9 percent). Unlike the end of Summerlea Street, Negley Avenue does not have a safe place for drivers to pull over and lacks pedestrian amenities; only one passenger was observed to be picked up there. Just eight passengers were picked up at the end of Summerlea Street. While it is understandable for more passengers to be dropped off than picked up with normal commuting patterns, data collection observed a total of 66 drop-offs (88 percent) to nine pick-ups (12 percent). This suggests that drivers may not feel safe enough to pick up passengers along Negley Avenue, since there is no place to pull over, and may pick them up elsewhere, away from the immediate station area. All but two drop-offs (97 percent) along Negley Avenue were in the northbound direction where pedestrians do not need to cross the street; all pick-ups were also in the northbound direction. Therefore, drivers picking up passengers from the Negley Station may be doing so where pedestrians can more safely cross the street, such as at Ellsworth Avenue or Centre Avenue. Since relatively few pedestrian pick-ups and drop-offs occur in the designated turnaround at the end of Summerlea Street, with five drop-offs in the morning and eight pick-ups in the evening, drivers may find it too inconvenient to use, regardless of design. Comments received through the public participation process indicated traffic congestion on Ellsworth Avenue between Negley Avenue and Summerlea Street may be a concern, and commuting drivers may not want to deviate from their routes when picking up and discharging passengers.

With the pedestrian preference to use Negley Avenue to reach the station, the operational analysis included pedestrian counts across Negley Avenue to quantify jaywalking pedestrians crossing midblock to reach the station. Peak period midblock crossings are shown in the following [Figure 2.4] **Midblock Negley Avenue Pedestrian Crossing Count**.

Marked midblock crosswalks and/or pedestrian midblock traffic signals are typically only permitted where the crossing is greater than 300 feet from the nearest signalized intersection, per PennDOT standards. The signalized intersection for the Market District Driveway is within 300 feet of the Negley Station pedestrian ramp. Additionally, PennDOT's Mid-Block Crosswalk Engineering and Traffic Study Checklist cautions against midblock crosswalks anywhere where there may be sight distance obstructions. The Negley Avenue Bridge's trusses create line-of-site obstructions. In addition to the distance requirement, pedestrian volumes and opposing roadway traffic volumes are not high enough to meet either a MUTCD pedestrian signal warrant or a Pennsylvania Optional Midblock Signal Warrant. Therefore, while the project team does not recommend installation of a midblock crosswalk at this location, the team does suggest installing additional wayfinding signage to guide pedestrians to cross at the nearby Market District Driveway signalized intersection.

Pedestrian counts revealed the importance of considering multi-modal, complete street applications for roadways in the Negley Station's walkshed. [Figure 2.5] **The Peak Period Vehicular, Bicycle, and Pedestrian Volume (Bi-Directional)** that follows compares peak period vehicular, bicycle, and pedestrian counts along Negley Avenue, Summerlea Street, and Pierce Street:

Data collection revealed that both Pierce Street and Summerlea Street are typically more traveled by pedestrians than cars. During all time periods, the maximum flow rate on Summerlea Street was less than one car every two minutes (22 vehicles for two hours). The maximum flow rate on Pierce Street was less than one car ever eight minutes (14 vehicles for two hours). Due to these low volumes, regardless of street configuration (separated, joined, or joined one-way), traffic impacts due to operational changes are anticipated to be negligible. Additionally, since pedestrians comprise the majority of traffic on these streets, pedestrian-focused features should be the priority.

Peak Period	Towards Negley Station	Away from Negley Station	Total
AM Weekday (7:00 AM – 9:00 AM)	26	44	70
Midday Weekday (11:00 AM – 1:00 PM)	11	14	25
PM Weekday (4:00 PM – 6:00 PM)	12	28	40
Saturday Weekend (1:00 PM – 3:00 PM)	9	9	18

[Figure 2.4] Midblock Negley Avenue Pedestrian Crossing Count.

Few bicycles were observed in the study area, especially along Summerlea Street which did not have a bicycle observation during any peak period. Therefore, while bicycle accommodations are recommended and may stimulate bicycle use, specific bicycle-focused street changes along Summerlea Street and Pierce Street are not yet needed based on volume. In the fall of 2017, the City of Pittsburgh installed bicycle lanes on Negley Avenue north of Centre Avenue and designed Negley Avenue south of Centre Avenue as a shared street. With the improved bicycle connections, this operational analysis recommends upgrading the pedestrian sidewalk ramp from Negley Avenue to the station to accommodate increased bicycle use.

