



Draft Station Plan

Comments on this draft plan can be submitted to brtprojects@metrotransit.org.

The public is also invited to attend upcoming open houses to provide input and learn more about the C Line and its station locations.

- Tuesday, November 17th
 - Minneapolis Central Library
300 Nicollet Mall
11:30am – 1pm
 - Patrick Henry High School
4320 Newton Ave. N.
6pm – 8pm
- Wednesday, November 18th
 - Harrison Education Center
501 Irving Ave. N.
6pm – 8pm
- Thursday, November 19th
 - Lucy Laney Community School
3333 Penn Ave. N.
6pm – 8pm

After the open houses, the plan will be revised to incorporate public input and a staff-recommended *C Line Station Plan* will go before the Metropolitan Council for approval. Metropolitan Council approval will be sought in early 2016. The recommended *C Line Station Plan* will finalize the number of C Line stations and locations of those stations to allow for the detailed design and engineering phase to proceed.

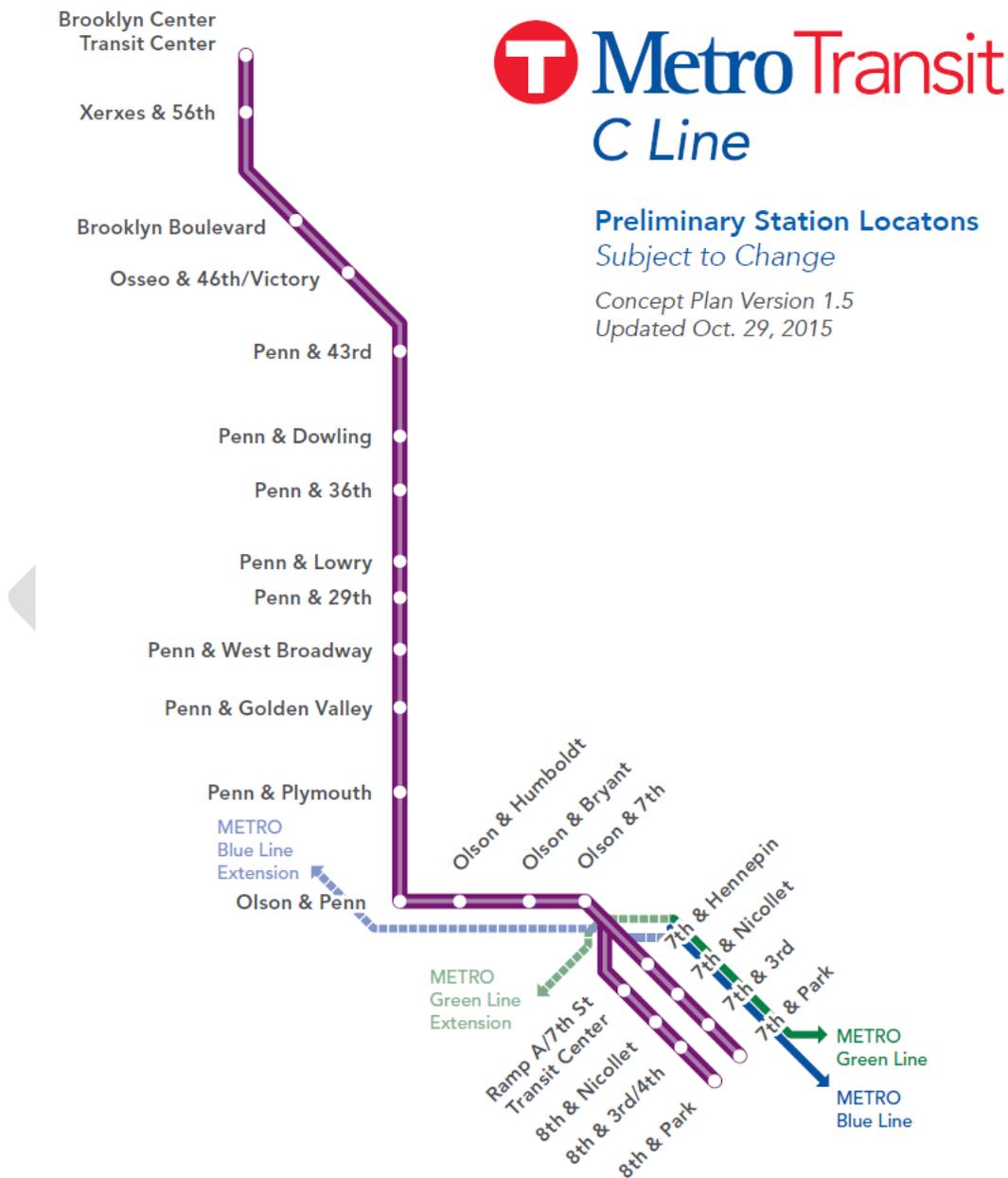
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I. Introduction

This document establishes the recommended station plan for the C Line arterial Bus Rapid Transit (BRT) project, including station locations, platform concepts, and anticipated project timeline and coordination. Compared to local bus routes, arterial BRT is an enhanced bus service intended to provide faster and more frequent service with an improved customer experience. The C Line will operate along the Penn Avenue corridor in north Minneapolis, with termini located in downtown Minneapolis and the Brooklyn Center Transit Center. See Figure 1 for a preliminary map and planned station locations. The C Line will function as the corridor's primary transit service. The existing Route 19 will continue to run with reduced frequency and to serve off-corridor branches.

Figure 1: Preliminary C Line Concept Map



Upon adoption by the Metropolitan Council, this document will guide the C Line design process anticipated to occur throughout 2016. The C Line is currently targeted for construction in 2017 with revenue service beginning in late 2017 or early 2018, pending full project funding availability.

Arterial BRT Background Information

The C Line will be the second operational line within the Twin Cities region's arterial BRT system. The A Line on Snelling Avenue and Ford Parkway is targeted to begin service in mid-2016. While Twin Cities arterial BRT service will be operational in the coming months, origins behind the concept developed in the mid-2000s.

In 2008, the Metropolitan Council's *2030 Transit Master Study*¹ identified high-ridership arterial corridors that could potentially foster transitways with high-quality bus or rail service. The study noted that constrained right-of-way availability and substantial community impacts precluded the possibility of bus or rail service in dedicated travel lanes on many of these corridors. However, it was demonstrated that faster and more frequent service along these corridors could substantially increase ridership.

The 2009 update to the Metropolitan Council *2030 Transportation Policy Plan*² (TPP) identified nine specific arterial corridors for further study of arterial BRT. These nine corridors and two additional routes formed the foundation for 2012's *Arterial Transitway Corridors Study*³ (ATCS). The ATCS presented the basic components of how arterial BRT will operate in the Twin Cities and offered initial concept-level station locations, ridership estimates, and costs for the 11 lines. Strategies to improve transit service on high-ridership corridors developed into the package of improvements now identified as arterial BRT. These improvements include, but are not limited to, pre-pay boarding, enhanced station amenities, transit signal prioritization, curb extensions, and quarter- to half-mile station spacing.

During ATCS development in 2011-2012, the Hennepin County Regional Railroad Authority (HCRRA) was actively studying Penn Avenue as a potential alignment alternative for the Bottineau Transitway/Blue Line Extension light rail project. With a locally preferred alternative now directing light rail outside of the Penn Avenue corridor, community stakeholders expressed an interest in other improved transit options along Penn Avenue. Existing high ridership on Penn Avenue's Route 19 suggested strong transit demand that warranted consideration for arterial BRT implementation. An ATCS addendum was released in January 2013 that analyzed two additional corridors, including Penn Avenue.

As previously noted, nine arterial BRT corridors were initially established within the *2030 TPP* adopted in 2009. Based on the outcomes of the 2012 ATCS and its 2013 addendum, the *2030 TPP* was amended in May 2013 to include three additional arterial BRT corridors, including Penn Avenue.

¹ Available at: <http://www.metrocouncil.org/METC/files/cc/cc84f33-a760-4c3b-84d7-3140425ec352.pdf>

² Available at: <http://www.metrocouncil.org/Transportation/Planning/Transportation-Policy-Plan/Previous-2030-Policy-Plan.aspx>

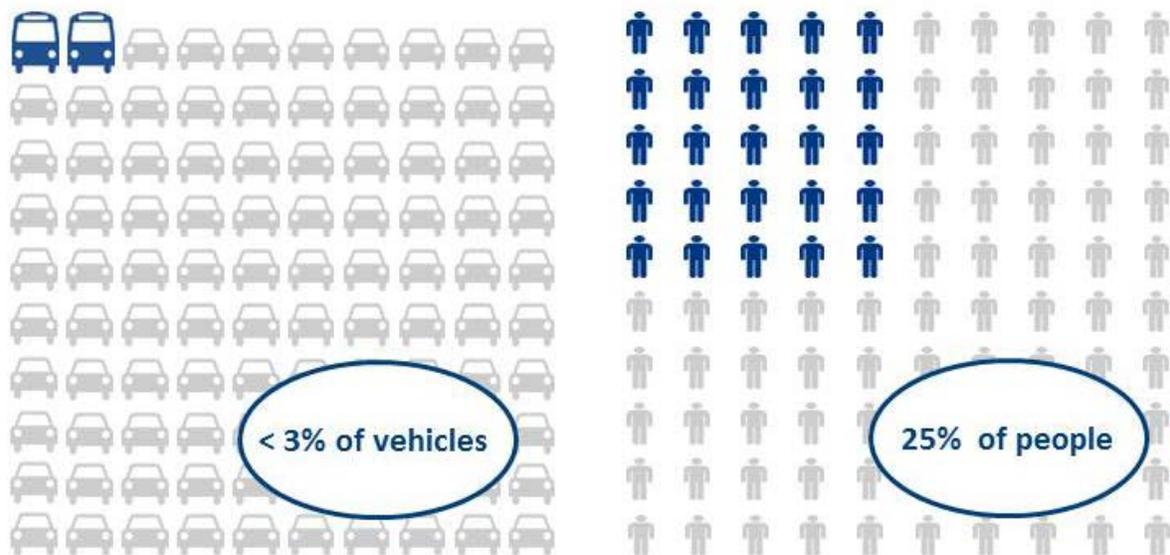
³ Available at: <http://www.metrotransit.org/abrt-study>

The C Line was further solidified as a planned transitway within the 2040 TPP⁴ adopted in 2015. Importantly, Penn Avenue is an identified arterial BRT line under the plan’s “Current Revenue Scenario” as a transitway expansion assumed to be funded within existing revenue streams.

Purpose and Need

The Penn Avenue (Route 19) corridor needs additional transit capacity. Route 19 is a critical component of the existing transit network and the Penn Avenue corridor itself. Carrying an average ridership of approximately 7,600 rides per weekday in 2014, it consistently ranks within Metro Transit’s top ten highest ridership routes. It also places within the top ten routes for highest number of passengers per in-service hour, a measure of productivity that indicates a high level of usage for the existing transit service on the Penn Avenue corridor. Ridership is high enough to carry one out of every four people on Penn Avenue north of Olson Memorial Highway, but makes up less than 3% of the total vehicle traffic. See Figure 2 for a visual representation of transit’s low-traffic/high-ridership nature on Penn Avenue.