Negley Avenue carries the highest volume of vehicular, bicycle, and pedestrian traffic for roads connecting to the Negley Station. During the commuting peak hours, approximately 25 percent of the trips made along Negley Avenue were made by pedestrians. The majority of pedestrians walking along Negley Avenue were observed to be heading to and from the Negley Station, approximately 70 percent in the morning and 85 percent in the evening.

Pick-up / Drop-off Areas

At the Negley Station, data collection observed five drop-offs in the AM peak period, one drop-off in the PM peak period, and eight pick-ups in the PM peak period. Therefore, the maximum pick-up and drop-off use was nine vehicles in a two hour period, or about five per hour. Video observations revealed only infrequent occurrences of more than one vehicle waiting to pick up passengers at any given time, with a single observation of two pick-ups and one drop-off occurring simultaneously. Since most of the drop-offs occur along Negley Avenue, it is reasonable to assume drivers find the Summerlea Street location inconvenient, since it requires a short detour from a through route. Therefore, the project team does not anticipate a redesigned station layout alone significantly changing pick-up and drop-off use along Summerlea Street. This leads to opportunities to downsize the current turnaround area.

Autonomous ride sharing vehicles are already in use in Pittsburgh (as of 2018), and their mode share is forecasted to increase. Ride sharing companies are trying to make autonomous ride sharing cheaper and/or more convenient than individual car ownership. This is expected to increase transit use, since inexpensive ride sharing may be a solution to addressing first mile / last mile limitations at a cost-effective price, with the combined modes still cheaper than traditional commuting. Currently, there are no available design guidelines that predict the future impact of pick-ups and drop-offs at transit stations based on future ride sharing use. Therefore, while station redesign should take potential ride sharing vehicle use in mind, building excess capacity before the impacts are truly known may be wasteful and inefficient. Since the Summerlea Street pick-up and drop-off area currently experiences low use (five vehicles per hour maximum), the project team recommends the pick-up and drop-off area for the redesigned station to accommodate three vehicles to match the current peak demand. To prepare for a future scenario in which demand may be increased due to autonomous ride sharing vehicles, the project team recommends reserving an area (such as a wide sidewalk that could be narrowed) that could be modified for an expanded pull-off area should conditions require it in the future.

Parking Utilization

Peak Period	Location	Vehicles	Bicycles	Pedestrians
AM Weekday (7:00 AM – 9:00 AM)	Negley Ave	1,258	10	429
	Summerlea St	22	0	138
	Pierce St	6	1	97
Midday Weekday (11:00 AM – 1:00 PM)	Negley Ave	1,293	3	190
	Summerlea St	17	0	24
	Pierce St	8	0	19
PM Weekday (4:00 PM – 6:00 PM)	Negley Ave	1,660	8	486
	Summerlea St	55	0	155
	Pierce St	14	3	91
Saturday Weekend (1:00 PM – 3:00 PM)	Negley Ave	1,644	7	261
	Summerlea St	37	0	23
	Pierce St	13	0	28

[Figure 2.5] Peak Period Vehicular, Bicycle, and Pedestrian Volume (Bi-Directional).

TRANSPORTATION PLANNING

Negley Station is considered to be an urban mixed use station, in which park and ride use is typically not appropriate for TOD. The project team performed midday field observations on Wednesday March 8, 2017, to observe if there are any areas in the walkshed that functions as an unofficial park and ride to better understand how riders are reaching the station. Refer to the [Figure 2.7] **Parking Restrictions** showing parking zones and restrictions within the station's walkshed.

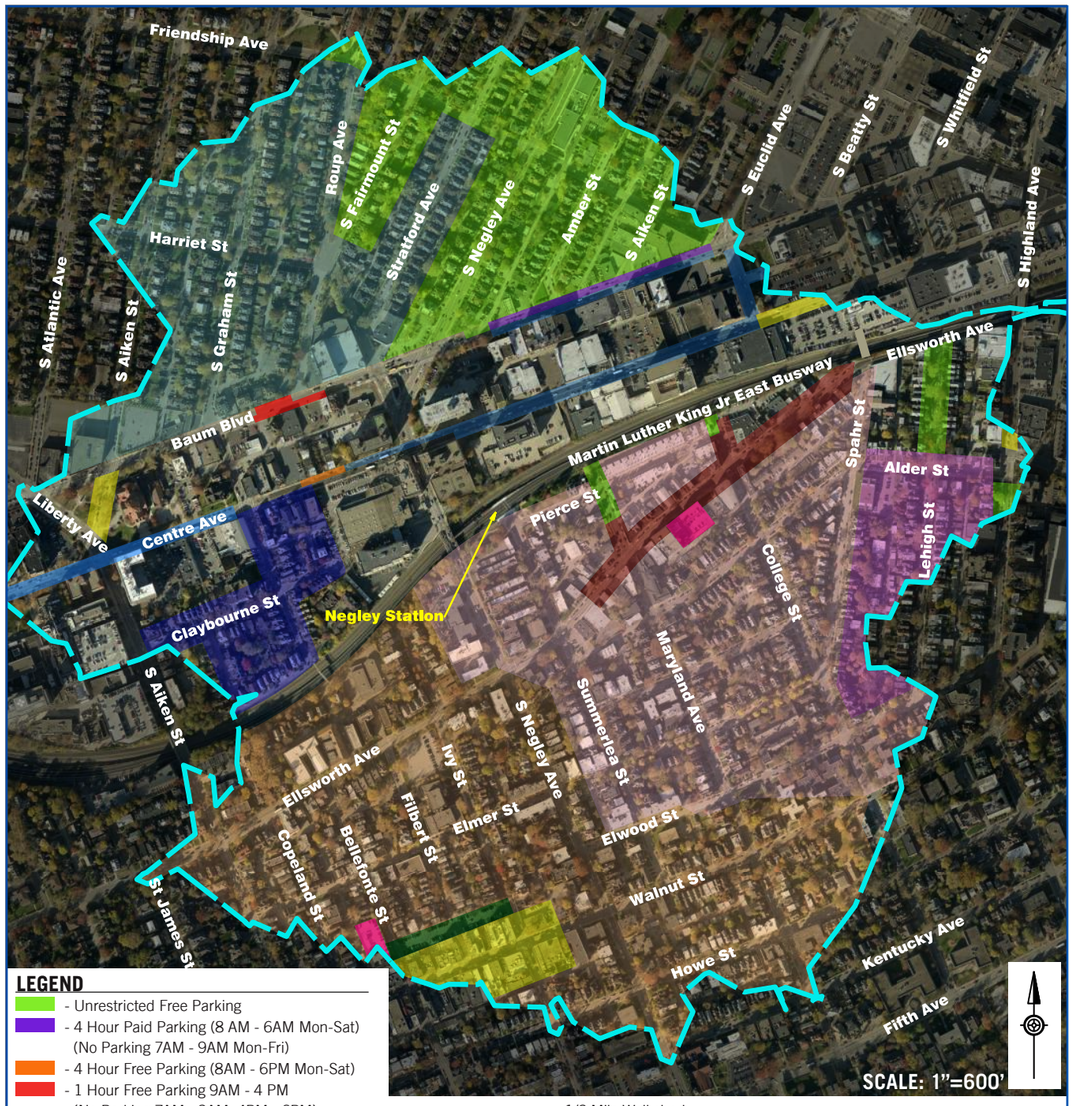
Identified in the figure, the only zone within the station's walkshed that allows free, non-permit parking is the area around Amber, North Negley, and Fairmount streets. A fall 2017 bicycle lane project removed parking from North Negley Avenue. All other areas are 4 hour or less paid parking and 2 hour or less free (permit) parking. Weekday observations determined that the free parking area fills to capacity near Baum Boulevard, yet the permit parking areas are filled to only about 50 percent in the same area (except on Summerlea Street). This indicates the free parking area may be used as an unofficial park and ride for the Negley Station. However, the same free area may also accommodate the East Liberty business district. While providing park and ride facilities is not recommended as part of Negley Station's reconfiguration, there is some demand for park and ride use in the walkshed that could increase ridership.