Figure 2: Vehicle and People Throughput on Penn Avenue



Route 19 has grown into an important role within the Twin Cities transit network. The route has responded well to steady increases in service frequency since 2007. The number of daily trips has increased approximately 24% since 2007. As a result, ridership growth is strong throughout the corridor. The *ATCS Final Report Addendum*⁵ noted that the 2011 average Route 19 ridership was 6,200 rides per weekday. 2014’s average weekday ridership of more than 7,000 rides represents a 23% in ridership over that three-year span. Route 19 buses are also crowded and prone to operate in overloaded conditions, particularly on weekends.

⁴ Available at: [http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan-\(1\)/The-Adopted-2040-TPP-\(1\).aspx](http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan-(1)/The-Adopted-2040-TPP-(1).aspx)

⁵ Available at: http://www.metrotransit.org/Data/Sites/1/media/pdfs/atcs/atcs_final_report_addendum.pdf

In addition, the Route 19 corridor needs better customer amenities. The existing streetscape throughout the corridor limits the extent in which customer amenities like shelters can be provided. Sidewalk space is limited and encroachments on the existing right-of-way effectively narrow the available space within the public realm for customer improvements. This is particularly true along Penn Avenue.

The Route 19 corridor also needs faster service. Route 19 can currently take over 45 minutes to travel between downtown Minneapolis and the Brooklyn Center Transit Center. Slow average speeds are the result of a combination of factors, including dwell time at red lights, lengthy on-board fare payment, and frequent bus stops approximately every 1/8 mile.

The purpose of the C Line is to enhance transit service along the Route 19 corridor with increased service frequency, faster speeds, and a more comfortable customer experience without substantially changing the existing roadway.

Arterial BRT Overview

Arterial BRT is designed to provide an improved customer experience with faster and more frequent trips when compared to existing local service. This experience is delivered through a package of improvements that sets arterial BRT apart from the local bus service it replaces. Critical arterial BRT components include enhanced customer facilities that deliver transitway-quality improvements and in-service operational improvements that together help define what arterial BRT looks like in the Twin Cities.

Every planned arterial BRT corridor is unique in street design and surrounding land uses. As a result, arterial BRT must be flexible when developing implementation strategies along specific corridors while also delivering on the core functionality of the arterial BRT mode. The following core characteristics of arterial BRT will be implemented to the extent possible given the context and unique aspects of each planned station location along the corridor.

Station Features

Arterial BRT brings a light-rail quality experience to bus corridors by turning stops into stations, designed for less delay and an improved customer experience. See Figure 3 for additional information on what arterial BRT stations will look like throughout the Twin Cities. More information on important station characteristics is also located within Section IV. General information is provided below.

- Curb bumpouts
 - Arterial BRT will run in general traffic with bumpouts (also called curb extensions or bus bulbs) at stations when feasible. Many existing local service stops berth buses in right-turn lanes for boarding and alighting, making it difficult to merge back into traffic and causing delay. ABRT curb bumpouts at station platforms on the farside of intersections eliminate delay-inducing merging movements. They also provide

Figure 3: BRT Station Features



Completed stations will vary depending on site conditions.

What will stations look like after construction is complete?

- A** **Utility boxes** near station areas house necessary communications and electrical equipment.
- B** **Pylon markers** help riders identify stations from a distance.
- C** **Real-time NexTrip displays** provide bus information, and on-demand **annunciators** speak this information for people with low vision.
- D** **Shelters** provide weather protection and feature on-demand **heaters** and integrated **lighting**. Shelter sizes will vary based on customer demand (small shown here).
- E** **Ticket machines** and **fare card validators** collect all payment before customers board the bus.
- F** **Emergency telephones** provide a direct connection to Metro Transit security. Stations also feature **security cameras**.
- G** Stations feature **trash and recycling** containers.
- H** Platform edges are marked with a cast-iron **textured warning strip** to keep passengers safely away from the curb while the bus approaches. Many stations also feature **raised curbs** for easier boarding.
- I** **Platform areas** are distinguished by a dark gray concrete pattern.
- J** Some stations have sidewalk-level **light fixtures** to provide a safe, well-lit environment. Fixtures will match existing lights in the surrounding area.
- K** **Benches** at stations provide a place to sit.
- L** Stations have **bike parking loops**.

additional space for station amenities and pedestrians on existing sidewalks. Curb height will also be increased to 9" to facilitate near-level boarding.

- Off-board fare payment
 - Similar to existing light rail operations, fare payment will occur prior to boarding the transit vehicle. Ticket vending machines and fare validators will be located at each station for customers to pay fare in advance of bus arrival. Off-board fare payment speeds the boarding process and significantly shortens the amount of time buses are stopped at stations, allowing vehicles to stop briefly in the travel lane instead of pulling off to the side of the street. Fare enforcement will be provided by Metro Transit Police instead of individually verified by the bus operator.
- Shelters
 - Shelters provide weather protection and feature on-demand heaters and integrated lighting. Shelter sizes can vary between 12' and 36' long, dependent upon site conditions and bus stop ridership. A cement foundation increases protection from the elements and helps establish a sense of permanency compared to standard shelters.
- Information
 - Detailed rider information is provided in a variety of formats to offer clear direction and increase customer confidence in trip status. A pylon landmark, real-time signage, and printed panel with timetable, mapping, and connection information provide better information in more ways than a standard bus stop.
- Furnishings and other improvements
 - Several station components will enhance customer safety and comfort, including security cameras and telephones and adequate clear zone for boarding and alighting. Benches, trash receptacles, and bike racks are available for customer use.

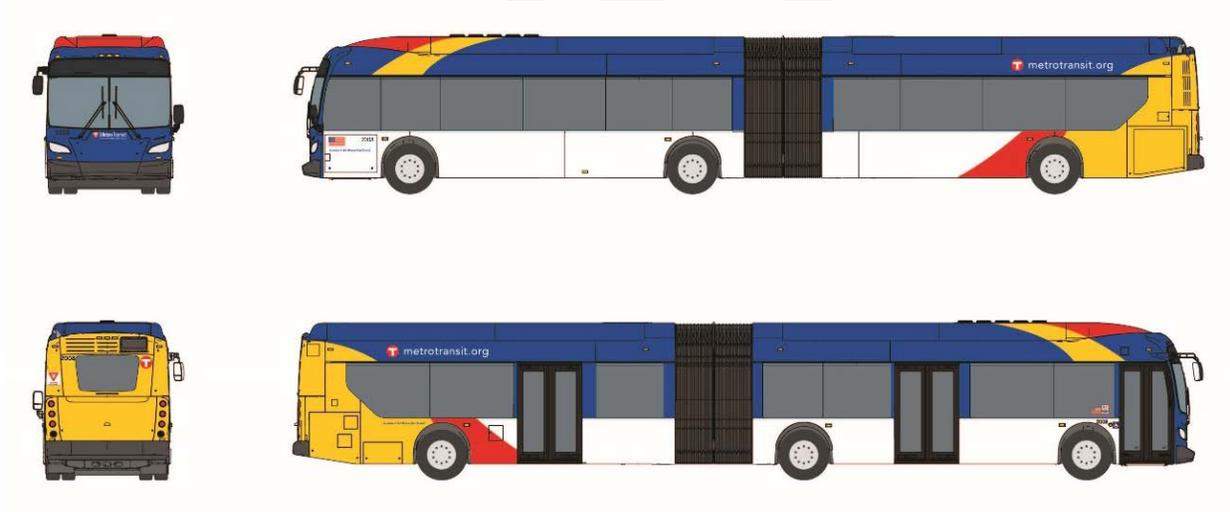
Operational Improvements

- Limited stops and increased frequency
 - ABRT utilizes quarter- to half-mile station spacing guidance, focusing on upgrading stops to stations where the greatest numbers of customers board buses today. More distance between stations significantly increases overall travel speeds when compared to local service station spacing of 1/8 mile (the length of a north-south block in Minneapolis), while also allowing for most customers to access stations comfortably on foot.
 - High frequency service increases the convenience of arterial BRT. The C Line will become the primary service in the corridor, running every ten minutes throughout the day with increased service on nights and weekends compared to the existing Route 19.

C Line Station Plan: Introduction

- Existing local service on Route 19 will be maintained with reduced frequency every 30 minutes to provide continued local (“front door”) service for customers who cannot or choose not to walk to a nearby station.
- BRT vehicles
 - ABRT buses will have distinctive branding to differentiate them from standard buses. C Line buses will be extended articulated vehicles to serve large numbers of riders, with three wide doors to allow customers to enter and exit through all doors of the vehicle. All buses will be low-floor vehicles to help facilitate boarding and alighting for all customers, and buses will have modified seating layouts for more interior circulation space. Accessibility ramps will remain for those customers using a mobility device.
- Transit signal priority (TSP)
 - Buses will be linked to traffic signals throughout the corridor to provide transit signal prioritization when conditions allow. A TSP system will allow buses to request early green time and/or extended green time to allow movement through the intersection. TSP helps reduce a substantial source of delay within local service, dwell time spent stopped at red lights.

Figure 4: C Line Articulated Bus Rendering

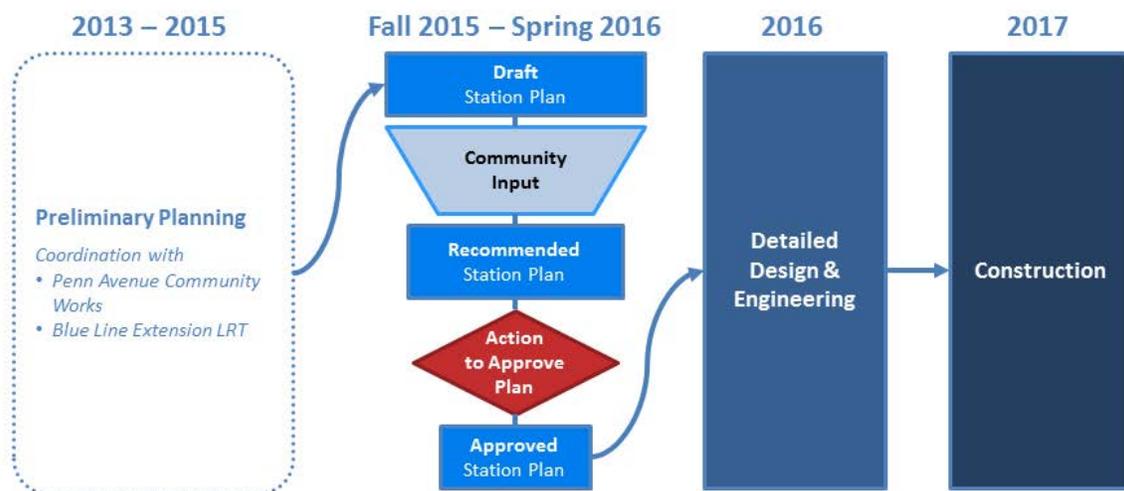


II. Planning Process

BRT on the Penn Avenue/Route 19 corridor was prioritized for implementation by adoption into the Transportation Policy Plan in May 2013. Since that time, Metro Transit has advanced preliminary planning for the C Line largely through coordinated efforts with Hennepin County and the City of Minneapolis in the Penn Avenue Community Works project.