On PAAC timetables, there is a symbol for private lots that charge a fee for park and ride parking in the vicinity of transit stations, even if the lot is not connected with the PAAC. While the project team understands that the PAAC does not have a formal program in place to coordinate private park-and-ride lots system-wide, such a program could increase revenue for private businesses and boost ridership for the agency. Shown in the map in the [Figure 2.8] **Observed Parking Availability** figure, the project team identified three parking structures offering at least 50 spaces within the Negley Station's half mile walkshed. During a March 8, 2017, field view, the project team observed the parking structures to estimate their utilization and capacity. Results of the observations are presented in the following [Figure 2.6] **Parking Utilization within Negley Station's Walkshed**.

Parking Structure	Approximate Vacant Spaces	Potential Available Park-and-Ride Spaces
Aldi	20	None
Market District	40	25
Centre Commons	100	75

[Figure 2.6] Parking Utilization within Negley Station's Walkshed.

PARKING RESTRICTIONS



[Figure 2.7] Parking Restrictions

OBSERVED PARKING AVAILABILITY

OBSERVED PARKING AVAILABILITY

[Figure 2.8] Observed Parking Availability

The team visited parking structures at Aldi at the intersection of Baum Boulevard and Roup Avenue, Market District at the intersection of Centre Avenue and Negley Avenue, and Centre Commons along Centre Avenue with a driveway to Negley Avenue.

Based on the field view, the Aldi parking structure's second floor appeared to be approximately 80 percent full and the third floor appeared to be about 50 percent full, with around 20 vacant parking spaces. There is little opportunity for park and ride use at this location given the limited available spaces and more distant proximity to the station compared with the closer parking structures.

At the Market District garage, parking spaces were observed to be almost fully occupied near the Market District entrances and exits on both floors of the parking structure. However, parking spaces in south side of the upper level furthest from the store entrances were observed to be mostly vacant, around 40 spaces in all. Market District may be able to lease a portion of this area, perhaps around 25 spaces, for park-and-ride use. Supermarkets have peak parking demand on weekends, so shared/flex parking spaces or some park-and-ride use could help maximize parking utilization if desired by the owner.

The upper level of the Centre Commons parking structure was observed to be mostly full. Lower level parking occupancy was concentrated around the building's entrance, with the periphery observed to be almost empty. Peak parking demand for office buildings overlaps with park-and-ride parking demand, so parking availability would ultimately be based on expected parking demand by the building's owner. Based on the site observation, the building's operator may be able to offer 50 to 75 spaces for lease if desired.

Alco Parking operates the Eastside Bond Parking Garage next to the East Liberty Station, about a half mile east of the Negley Station. The four to ten hour rate is $8 per day, with the monthly rate $125. The associated development opened in phases from October 2015 to September 2016, so the garage was relatively new at the time of field observations in March 2017. This facility is not shown as a park and ride lot on PAAC maps. The project team understands the facility is currently not fully utilized during the daytime, but it is not clear if commuters consider it as a potential park and ride facility. Downtown Pittsburgh remote lot parking starts at $5 per day and central parking generally varies between $10 and $20 per day. Considering transit fares, daily parking rates for park and ride uses are limited.

These preliminary findings suggest while there is demand for daily parking near the Negley Station, options for shared private park-and-ride are limited based on availability and fee structure.

OPERATIONS ANALYSIS RECOMMENDATIONS

Based on the operational analysis, the primary focus for Negley Station's redesign should be pedestrian-focused accommodations. Therefore, the project team recommends installing wider sidewalks, better wayfinding signage, and more pedestrian amenities to promote station use. Bicycle use is currently low, but the project team recommends adding bicycle friendly infrastructure and amenities to promote bicycle use.

The project team recommends reconfiguring the pick-up and drop-off area to maintain space for three vehicles along Summerlea Street or Pierce Street, but with the ability to expand the area if needed in the future. Both streets currently function as yield streets, since lanes are not wide enough for vehicles to pass each other alongside parked cars. Due to low traffic volumes on these roadways, a change in operations is not required. However, it should be noted that a one-way loop from Maryland Avenue to Pierce Street to Summerlea Street to Ellsworth Avenue could reduce vehicular conflicts and limit pick-ups and drop-offs to the station side of the street. One way street conversions are based on resident approval, in which 70 percent of property owners must approve. The team suggests future developers study one-way operations as part of traffic studies for their projects.