Planning and community engagement will continue in late 2015 with opportunities to review the C Line Station Plan. This document will guide the project's detailed engineering phase upon formal approval by the Metropolitan Council. See Figure 5 for additional project development process information.

Figure 5: Project Development Process



Penn Avenue Community Works⁶

Preliminary C Line planning began in late 2013 in coordination with the Penn Avenue Community Works (PACW) project. Penn Avenue Community Works is a partnership led by Hennepin County in collaboration with the City of Minneapolis, Metro Transit, and the neighborhoods and people of the Penn Avenue corridor to realize the community vision for transportation access, economic opportunity, and improved quality of life. The project area extends from the planned Penn Avenue Southwest light rail transit (Green Line Extension) station south of I-394 north to the Minneapolis city limit at Osseo Road and 49th Avenue North.

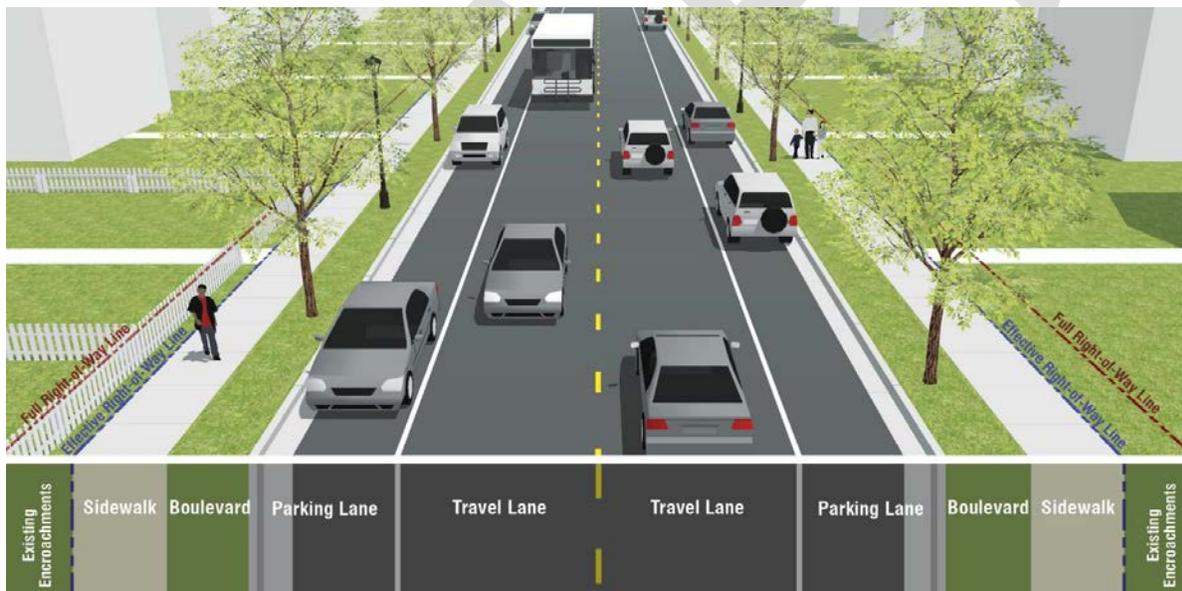
Since 2013, the project has engaged partner agencies and the community in a planning process to develop a vision for the corridor. The PACW project included the C Line as part of this long-term vision, resulting in a critical partnership throughout the project's planning process. As part of Penn Avenue Community Works communications and engagement, Metro Transit shared information on C Line plans and gathered input on station concepts from neighborhood associations, community councils, and other local organizations. The project has included extensive community engagement

⁶ For additional information, see the PACW website at: <http://www.hennepin.us/residents/transportation/penn-avenue-community-works>

and agency coordination to research and analyze existing corridor conditions (e.g., roadway, transit, housing, etc.) and align programs, plans, and projects occurring throughout the corridor. A final outcome for the Penn Avenue Community Works planning phase, expected in early 2016, will be an implementation framework to identify ways and means to realize the long-term vision for the corridor.

As part of Penn Avenue Community Works planning, Hennepin County and its partners developed roadway concepts for a Penn Avenue reconstruction. Technical analysis of these concepts included traffic modeling to verify C Line bumpout station concepts along Penn Avenue. Roadway concepts were discussed at several open houses throughout the fall of 2014⁷ and included a variety of lane width, parking, bicycle facility, and pedestrian realm combinations on Penn Avenue. C Line station location outreach was a component of these open houses. Roadway concept development culminated in February 2015, when the Penn Avenue Community Works Steering Committee selected a preferred roadway concept consisting of two travel lanes with parking on both sides of the roadway and an expanded pedestrian realm with a tree boulevard. See Figure 6 for additional information.

Figure 6: Penn Avenue Preferred Roadway Concept



Following selection of a preferred roadway concept, Penn Avenue Community Works and C Line collaboration also resulted in the development of preliminary designs for intersections with C Line stations within the Penn Avenue Community Works project area. These preliminary design concepts inform the station plans within Section V of this document.

⁷ See the *C Line Planning Phase Outreach Summary* for specific open house dates. This document is available at: <http://www.metrotransit.org/Data/Sites/1/media/abrt/cline/c-line-planning-phase-outreach-summary-spring-2015.pdf>

Preliminary Planning and Community Outreach

Metro Transit conducted outreach throughout 2013, 2014, and 2015 to share general information about BRT, receive feedback on proposed station locations, and allow opportunities for one-on-one discussions with interested area business and residential stakeholders.

Public engagement efforts throughout the preliminary planning process included open houses in coordination with Penn Avenue Community Works and the Blue Line Extension LRT project, presentations to neighborhood associations and community councils, direct mailings to community residents and businesses, and one-on-one follow-up discussions with interested stakeholders. Detailed information on this outreach process is located within the *Preliminary Planning Phase Outreach Summary* available on the Metro Transit C Line project website⁸.

Draft C Line Station Plan Review

Together with the Penn Avenue Community Works effort, the preliminary planning concept outreach helped establish information presented within this document, the *C Line Station Plan*. The *C Line Station Plan* is intended to provide background information on C Line project development history, future project timelines, and station plans for station locations throughout the corridor. The information in this document will help drive the engineering and design process for individual station locations.

A public engagement process will be implemented along with the publication of a draft *C Line Station Plan* to help finalize the document prior to Metropolitan Council approval. Public workshops and open houses, electronic and print communications, and opportunities for one-on-one conversations with Metro Transit staff will help revise recommendations in the plan, including station-specific concepts.

C Line Station Plan outreach will occur throughout the fall of 2015. Input obtained from outreach activities will be integrated into a revised *C Line Station Plan*.

Recommended C Line Station Plan Adoption

After the fall 2015 public engagement opportunities, the plan will be revised to incorporate public input and a staff-recommended *C Line Station Plan* will go before the Metropolitan Council for approval. Metropolitan Council approval will be sought in early 2016. The recommended *C Line Station Plan* will finalize the number of C Line stations and locations of those stations to allow for the detailed design and engineering phase to proceed.

⁸ Available at: <http://www.metrotransit.org/Data/Sites/1/media/abrt/cline/c-line-planning-phase-outreach-summary-spring-2015.pdf>

Blue Line Extension LRT Coordination and Future Potential C Line Realignment Study

Along Olson Memorial Highway from Penn Avenue east into downtown Minneapolis, the C Line shares an alignment with the planned Blue Line Extension LRT line. Blue Line Extension preliminary design has included accommodations for C Line stations along Olson Memorial Highway. C Line construction is targeted for 2017, with service beginning in 2017 or 2018. Blue Line Extension construction is targeted for construction as early as 2018 or 2019, with service anticipated in 2021. Pre-Blue Line Extension operations, without LRT serving transit demand along Olson Memorial Highway, the C Line must continue to serve customers on Olson Memorial Highway in conjunction with accompanying local service via Route 19. As a result, pre-Blue Line Extension C Line operations on Olson Memorial Highway are planned to utilize temporary station improvements to both support near-term BRT operations and move when displaced by expected LRT construction beginning in 2018.

Given LRT investment on Olson Memorial Highway, stakeholders have expressed interest in studying potential long-term relocation of the C Line from Olson Memorial Highway to Glenwood Avenue after Blue Line Extension light rail service begins. Additional analysis of a C Line concept on Glenwood Avenue is necessary to determine its feasibility as a long-term option. This analysis will occur in early 2016 to help identify the best permanent alignment for C Line operations.

This *C Line Station Plan* is a plan for stations along the Olson Memorial Highway alignment and is not intended to communicate details regarding a potential long-term Glenwood Avenue alternative. Stakeholders and the public will be engaged in additional study of Glenwood Avenue in 2016.

III. Project Implementation & Timeline

Anticipated Schedule

The C Line process consists of three major components:

- Planning (2014-2015)
- Design (2016)
- Construction (2017, pending funding availability)

Revenue service is anticipated to begin in late 2017 or early 2018.

Planning Phase (2014-2015)

See Section II for more information about the C Line planning process. The C Line planning process will conclude with the adoption of the recommended *C Line Station Plan* by the Metropolitan Council in early 2016. The recommended *C Line Station Plan* will finalize station locations and key station components to allow for the detailed design phase to proceed.

Design Phase (2016)

Pending Metropolitan Council approval of the recommended *C Line Station Plan*, the engineering and design phase will occur throughout 2016. The design services procurement and contract award process is anticipated to be finalized by early 2016 in order to allow adequate time for the completion of project engineering by 2017.

Construction Phase (2017)

The C Line is targeted for construction in 2017, pending full project funding availability. The construction phase would begin with the initiation of the bidding process in early 2017. A contract award and subsequent Notice to Proceed is anticipated by spring of 2017. Construction and system testing throughout the remainder of 2017 would lead to the beginning of revenue service in 2018.