Currently, most of Negley Station's pick-up and drop-off activity occurs along Negley Avenue, though the existing vehicular bridge over the East Busway prevents opportunities for reconfiguration. There is currently no space for pick-up or drop-off pull-offs. The City of Pittsburgh is planning to rehabilitate or replace the bridge in the early 2020s, so the project team recommends coordination between the PAAC and the City to determine if improved amenities and operations can be accommodated along Negley Avenue at the station. The recommendations presented in this operation analysis will help improve the operational efficiency and usability of the Negley Station for years to come.

A.5 COMMUNITY ENGAGEMENT

STAKEHOLDER & PUBLIC ENGAGEMENT OVERVIEW

At the outset of the planning process, in January of 2017, Port Authority staff and members of the consultant team held a start-up meeting and project area tour. In preparation for the start-up, the consultant team assembled a database of key stakeholders to ensure focused involvement of residents, agency representatives, and other key stakeholders. The database included the following categories:

- Developers
- Advocacy organizations
- Planning and regional agencies
- Neighborhood organizations
- Key property owners
- Public officials
- Residents

Two rounds of stakeholder meetings were convened to gather input from key stakeholders. The first round of stakeholder meetings was held on April 24-25, 2017. Individual stakeholders and organizations identified in the database received invitations. In addition, stakeholder organizations distributed information to their constituents and City Council District 8 publicized the meeting. Follow-up calls were made to stakeholders to encourage attendance and answer any questions about the process. To accommodate stakeholders available in the daytime and those available in the evening, interactive workshops were offered at both times on April 24th. At each session, following a brief presentation, participants were invited to visit three stations, focused on these topics:

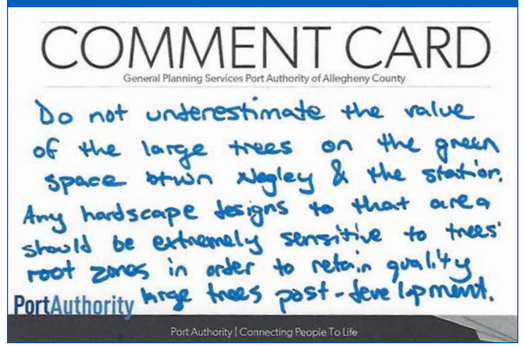
- The station area
- The TOD area of influence
- Streetscapes, gateways, and connections

Community members working together during the first of two public meetings determining the challenges and opportunities of Negley Station. The meetings were held at the First United Methodist Church on April 24-25, 2017.

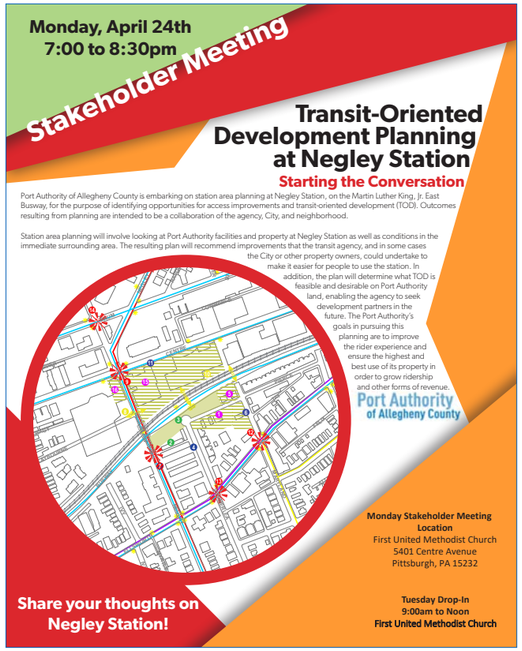
The second round of stakeholder meetings was convened on September 11, 2017. Two sessions were offered, at 1:00 PM and 6:30 PM. In addition to the outreach undertaken for the first round of meetings, flyers were posted at Negley Station to publicize the event.

Building on input that was gathered at the first round of stakeholder meetings, the consultant team presented concepts for improvements to station access, station design, and transit-oriented development. The presentation was followed by a facilitated group discussion. Questions and issues during the discussions focused on access from Negley Avenue to the station, the station design, and impacts on the surrounding residents and businesses.