Coordinated Implementation

As noted within Section II, ongoing infrastructure planning for projects surrounding the C Line corridor can substantially affect final design and construction scheduling. This will result in a phased approach to C Line construction. Some permanent stations will be constructed after the start of C Line operations in conjunction with future infrastructure improvements being built by partner agencies. See below for additional information on how other infrastructure projects interact with the C Line and a phased construction approach. More station-specific project coordination information (including the Penn Avenue Community Works project) is discussed

within Section V's individual station plans. C Line coordination with other partner agency infrastructure projects include:

- **Brooklyn Boulevard Corridor Project, Bass Lake Road to 49th Avenue (City of Brooklyn Center)⁹**
 - Impacted C Line stations include:
 - Brooklyn Boulevard area
 - The City of Brooklyn Center is leading a reconstruction project of Brooklyn Boulevard from 49th Avenue to Bass Lake Road, currently scheduled for 2018. The future roadway design will differ from existing conditions, so constructing a station prior to the Brooklyn Boulevard reconstruction is not recommended. Station development will be coordinated with the reconstruction project and built after the start of C Line operations. Because this area is well served by existing service, a temporary C Line station will not be constructed prior to the street reconstruction.
- **METRO Blue Line Extension (Metro Transit)¹⁰**
 - 2018-2021: C Line coordination on Olson Memorial Highway
 - Impacted C Line stations include:
 - Olson & Penn
 - Olson & Humboldt
 - Olson & Bryant
 - The Blue Line Extension project, currently in development, will construct light rail along Olson Memorial Highway, with construction anticipated from 2018 to 2020. Service on the light rail extension is scheduled to begin in 2021. As a result, pre-light rail C Line operations on Olson Memorial Highway are planned to utilize temporary station improvements at existing bus stops to support near-term BRT operations and be easily moved when displaced by expected Blue Line Extension construction beginning as early as 2018.
- **8th Street South Reconstruction Project, Hennepin Avenue to Chicago Avenue (City of Minneapolis)¹¹**
 - 2019: Hennepin Avenue to Chicago Avenue
 - Impacted C Line stations include:
 - 8th & Nicollet
 - 8th & 3rd

⁹ Anticipated project schedule from City of Brooklyn Center's 2015-2019 CIP, available at: <http://www.cityofbrooklyncenter.org/DocumentCenter/View/3910>

¹⁰ Anticipated project schedule from Metro Transit project website at: <http://www.metrocouncil.org/Transportation/Projects/Current-Projects/METRO-Blue-Line-Extension/Timeline.aspx>

¹¹ Anticipated project schedule from City of Minneapolis proposed 2016-2020 CIP map, available at: <http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/images/wcms1p-142016.pdf>

- 8th & Park
 - The City of Minneapolis plans to reconstruct 8th Street from Hennepin Avenue to Chicago Avenue in 2019-2020. Because 8th Street is slated for major construction in the next few years, these permanent stations will not be built as part of the C Line project in 2017. Temporary station improvements will be deployed when the C Line opens, and buses will move to detour routes throughout the 8th Street reconstruction activities. Permanent station design and construction will be coordinated with the planned reconstruction project.

DRAFT

IV. Station Characteristics Overview

There are several major considerations that influence the design of a BRT station. These components help define each station's operational efficiency and customer experience and include:

- Intersection location of station
- Platform location
- Shelter size
- Curb location
- Platform length

Additional background information guiding station element decisions is below. These considerations played a central role in developing each station's station plan within Section V. Station-specific elements are summarized within each station plan.

Once approved, these plans will guide the detailed design of stations by identifying station intersections and platform location at those intersections. Other characteristics will be finalized through detailed engineering in the upcoming design phase.

Station location: Why this intersection?

A key objective of arterial BRT includes offering faster trips for more people along the corridor. Faster trips, in part, depend upon the strategic placement of stations with increased spacing compared to the existing Route 19. Quarter- to half-mile spacing is a foundational consideration of C Line station selection. Existing Route 19 service maintains bus stops with approximately 1/8-mile spacing. This increase in station spacing distance is anticipated to help C Line service operate up to 24 percent faster than the existing local service, when combined with other improvements. Serving today's customers well and maximizing future ridership along the corridor depends upon station locations serving substantial numbers of passengers without adding significant walk distance. A balance between adequate station spacing and high-ridership areas helped drive station locations along the C Line.

Station location inputs include:

- Quarter- to half-mile station spacing guidance;
- Existing Route 19 ridership at current bus stops;
- Community engagement;
- Connectivity to existing transit network; and
- Existing land uses and right-of-way conditions.

Platform location: Nearside or farside of the intersection?

A nearside platform is located just before a roadway intersection. A farside platform is located just after a roadway intersection. Arterial BRT operations benefit more from farside platforms. As a result, C Line platforms will be placed farside whenever possible.

Farside platforms are beneficial because they eliminate conflicts between right-turning vehicles and stopped transit vehicles common at nearside platform locations. Farside stations also maximize transit signal priority effectiveness by allowing a bus to activate its priority call to the signal, progress through the intersection, and stop at the farside platform. This reduces scenarios more common to nearside locations when a bus is required to stop twice before moving through an intersection: once for a red traffic signal, and again to unload and load passengers at the platform itself.

The preferred C Line platform location will be on the farside of intersections. However, not all platforms are sited farside. Site-specific conditions that may prevent implementation of farside platforms include:

- Existing roadway access or driveways;
- Right-of-way needs and constraints; and
- Surrounding land uses.

Shelter size: Small, medium, large?

Stations will be equipped with more features than a typical bus shelter to allow for a comfortable and safe customer experience. Station features will incorporate many elements found at light rail stations, but in a more compact setting adaptable to site-specific conditions. Standard station features include shelters with heat and lighting, security features like a camera and phone, real-time bus arrival information, trash receptacles, and printed maps. A key variable at each station is shelter size: small, medium, or large shelter structures. Basic shelter dimensions are:

- Small shelter: 12' (length) x 5' (width) x 9' (height);
- Medium shelter: 24' x 5' x 9'-12'; and
- Large shelter: 36' x 5' x 9'-12'.

The primary variable directing planned shelter sizes at each platform will be existing ridership (specifically, the number of boardings) for all routes serving the current location/bus stop. More boardings at an existing stop warrants a larger shelter, with shelters sized to accommodate peak demand based on daily ridership. These boarding guidelines for different shelter sizes are:

- Small shelter: Fewer than 50 boardings per day
- Medium shelter: Between 50 and 200 boardings per day
- Large shelter: More than 200 boardings per day.

Specific site conditions may influence the size of the shelter planned for each location. Shelter size will ultimately be determined through detailed site engineering in the design phase.

See Figures 7-9 for shelter renderings.

Figure 7: Small Shelter Rendering



Figure 8: Medium Shelter Rendering



Figure 9: Large Shelter Rendering



Platform bumpouts: Will the curb at station platforms be extended?

A bumpout platform is a section of sidewalk extended from the existing roadway curb to the edge of a through-lane for the length of the platform. Immediately beyond the platform length, this curb extension or extended sidewalk transitions back to the typical sidewalk width. Existing sidewalk is routed behind the platform and related structures (e.g., shelter, pylon, bicycle racks, etc.). Platform bumpouts are considered at locations where the area against the curb is currently used for on-street parking or in some cases, turn lanes. See Figure 10 for more information.

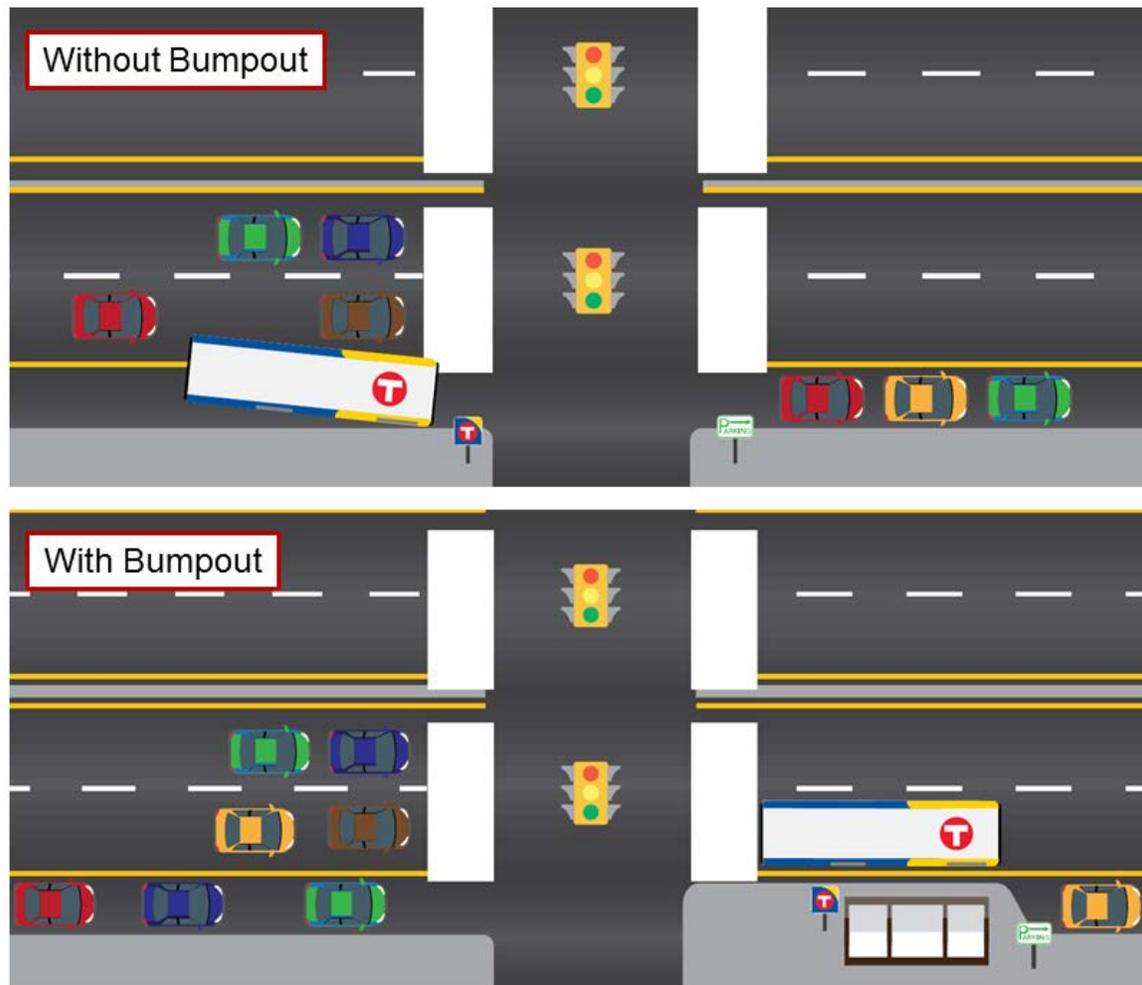
At locations where bumpout platforms are not feasible due to existing site constraints (e.g., turning lane conditions or absence of on-street parking), the platforms will be adjacent to the existing curbside travel lane without moving the curb. Surrounding sidewalk will be integrated into the platform instead of routed behind it.

Under both bumpout and non-bumpout/curbside platform conditions, buses stop in the travel lane and eliminate the need to merge into traffic when leaving stations.

Platform bumpouts improve overall bus operations by:

- Eliminating the need for buses to merge in and out of traffic to access stations;
- Potentially reducing overall platform length, which may allow on-street parking stalls to be added in space previously used for bus movements;
- Providing space for clear and accessible all-door boarding, shelters, and station amenities;
- Minimizing conflicts between waiting bus passengers and pedestrians using the sidewalk.

Figure 10: Bumpout Visualization



Platform length and height: How long will the platform be? How high will the platform be?

C Line platforms will be designed for a standard length of 60'. A 60' platform length can fully accommodate a 60' articulated bus, the planned standard bus type for revenue service. Certain constrained conditions, like existing access points and driveways, might preclude a full 60' platform from being constructed. In some places, stations may be designed at a longer length to accommodate more than one bus stopped at a given time.

Platforms will have a target design standard of 9" curb height to facilitate "near-level boarding." Near-level boarding substantially reduces the distance between the curb and the floor of the bus, easing vehicle access for passengers with low mobility and enabling faster boarding and alighting of all passengers. Near-level boarding does eliminate the need for ramps to be deployed to assist passengers using mobility devices. Curb heights of 9" or lower are compatible with all bus models. Curb height for specific C Line platforms will be finalized within the project's detailed design phase and can be influenced by variables like area drainage requirements and Americans with Disabilities Act (ADA) standards.