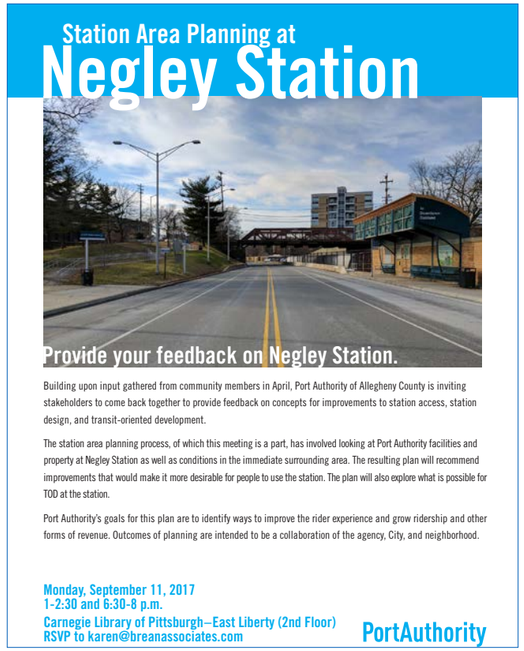
SAMPLE STAKEHOLDER COMMENT CARD



Comment cards were accessible to all participants of the stakeholder meeting so that those who were not able to speak during the meeting we able to share their input.



Flyers for Round 1 of the stakeholder meetings were posted on station bulletin boards, and the Port Authority's website. Local community groups, property owners, and public leaders were also contacted with meeting information.



Flyers for Round 2 of the stakeholder meetings were posted on station bulletin boards, and the Port Authority's website. Local community groups, property owners, and public leaders were also contacted with meeting information.

COMMUNITY ENGAGEMENT

NEGLEY AVENUE STAKEHOLDERS SESSIONS

As part of the station area planning process for Negley Station, a stakeholder meeting was held on April 25th and again on September 11th with groups that represent the Shadyside community as well as key constituencies that use the system at Negley. The meeting included focused discussions on three main topics:

- The station area itself
- The TOD area of influence
- Streetscapes, gateways, and connections

APRIL 25TH: MORNING AND EVENING SESSIONS

During the meeting, participants rotated among the three station locations. Following is a summary of comments received during the stakeholder discussions.

I. TOD Area of Influence

Group I

Bridge

- Reintroduce connection to inbound EBA
  - Access
  - Safety
- Way to connect directly to Centre?
  - Ideal – multiple ways to get to site
  - Incentivize developments?
- BCI Goals
  - Negley brings bicycle traffic from Highland Park
  - Encourage pedestrian access
  - Shops for commuters
  - Do not remove any affordable housing!
- Mixed use
  - Housing and commercial amenities
- Net gain of affordable housing – ok to have higher density
- Current "empty lot" access to busway
  - Visibility is good
  - Summerlea feels less safe
    - Darker?
    - Less traffic?

Group II

- No more density here or increase density in right place with respect to historic properties
- Centre/Negley – density ok here
- Economic isolation
- Preserving landscape/trees
  - Opportunities for green infrastructure and public art
- Connection from Negley to station
  - Functions as a park
  - Neighborhood needs green
  - Enhance the green
  - Creative design – reduce length of ramp
- Pedestrianization of environment at Centre and Negley
  - Centre should be the more pedestrian-oriented street (Baum should stay more vehicle-oriented)
  - TOD opportunity
- Pierce/Maryland block
  - Low-rise, high density, residential
  - Plus incorporate rider amenities – places to go while waiting for bus
    - Coffee truck
    - Mosites ground floor presence = good example
  - Data center is moving
  - Giant Eagle service on Negley
    - Missed opportunity
    - Anti-pedestrian
- Opportunity to activate first floor of Essex House
- Develop/utilize tools for design leverage

Group III

- Community-oriented or institutional use on Pierce (vs. commercial or office)
- Additional height ok if it means incorporating affordable housing
- Mixed income!
- Maximum height = 7 stories
- Centre/Negley area = "Grocery Square"
  - Walk interesting but not pretty
  - No deli-like places
- Overlay district to incentivize developers (ex: parking)
- Importance of green space at connection
- Town homes vs. apartments
  - Home ownership

- Low height = important on Ellsworth
- Urban Scale
- Neighborhood parking problem
  - Typically provide 1 space/unit, but folks often have 2 cars and have to park on neighborhood streets

II. Streetscape, Gateways, Connections

Group I

- Describe the streetscape
  - Impersonal, harsh
  - Large building scale
    - Not conducive for pedestrians
    - No transparency to sidewalk.
      - What is going on in the buildings?
      - Harsh, impersonal
  - Complaints about homeless on corner of Centre/Negley
  - Complaints about empty lot across from Giant Eagle Market District
    - Homeless move in
    - Unsightly
    - Supposedly above apartment building parking
  - Street trees are nice during the day, but make streets dark and dangerous at night
  - Negley is impersonal
  - Kenilworth garage an eyesore
  - "Tough pedestrian environment"
- Routes to Negley Station
  - Summerlea is nicer to walk to station
  - One participant prefers to cross Centre midblock at the Giant Eagle Market District driveway instead of at the signal at Negley
    - Cycle length is too long at Negley
  - Complaints about "Pittsburgh left" at Baum and Negley, since there are no turn arrows
  - In giving directions, "Turn at Giant Eagle"
  - No parking at the station
  - One participant uses Negley to the station instead of Summerlea
  - Challenging connection from Aldi to Negley
  - No identity of Negley from Baum to Ellsworth
  - Need comprehensive wayfinding strategy
  - Need synergy between neighborhood business districts
  - Suggestion for a map at the Negley Station showing destinations within a 5 minute walk
  - Busway is an asset, but people need better ways to realize it

Group II

- Baum built as the auto highway
- Negley is a dangerous bike route, it serves transit and residential traffic
- Stop bars on Negley not conducive to buses
- University of Pittsburgh owns Hertz in the triangular island, zoned Parks
- Pedestrian ramp from the Negley station to Negley Avenue poor for bikes
  - Cyclists walk bikes down ramp
  - Participants want a wider bridge for bikes and a pro-bike design for station
  - Want better connections from the bridge to the station

Group III

- Community landmarks
  - Dover gables (micro housing)
  - Pierce street worker housing (original for railroad employees)
  - Manor care
- The station is not an obvious landmark
  - Look for manor care or for the bridge
  - Is there something the new bridge can learn from the new bridge at Highland?
  - The Y intersection is like an arrow
    - Want landmark character in the triangular island
- Accessing the station
  - Need a safe way to cross from Dapper Way
  - Want green paint for bike lane
  - Suggestion to follow a color or a paint line to station
  - Breen noted that most riders are regulars, others can't figure it out
  - Hesitation to walk from Shadyside to the Market District Giant Eagle
- Concern that developers do not do the right thing when it comes to development in the neighborhood
- Pedestrians will choose to walk on Ellsworth and not on Centre
  - Centre is busy with nothing to see
  - Centre feels empty

COMMUNITY ENGAGEMENT

- No uniform sidewalk along Centre
- New developments along Centre has inconsistent treatments
- Ellsworth has consistent character through residential and commercial sections

- Residents want transparency with land interests
- Shadyside does not currently have a comprehensive plan
- Discussion of system time (fast) and context time (experience)

III. Station Area

Steps

- Participant thought replacing steps was a given. Others expressed that people need the stairs.
- Replacing steps does not address ADA or people with strollers.
- Redesign new stairs to account for sun/shade patterns. People used the old stairs to escape the morning sun that makes the inbound side hot in the summer.

Dropoff Area

- Participants do not see a lot of drop-offs on Negley.
- The turnaround at the station would be a good location for a pedestrian plaza.

One-Way Circulation on Surrounding Streets

- Seems like a good idea.
- Participants want to get rid of jersey barriers.

Development in/around Station

- Participants expressed concern over transparency (is there already a development on the table). If there is to be a higher density around the station, the process should be totally transparent.

Future Engagement

- Participants would like more information about BRT/TOD best practices.

Green Infrastructure / Green Space

- Participants expressed concern over ongoing maintenance. Current trees at station roundabout are dead because of PAAC over-salting. Participants would like to see a maintenance endowment or a long-term agreement.
- East Liberty plantings should be the standard (though privately funded).
- Participants would like to see a larger bioswale to protect the trees.
- One participant expressed concern over the health of the large chestnut tree.
- The inaccessible green space along the ramp is frustrating. It could be a great public amenity. One participant suggested making it "part of the waiting experience."