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C Line Station Plan: Station Characteristics Overview

Near-level boarding is in contrast to “level boarding,” where platforms are located at the same level and height as the floor of the bus, a height of approximately 14 inches. Light rail platforms within the Twin Cities are an example of level-boarding facilities. Level-boarding platforms are not possible for the C Line due to the tight space constraints of constructing stations within existing right-of-way; ramping up to a 14-inch curb from a 6-inch sidewalk requires a prohibitively large area. Level boarding also requires that buses slow down considerably upon approaching stations, which can negate some to all of the travel time savings benefit they may provide.

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V. Station Plans

The following section contains individual station plans for each of the 24 C Line stations. The plans communicate two core station components: the station intersection and the location of platforms within that intersection. While other details are provided to the extent possible (e.g., curb bumpout information, platform length, shelter improvements, etc.), these details will be finalized throughout the detailed design and engineering phase in 2016.

There are four main sections of the C Line alignment: Brooklyn Center, Penn Avenue/Osseo Road, Olson Memorial Highway, and downtown Minneapolis. The individual station plans are organized north to south, beginning in Brooklyn Center and ending in downtown Minneapolis.

Brooklyn Center

- [Brooklyn Center Transit Center](#)
- [Xerxes & 56th Avenue](#)
- [Brooklyn Boulevard Area](#)

Penn Avenue/Osseo Road

- [Osseo & Victory Area](#)
- [Penn & 43rd Avenue](#)
- [Penn & Dowling](#)
- [Penn & 36th Avenue](#)
- [Penn & Lowry](#)
- [Penn & 29th Avenue](#)
- [Penn & West Broadway](#)
- [Penn & Golden Valley](#)
- [Penn & Plymouth](#)

Olson Memorial Highway

- [Olson & Penn](#)
- [Olson & Humboldt](#)
- [Olson & Bryant](#)
- [Olson & 7th Street](#)

Downtown Minneapolis

- [Ramp A/7th Street Transit Center](#)
- [8th & Nicollet](#)
- [8th Street & 3rd/4th Avenue](#)
- [8th Street & Park](#)
- [7th Street & Hennepin](#)
- [7th Street & Nicollet](#)
- [7th Street & 3rd/4th Avenue](#)
- [7th & Park](#)

Station Plan: Brooklyn Center Transit Center

This station will function as the northern terminus of the C Line. It will use the existing Brooklyn Center Transit Center, one of the busiest boarding locations in the Metro Transit system. Over 400 customers board Route 19 each weekday at the transit center, the highest ridership of any existing southbound stop. The Xerxes & 56th Avenue station is about 0.30 mile to the south, within the 0.25 to 0.5 mile station spacing guidelines. The existing transit facility will be retrofitted to include core BRT improvements (see “Other Alternatives Considered” for additional information).

Table 1: Station Plan Summary – Brooklyn Center Transit Center

Brooklyn Center Transit Center		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Brooklyn Center Transit Center</u> Existing transit center will serve as the northern terminus with connections to many transit routes.
	Platform Location	<u>SB: Existing transit stop location</u> Will modify existing Brooklyn Center Transit Center facilities.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Use existing waiting facilities</u> Station will use existing transit center facilities.
	Curb Configuration	<u>SB: No bumpout</u> Platform located off-street at existing transit center. No additional pedestrian space or operational improvements required.
	Platform Length	<u>SB: At least 60' long</u> Will use C Line design standard to accommodate at least one 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

Notes and Discussion

As an existing transit center, the station will offer connections to many transit routes. Reduced Route 19 local service is planned to be maintained at this location.

Retrofit of Existing Facility

The C Line project will leverage existing transit infrastructure to implement a BRT station with minimal construction. The specific C Line platform/gate location within the transit center will be determined during the detailed design and engineering phase.

Instead of implementing a complete and new BRT station package (e.g., shelter, lighting, bike loops, etc.), the C Line will retrofit the existing facility with core BRT components. C Line construction improvements will include the landmark pylon housing real-time signage and other technology, fare collection equipment, and additional BRT branded signage. Figure 1 highlights existing conditions.

Figure 4: Brooklyn Center Transit Center



Other Alternatives Considered

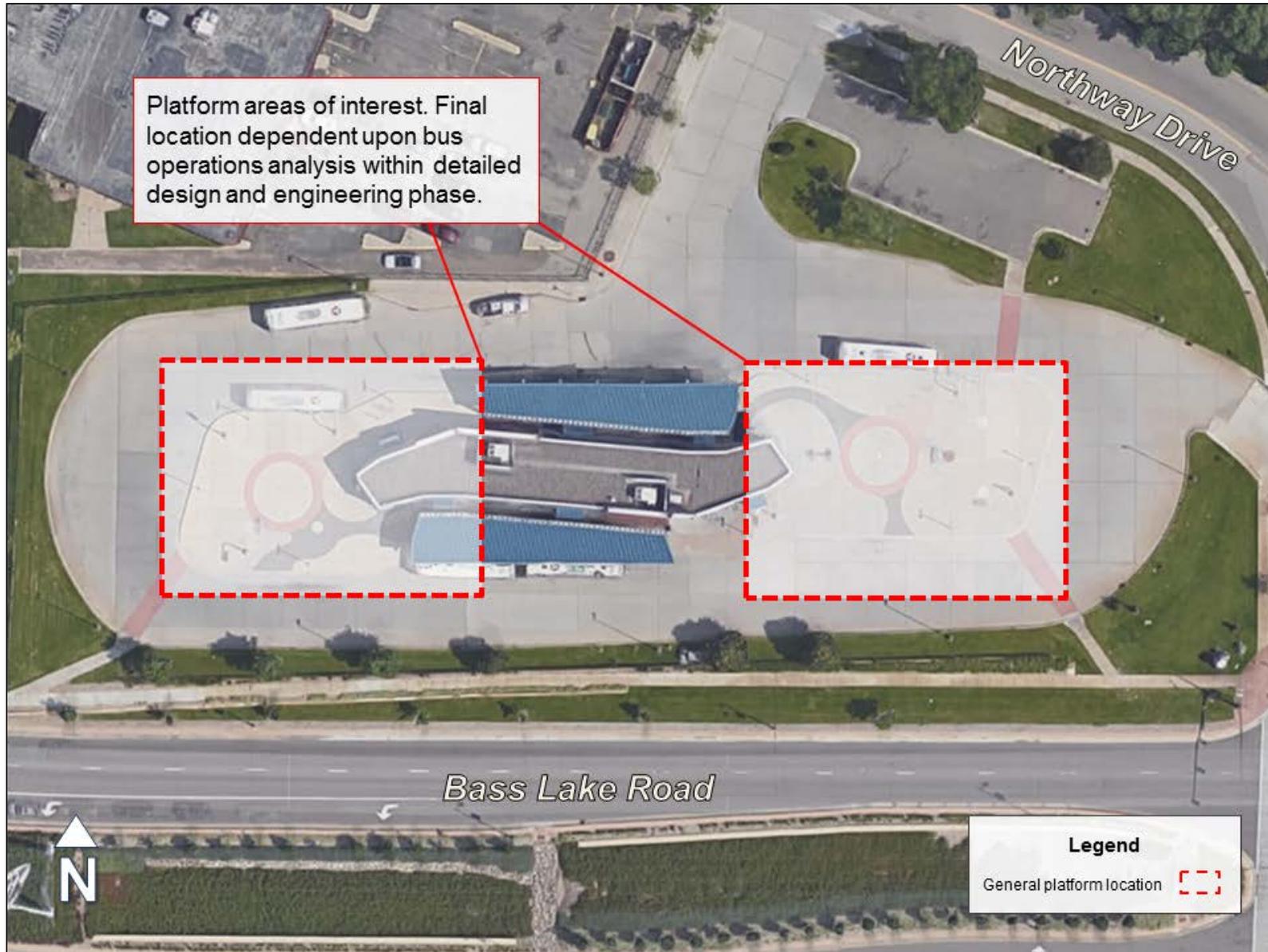
No alternative locations were considered for this station.

Project Delivery

Permanent station improvements at the Brooklyn Center Transit Center are anticipated to be constructed independently of any larger infrastructure project in 2017. The station will be operational at the start of C Line revenue service. This timeline is subject to change pending full C Line project funding.

Some C Line BRT investments at this location may ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

Figure 5: Station Layout – Brooklyn Center Transit Center



Station Plan: Xerxes & 56th Avenue

This station will serve a major Brooklyn Center commercial area. The distance between Xerxes & 56th Avenue and the closest station to the south exceeds the 0.25-0.5 mile spacing guidance as a result of Highway 100's presence and ridership trends in the area. Depending on final location, the Brooklyn Boulevard Area station will be situated approximately 0.75 mile to the south. The Brooklyn Center Transit Center station is located about 0.3 mile to the north. Compared to other southward station options in the commercial area, the 56th Avenue location provides a balance between adequate station spacing and substantial ridership to support a BRT investment.

Table 2: Station Plan Summary – Xerxes & 56th Avenue

Xerxes & 56th Avenue		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Xerxes & 56th Avenue</u> Provides access to major commercial area.
	Platform Location	<u>SB: Nearside (NW corner)</u> Existing bus stop; adequate length available nearside compared to farside; bus stop currently exists at this location. <u>NB: Nearside (SE corner)</u> Existing bus stop; right-of-way constraints exist on farside quadrant; bus stop currently exists at this location.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Replace existing shelter</u> Will replace existing shelter with enhanced amenities. <u>NB: No shelter</u> Northbound station functions primarily as a drop-off location; site constraints and low number of boardings do not support shelter placement; no shelter currently present.
	Curb Configuration	<u>SB: No bumpout</u> Adequate space for station improvements currently exists. Travel lane is immediately adjacent to station. <u>NB: No bumpout</u> Adequate space for station improvements currently exists. Travel lane is immediately adjacent to station.
	Platform Length	<u>SB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle. <u>NB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. The station will serve many transit connections. Local Routes 5 and 22 provide service to downtown Minneapolis and points south. Local Route 717 provides service to Plymouth. Routes 721 and 724 provide limited stop service and Route 761 provides express service between Brooklyn Park and downtown Minneapolis. Reduced Route 19 local service will also be maintained at this location.

The intersection of Penn Avenue and 56th Avenue is unsignalized. Transit signal priority will not be implemented at this intersection.

Site Station Platforms on Nearside Corners of Xerxes & 56th Avenue

Station platforms will remain at existing bus stop locations on the nearside of the intersection for both northbound and southbound buses. The intersection is unsignalized, removing the influence of transit signal priority on farside siting.

In addition, length required for a southbound farside platform siting is limited by commercial driveway access. Comparatively, the southbound nearside quadrant has more than 100' of length to safely accommodate an arterial BRT platform.

Right-of-way constraints exist for a northbound farside platform siting. The nearside intersection quadrant contains additional space east of the sidewalk/trail, occupied by the existing transit waiting area. Coordination with Three Rivers Park District and the City of Brooklyn Center will be ongoing throughout the detailed design and engineering phase.

Shelters

BRT station characteristics can flex in some ways to the unique site conditions and needs of every station. This is particularly true for stations near the end of the line where many people are getting off the bus but few are boarding. With low northbound ridership at this station, the last before reaching the Brooklyn Center Transit Center terminus, the northbound platform will largely function as a drop-off location. As a result, a shelter installation is not supported at this location.