Pedestrian Bridge / Connection to Centre

- Participants liked the idea of a pedestrian bridge to the station.
- Bridge should be wide and inviting.
- A pedestrian bridge at Maryland could serve as a "relief valve" for Negley Ave.
- Is there a sewer easement through the private parcels that could allow a bridge?
- May be unnecessary because walking down Ellsworth is more pleasant than walking down Centre.
- A bridge would connect Emerald on Centre residents to Shadyside businesses and the Busway.
- A bridge could connect Busway riders to parking behind the medical building.

Public Art

- No "plop" art. Public art should be integrated into the overall design and ongoing maintenance of the station to create a cohesive look.
- Participants like the recent bridges over the busway.
- Public art at the station could come in the form of landscape (collaboration between landscape architect and artist).
- Participants like the idea of a smaller scale bike shed like the one at East Liberty.

Overall Design / Circulation

- Use low-glare lighting.
- Create a more pedestrian scale.
- Consider permeable paving.
- Incorporate historical signage about the area.
- Crosswalk is still in the wrong location even with new steps.
- Participants liked the idea of moving the platforms away from the bridge.
- One of the reasons East Liberty Station is great is all of the circulation options. Participants would like more options for entrances and exits.
- A median would help slow buses, could incorporate greenery, and would add to the character of the station.
- Make Connect Card kiosk more visible.

Wayfinding

- Incorporate better wayfinding, especially from Ellsworth and Centre/Baum.
- One participant uses Negley rather than Summerlea or Maryland to get to Ellsworth because of the lack of lighting and activity.
- Would be great to have a better connection to the front of Market District (not garage elevator).

Bridge Reconstruction

- Participants expressed concern over alternate routes to the station during the Negley bridge closure.

Connection to PAAC Facilities Beyond the Busway

- There are some great routes close to the Busway stop. They should be better marked and have improved shelters.

Bicycle Access

- Several participants noted that the ramp does not work for bikes – too narrow, too windy, blocked by garbage can.

SEPTEMBER 11TH: MORNING AND EVENING SESSIONS

The second round of station planning meetings was convened on September 11, 2017 with groups that represent the Shadyside community, other key stakeholders, and residents. Port Authority staff and the consultant team presented improvements to the station design and access along with transit-oriented development concepts. The second round of stakeholder meetings did not include breakout sessions.

Negley Access

- Will there be stairs down to the inbound platform?
- Original stairs were enclosed; will these be?
- Where will stairs land?
- Is the upper plaza for drop-offs?
- Will project include bridge improvements?

Busway Station

- Would it be possible to design two crosswalks?
- Pierce Street is a challenge with traffic.

Community Impacts

- Good to see mixed-use development.
- What will be the mix of affordable housing?
- What will happen to businesses displaced by new development?
- What will happen to the trees? When the hardscape gets developed, keep the trees in mind.
- What was the process for notifying property owners?

Port Authority Transit Oriented Development: Invited Stakeholders - Negley Station	
Advocacy Organizations	Committee for Accessible Transportation (CAT)
	Disabilities Law Project
	Three Rivers Center for Independent Living
	Healthy Ride
	Bike Pittsburgh
	Pittsburghers for Public Transit
	Tree Pittsburgh
	Pittsburgh Community Reinvestment Group
Planning and Regional Agencies	Allegheny County Economic Development
	Pittsburgh Department of City Planning
	Pittsburgh Department of Mobility & Infrastructure
	Allegheny Conference on Community Development
	Pittsburgh Water and Sewer Authority
	Urban Redevelopment Authority of Pittsburgh
	Pittsburgh Department of Mobility & Infrastructure
	Southwestern Pennsylvania Commission
Neighborhood Organizations	Friendship Community Group
	East Liberty Development Incorporated
	Shadyside Chamber of Commerce
	Shadyside Action Coalition
	Boys and Girls Club
	Peoples Oakland
	Bloomfield Livable Streets
	Enright Park Neighborhood Association
	Baum Center Initiative
Key Property Owners	University of Pittsburgh Medical Center
	Oxford Development
	Echo Realty
	Standard Realty
	Standard Realty
	Market House Association
Public Officials	City of Pittsburgh District 7
	City of Pittsburgh District 8
	City of Pittsburgh District 8
	City of Pittsburgh District 9
	Allegheny County Council District 10
	Allegheny County Council District 11

Listed are the identified stakeholders for the Negley Station General Planning Services meetings.

PortAuthority