The southbound platform, however, currently serves well over 100 boardings a day and will contain an enhanced shelter.

Other Alternatives Considered

Brooklyn Center Station Consolidation

The 2012 ATCS addendum¹² considers stations at both Brooklyn & Highway 100 and Xerxes & 56th Avenue. The initial plan for a Brooklyn & Highway 100 station, however, was based on today's bus stops and did not account for future planned reconstruction and changes to Brooklyn Boulevard in

¹² Available at: http://www.metrotransit.org/Data/Sites/1/media/pdfs/atcs/atcs_final_report_addendum.pdf

this vicinity. The City of Brooklyn Center's plans for a 2018 reconstruction of Brooklyn Boulevard relocate the existing bus stop north to Brooklyn & 55th Avenue, approximately 0.25 mile from the proposed Xerxes & 56th Avenue station.¹³ The current bus stop location draws mid-block crossings; by moving the stop further north, the City hopes to minimize the number of people encouraged to cross mid-block. See Figure 1.

Figure 6: Brooklyn Blvd. Reconstruction Concept Plan from Hwy 100 to 55th Ave.



As a result of these plans, options for station locations in this area were reconsidered. An analysis of planned road reconfiguration, ridership figures, and land uses within the Brooklyn Center portion of the corridor prompted considerations of various station combinations north of Highway 100 (excluding the Brooklyn Center Transit Center terminus). Station options included:

- Xerxes & 56th Avenue and Brooklyn & Hwy 100 stations;
- A single station at Brooklyn & 55th Avenue;
- A single station at Xerxes & 55th Avenue; and
- A single station at Xerxes & 56th Avenue.

To inform the station plan, Metro Transit conducted a customer survey to determine rider origins within the Shingle Creek Crossing area, the major ridership generator in the area. Under a consolidation scenario where a single station is constructed at 55th Avenue (at either Xerxes or Brooklyn), understanding rider origins and a customer “center of gravity” throughout the area informs the siting of a station. Survey results indicated the 56th Avenue location provides more direct transit access to popular origins in the commercial area compared to 55th Avenue. Ridership at 56th Avenue for all bus routes is greater than ridership at 55th Avenue and Highway 100 stops combined. See Figure 2 for additional information. As a result, consolidating stations into a single station at either Xerxes & 55th Avenue or Brooklyn & 55th Avenue would not serve customers as well as a station at 56th.

With the planned relocation of the Brooklyn & Highway 100 bus stop north to Brooklyn & 55th Avenue, the resultant distance between stops to Xerxes & 56th is 0.25 mile. The 56th Avenue location currently serves three times the number of customers served by the Brooklyn & Highway 100 bus stop. See Figure 2 for additional information. The presence of the Highway 100 overpass

¹³ Additional information available at: <http://www.cityofbrooklyncenter.org/DocumentCenter/View/2648>

immediately to the south limits pedestrian connectivity, thereby limiting the potential walk-access catchment area for the stop. Given the planned relocation of the bus stop, its short distance to the Xerxes & 56th station, limited ridership, and limited pedestrian connectivity, a Brooklyn & Highway 100 station is not recommended for inclusion in the C Line. The bus stop at Brooklyn & Highway 100 will continue to be served by several local and limited stop bus routes.

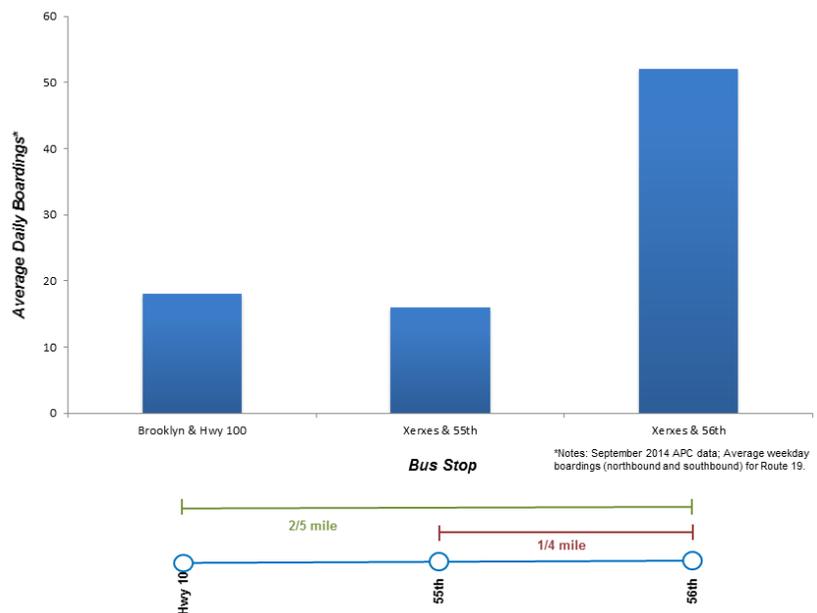
As a result, the plan recommends that C Line service north of Highway 100 will be consolidated at a single Xerxes & 56th station.

Project Delivery

Permanent station facilities are anticipated to be constructed independently of any concurrent infrastructure project in 2017 and operational at the start of C Line revenue service. The aforementioned planned 2018 reconstruction of Brooklyn Boulevard is not anticipated to affect the Xerxes & 56th Avenue station. This timeline is subject to change pending full C Line project funding.

C Line BRT investments at this location would ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

Figure 7: Xerxes & 56th Ave. Ridership and Station Spacing



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C Line Station Plan: Xerxes & 56th Avenue

Figure 8: Station Layout – Xerxes & 56th Avenue



Station Plan: Brooklyn Boulevard Area

This station will provide transit access to the Shingle Creek area on Brooklyn Boulevard between 49th Avenue and Highway 100. While ridership in the area is lower compared to the greater C Line corridor, providing access to improved transit in the community is supported by station spacing guidelines and the unique geography of the surrounding area; railroad tracks south of 49th Avenue and Highway 100 north of 51st Avenue create substantial distances between destinations.

A planned Brooklyn Boulevard reconstruction project will require project coordination to determine an appropriate station location. The City of Brooklyn Center is leading a reconstruction project of Brooklyn Boulevard from 49th Avenue to Bass Lake Road in 2018.¹⁴ Roadway design is currently in a concept planning phase, and final roadway configuration is subject to change.¹⁵ The future roadway design will differ from existing conditions, so constructing a station prior to the Brooklyn Boulevard reconstruction project is not recommended. C Line BRT investments in this area would ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont corridor).

C Line operations are anticipated to begin in late 2017. Because this area is well served by Routes 5, 22, 721, 724, and continued limited Route 19 service, a temporary C Line station will not be constructed before completion of the Brooklyn Boulevard reconstruction in 2018. This timeline is subject to change pending full C Line project funding.

As a result of ongoing coordination with the Brooklyn Boulevard project, a station location general area of interest between 49th Avenue and Highway 100 is presented within this plan. Final roadway design considerations that will impact a final station location include the presence of safe pedestrian crossings and available right-of-way. A final station location will be coordinated with the City of Brooklyn Center Brooklyn Boulevard reconstruction project. Input received during this planning phase will also help inform final station location.

Table 3: Station Plan Summary – Brooklyn Boulevard Area

Brooklyn Boulevard Area		
	<i>Station Characteristic</i>	<i>Planned Condition*</i>
CORE STATION PLAN	Intersection Location	Brooklyn Boulevard Area Provides adequate access per station spacing guidelines.
	Platform Location	<u>SE</u> : Final location dependent upon Brooklyn Boulevard reconstruction project coordination. <u>NB</u> : Final location dependent upon Brooklyn Boulevard reconstruction project coordination.

¹⁴ Additional information available at: <http://www.cityofbrooklyncenter.org/index.aspx?NID=833>

¹⁵ Additional information available at: <http://www.cityofbrooklyncenter.org/DocumentCenter/View/2648>

Brooklyn Boulevard Area		
ADDITIONAL STATION DETAILS	Shelter	<p><u>SB: Install new shelter</u> Install new shelter with enhanced amenities.</p> <p><u>NB: Install new shelter</u> Install new shelter with enhanced amenities.</p>
	Curb Configuration	<p><u>SB: No bumpout</u> Adequate space for pedestrians and station components anticipated to be coordinated within Brooklyn Boulevard reconstruction.</p> <p><u>NB: No bumpout</u> Adequate space for pedestrians and station components anticipated to be coordinated within Brooklyn Boulevard reconstruction.</p>
	Platform Length	<p><u>SB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle.</p> <p><u>NB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle.</p>

*Final conditions to be developed during the engineering/design process.

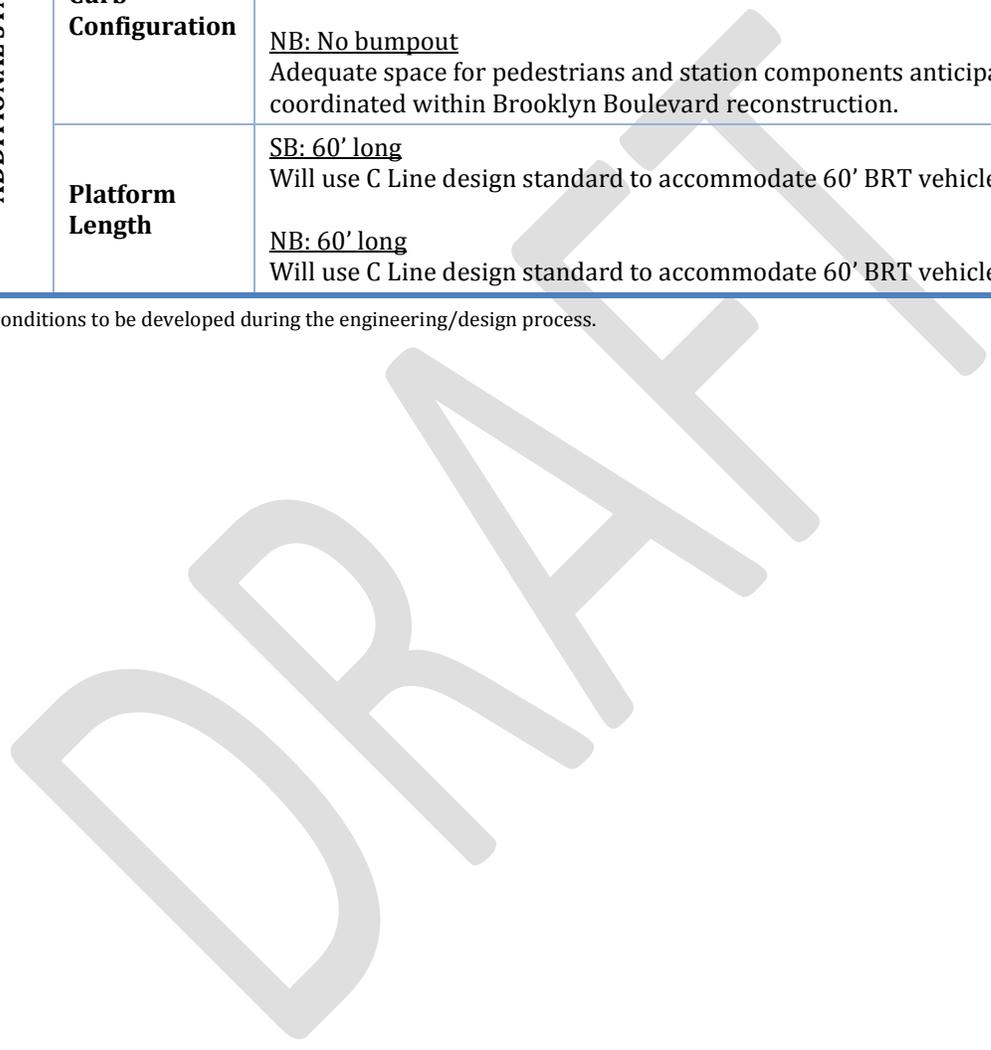
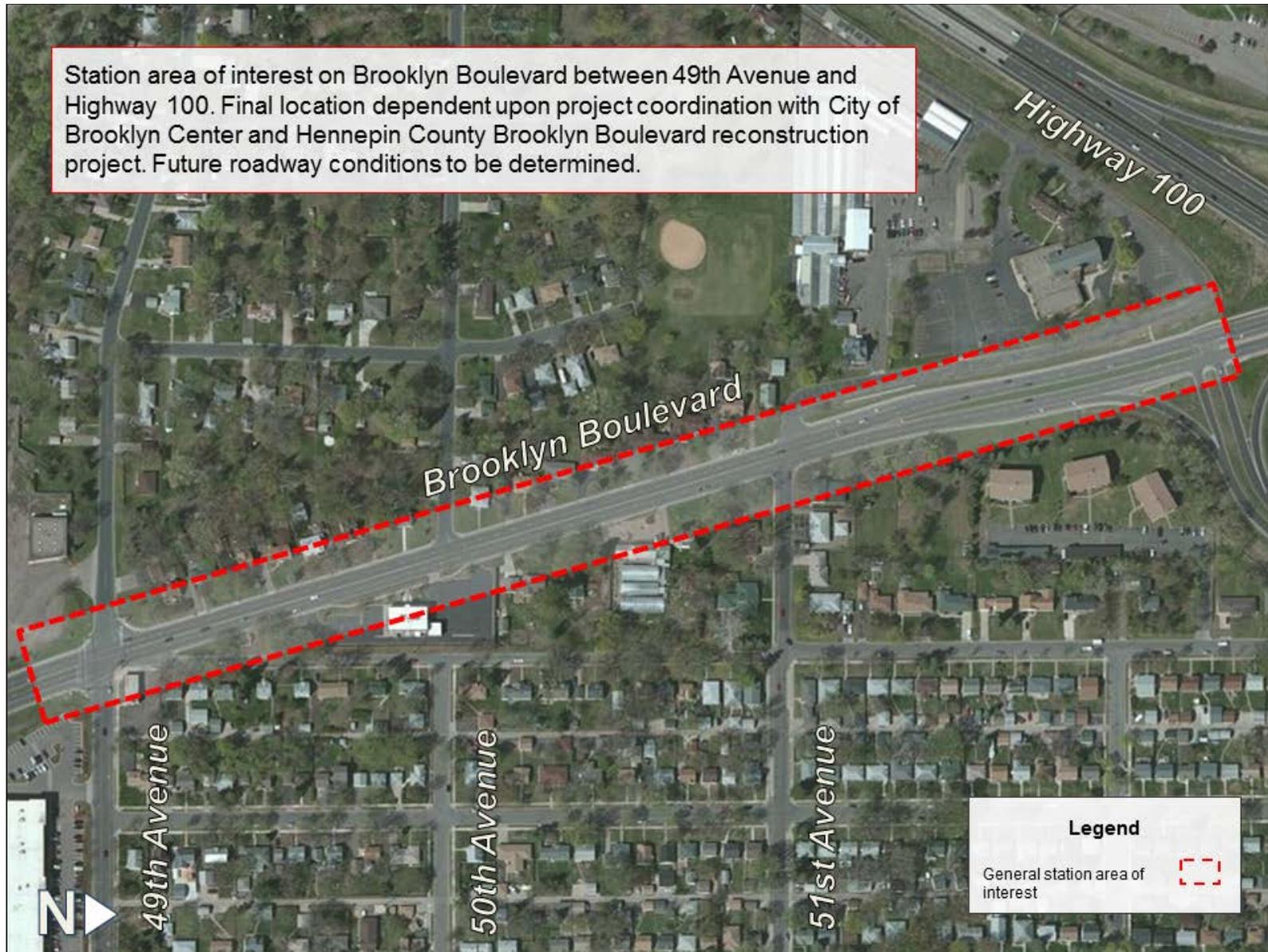


Figure 9: Station Layout – Brooklyn Boulevard Area



Station Plan: Osseo & Victory Area

The Osseo & Victory Area station would serve the northern portions of the Victory neighborhood. The station would function as an access point on the C Line corridor to ensure adequate station distancing. Several station options are being considered and public input is requested to help inform a final station plan. The various station location options are focused around Victory Memorial Parkway. See Figure 1 for a summary of station location options. The Penn & 43rd Avenue station location will be about 0.3 mile south of the parkway. Railroad tracks create a geographic barrier that will result in a longer distance from the parkway to the Brooklyn Boulevard Area station over 0.8 mile to the north.

Table 4: Station Plan Summary – Osseo & Victory Area

Osseo & Victory Area		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Osseo & Victory Area</u> Serves north Victory neighborhood, providing adequate spacing between higher-ridership stations (south at Penn & 43rd Avenue, north of the CP Rail tracks in the Brooklyn Boulevard area)
	Platform Location	<u>SB: Several alternatives being considered</u> Comments are requested regarding platform location options. <u>NB: Several alternatives being considered</u> Comments are requested regarding platform location options.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Install new shelter</u> Comments are requested regarding shelter improvements. <u>NB: Install new shelter</u> Comments are requested regarding shelter improvements.
	Curb Configuration	<u>SB: No bumpout</u> A travel lane (bicycle lane) is located immediately adjacent to the curb. Lower ridership and area conditions do not support a bumpout and bicycle lane realignment. <u>NB: No bumpout</u> A travel lane (bicycle lane) is located immediately adjacent to the curb. Lower ridership and area conditions do not support a bumpout and bicycle lane realignment.
	Platform Length	<u>SB: 60' long</u> A platform would need to be 60' long, meeting the C Line design standard to accommodate 60' BRT vehicle. <u>NB: 60' long</u> A platform would need to be 60' long, meeting the C Line design standard to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

Notes and Discussion

Several bus stops currently exist within the Osseo & Victory area. Station locations currently under consideration include existing bus stop locations and sites not currently used by bus operations. A final station location alternative will include local service bus stop adjustments to maintain but not increase the number of stops in the area. Nearby bus stops would likely be relocated and/or consolidated with C Line operations.

Existing transit service in the area includes Route 5 for local service between Brooklyn Center and the Mall of America and Routes 721 and 724 for limited stop service between northern suburbs and downtown Minneapolis. Under C Line and future D Line operations, reduced Routes 19 and 5 local service would still be maintained in the area.

The intersection of Osseo Road and Victory Memorial Parkway is signalized. Dependent on a final station location, transit signal priority will be considered for implementation during the detailed design and engineering phase. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

Station Locations Under Consideration

Three station location alternatives are being considered for the Osseo & Victory Area station, along with an alternative to omit a station at this location. See Figure 1 for platform location information. These alternatives are identified below.

Alternative A: Southbound at Victory Memorial Drive (Platform location #1) & Northbound at 46th Avenue (#3)

Alternative A would construct a southbound platform on the nearside of Victory Memorial Drive (#1) and a northbound platform on the nearside of 46th Avenue (#3). Both platform locations are within existing right-of-way and outside of parkland area. The location would serve ridership in the area that is concentrated around Victory Memorial Parkway. The northbound platform would be located adjacent to a vacant, publicly owned, triangular parcel bordered by 46th Avenue on the north and Sheridan Avenue on the east. The southbound platform would be located adjacent to a vacant, publicly owned parcel, bordered by a single-family residence. Given the surrounding residential area, a final station design would address site-specific issues to the extent possible. The station would ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

Alternative B: Southbound at Victory Memorial Drive (#1) & Northbound at 45th Avenue (#5)

Alternative B would construct a southbound platform on the nearside of Victory Memorial Drive (#1) and a northbound platform on the nearside of 45th Avenue (#5). Both platform locations are within existing right-of-way and outside of parkland area. The northbound platform would be located at an existing bus stop, adjacent to a vacant, publicly owned parcel, bordered by a single-

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C Line Station Plan: Osseo & Victory Area

family residence. The southbound platform would be located adjacent to a vacant publicly owned parcel, also bordered by a single-family residence. The northbound platform would be located about 0.25 mile from the Penn & 43rd Avenue station, the minimum distance within station spacing guidelines. Platforms are within residential areas, and a final station design would address site-specific issues to the extent possible. The station would ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

Alternative C: Southbound at Victory Memorial Parkway (#2), Northbound at Victory Memorial Parkway (#4)

Alternative C would construct a southbound and northbound platform on the nearside of Victory Memorial Parkway. The southbound platform would be located at an existing southbound bus stop (#2); the northbound platform would relocate the 45th Avenue bus stop approximately 200 feet north (#4). These platforms would be located within the parkway, requiring additional coordination and potential design mitigations to address any parkland impacts and develop related design adjustments. Close coordination with the Minneapolis Park and Recreation Board would be required to ultimately determine feasibility of this alternative. It is anticipated station improvements would be built on existing transportation right-of-way. As noted, a final station design would address site-specific issues to the extent possible.

Alternative D: Do not build station

Alternative D would not construct a station in the Osseo & Victory area. Under this alternative, the C Line and D Line would not stop in this area to pick up or drop off customers, reducing overall transit access long-term within the immediate area. Existing riders in the area would still have access to existing transit service on Routes 721 and 724, along with less frequent Route 19 and Route 5 service that would remain after C Line and D Line implementation.

Station Locations with Fatal Flaws - No Longer Under Consideration

Other platform locations were analyzed for feasibility but deemed unsuitable for further consideration. See Figure 1 for platform location details. Additional information is provided below.

Southbound Options

Platform location #6 – Southbound Osseo at Upton: This southbound platform would be located at an existing bus stop location where Upton Avenue dead-ends at Osseo Road. While there is available right-of-way at this location, the potential ridership catchment area is severely limited by the railroad to the north. A station in this location would not serve the core of existing or future ridership in the neighborhood as well as a station further south.

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C Line Station Plan: Osseo & Victory Area

#7 – Southbound Osseo at Thomas: This southbound platform would be located on the farside of Thomas Avenue on Osseo Road. Limited right-of-way exists for BRT improvements and a mid-block location introduces unsafe pedestrian crossings. There are also no sidewalks connecting to this location from the north or south.

#8 – Southbound Osseo at Sheridan: This southbound platform would be located at an existing bus stop across from where Sheridan Avenue meets Osseo Road. Limited right-of-way exists for BRT improvements and a mid-block location introduces unsafe pedestrian crossings. There are also no sidewalks connecting to this location from the north or south.

Northbound Options

#9 – Northbound Osseo near dog park: This northbound platform would be located on the farside of the existing driveway north of 47th Avenue. While there is available right-of-way at this location, the potential ridership catchment area is severely limited by the railroad to the north. A station in this location would not serve the core of existing or future ridership in the neighborhood as well as a station further south. The location would also introduce mid-block pedestrian movements to cross Osseo Road.

#10 – Northbound Osseo at 47th (farside): This northbound platform would be located farside of 47th Avenue, south of the existing driveway. The approximately 50' length between the intersection and the driveway is too short to accommodate a BRT platform.

#11 – Northbound Osseo at 47th (nearside): This northbound platform would be located at an existing bus stop location on the nearside of 47th Avenue. Available right-of-way does not exist at this location.

#12 – Northbound Osseo at Thomas: This northbound platform would be located at an existing bus stop location on the nearside of Thomas Avenue. Available right-of-way does not exist at this location.

#13 – Northbound Osseo at Russell: This northbound platform would be located on the farside of Russell Avenue at an existing bus stop location. Available right-of-way does not exist at this location.

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C Line Station Plan: Osseo & Victory Area

Figure 10: Osseo & Victory Area Station Location Alternatives



Station Plan: Penn & 43rd Avenue

This station will serve the northern portion of the Penn Avenue corridor, including the commercial node at 44th Avenue. Ridership and roadway geometry support station siting at 43rd Avenue. See “Other Alternatives Considered” for additional information. The 43rd Avenue location meets station spacing guidance; the Penn & Dowling station will be approximately 0.65 mile to the south and the Osseo & Victory Area station will be about 0.4 mile to the north. The longer 0.65 mile distance to the Penn & Dowling station is appropriate in this segment given lower ridership between Dowling Avenue and 42nd Avenue due to the presence of Crystal Lake Cemetery east of Penn Avenue.

Table 5: Station Plan Summary – Penn & 43rd Avenue

Penn & 43rd Avenue		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Penn & 43rd Avenue</u> Serves more riders when compared to 44th Avenue, where safe station siting is not feasible.
	Platform Location	<u>SB: Nearside (NW corner)</u> A bus stop currently exists at this location. No benefit to farside station at this unsignalized intersection. <u>NB: Nearside (SE corner)</u> A bus stop currently exists at this location. No benefit to farside station at this unsignalized intersection.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Install new shelter</u> No shelter currently present. Will install new BRT shelter with enhanced amenities. <u>NB: Install new shelter</u> No shelter currently present. Will install new BRT shelter with enhanced amenities.
	Curb Configuration	<u>SB: Bumpout</u> Will maximize operational efficiency and pedestrian space. No space constraints exist that will restrict bumpout construction. <u>NB: Bumpout</u> Will maximize operational efficiency and pedestrian space. No space constraints exist that will restrict bumpout construction.
	Platform Length	<u>SB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle. <u>NB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

Notes and Discussion

There are no transit connections at this station. Reduced Route 19 local service will be maintained at this location.

The intersection of Penn Avenue and 43rd Avenue is unsignalized. Transit signal priority will not be implemented at this intersection.

On-street parking will be impacted by this station, though stations will be sited at corners with existing no-parking bus stop zones. The addition of curb bumpouts will result in a reduction of on-street parking on Penn Avenue by approximately two to three parking spaces per platform.

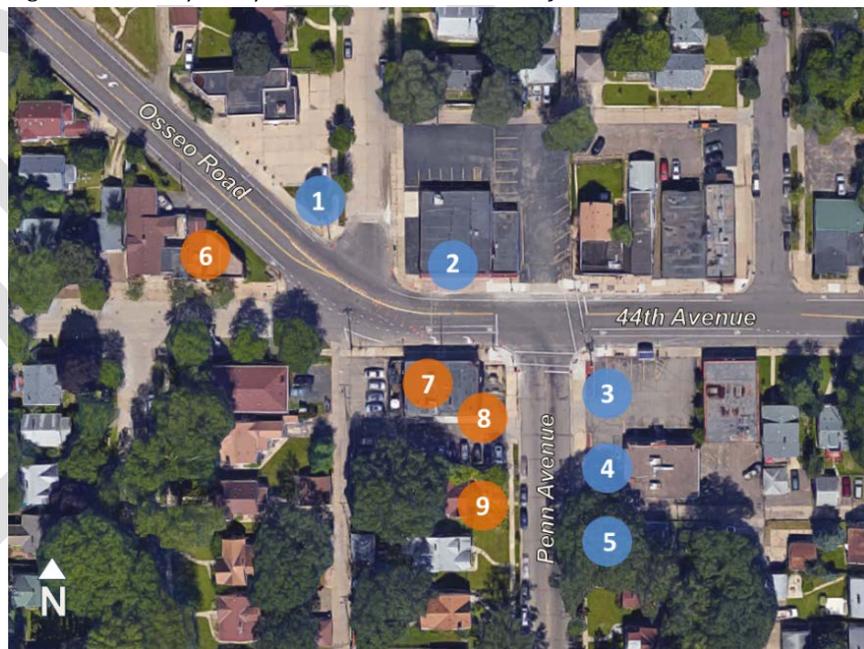
Other Alternatives Considered

Penn & 44th Avenue Station Location

Commercial activity surrounding the intersection of Penn Avenue and Osseo Road with 44th Avenue produces an expected consideration for transit enhancement in the area, in contrast to the lower-density residential uses surrounding 43rd Avenue. However, roadway constraints restrict feasibility of siting a station at the Osseo Road/44th Avenue/Penn Avenue intersection. Moreover, higher ridership to the south supports that a C Line station in the area is better positioned at 43rd Avenue.

The skewed and offset Osseo/44th/Penn intersection introduces a number of critical limitations to safely siting a BRT station that meets customer needs. See Figure 1 for an aerial image of this intersection and the alternatives considered. Tables 2 and 3 identify critical factors supporting placement of a BRT station away from the Osseo/44th/Penn intersection, as an enhancement to the existing bus stop at 43rd Avenue.

Figure 11: Osseo/Penn/44th Ave. Alternative Platform Location



The platform sites at Penn & 43rd Avenue maintain driveway access points, safe vehicle turns, and sightlines, and provide adequate space for shelters and customer amenities.

Table 6: 43rd Ave. Northbound Alternative Platform Options

Northbound Alternative Options	
Location	Critical Limitations to Siting Station
1: Osseo Rd, farside of Penn Ave.	<ul style="list-style-type: none"> Right-of-way unavailable; would require acquisition of parcel behind sidewalk Stopped bus would be blocked from view of vehicles approaching from the east; platform location is in blind spot for right-turning vehicles
2: 44th Ave, farside of Penn Ave.	<ul style="list-style-type: none"> Bus cannot stop pull up to curb after making left turn
3: Penn Ave, nearside of 44th Ave.	<ul style="list-style-type: none"> Impossible to make left turn from curb without a dedicated bus-only turning signal 60' platform cannot fit without eliminating driveway/access
4: Penn Ave north of alley, mid-block	<ul style="list-style-type: none"> Inadequate space for bus to enter left-turn lane at 44th Inadequate length for 60' platform between alley and driveway Location invites undesirable mid-block pedestrian crossings
5: Penn Ave south of alley, mid-block	<ul style="list-style-type: none"> Inadequate space to enter left-turn lane at 44th Location invites undesirable mid-block pedestrian crossings

Table 7: 43rd Ave. Southbound Alternative Platform Options

Southbound Alternative Options	
Location	Critical Limitations to Siting Station
6: Osseo Rd, nearside of 44th Ave	<ul style="list-style-type: none"> Right-of-way unavailable; would require acquisition of parcel behind sidewalk No sidewalk connectivity along west side of Osseo Road
7: On 44th Ave, nearside of Penn Ave.	<ul style="list-style-type: none"> High right-turn volumes creates conflict with bus stopping in single traffic lane
8: Penn Ave, farside of 44th Ave.	<ul style="list-style-type: none"> Platform location is in blind spot for right-turning vehicles 60' platform cannot fit without eliminating driveway/access
9: Penn Ave south of driveway, mid-block	<ul style="list-style-type: none"> Platform location is in blind spot for right-turning vehicles 60' platform cannot fit without eliminating driveway/access Location invites undesirable mid-block pedestrian crossings

In addition, existing ridership is higher at 43rd Avenue than 44th Avenue, due in large part to ridership from Patrick Henry High School. 43rd Avenue serves more than twice as many customers as 44th Avenue. Students generally use the 43rd Avenue bus stop because it is closer to school doors than the 44th Avenue stop.

Project Delivery

Penn Avenue Community Works Project

Station design and construction will be coordinated with the Hennepin County-led Penn Avenue Community Works project.¹⁶ Hennepin County plans to reconstruct intersections on the Penn Avenue corridor in coordination with C Line construction. Improvements to targeted intersections of Penn Avenue, including C Line stations, are currently planned for construction beginning in 2017. This timeline is subject to change pending full C Line project funding.

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¹⁶ Additional information available at: <http://www.hennepin.us/residents/transportation/penn-avenue-community-works>

Figure 12: Station Layout – Penn & 43rd Avenue



Station Plan: Penn & Dowling

This station will serve the intersection of Penn Avenue and Dowling Avenue. This location will have unique station spacing as a result of surrounding land uses. The Penn & 43rd Avenue station is located about 0.65 mile to the north, a longer distance than typical due to the disruption of the street grid from the Crystal Lake Cemetery. The Penn & 36th Avenue station is about 0.25 mile to the south, a shorter distance than typical to provide transit access for strong transit demand between Lowry Avenue and Dowling Avenue. Modest ridership surrounding the Penn & Dowling station reflects that transit predominantly serves single-family residential land uses in this area.

Table 8: Station Plan Summary – Penn & Dowling

Penn & Dowling		
	<i>Planned Condition*</i>	
CORE STATION PLAN	Intersection Location	<u>Penn & Dowling</u> Provides adequate station spacing and transit access to northern portion of Penn Avenue corridor.
	Platform Location	<u>SB: Nearside (NW corner)</u> SB platform must be sited nearside due to existing NB constraints and limited roadway width. A bus stop currently exists at this location. <u>NB: Nearside (SE corner)</u> Crystal Lake Cemetery limits feasibility of farside platform. A bus stop currently exists at this location.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: New shelter</u> No shelter currently present. Will install new shelter with enhanced amenities. <u>NB: New shelter</u> No shelter currently present. Will install new shelter with enhanced amenities.
	Curb Configuration	<u>SB: Bumpout</u> Maximizes operational efficiency and pedestrian space. No space constraints exist that will restrict bumpout construction. <u>NB: Bumpout</u> Maximizes operational efficiency and pedestrian space. No space constraints exist that restrict bumpout construction.
	Platform Length	<u>SB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle. <u>NB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. Aside from Route 19, there are no intersecting bus routes at this location. Reduced Route 19 local service will be maintained at this location. Dowling Avenue also carries Route 19 “H” branch service west to 42nd Avenue and York Avenue.

The intersection of Penn Avenue and Dowling Avenue is signalized. While nearside station platforms limit the potential for transit signal priority, signal priority will be considered for implementation and is dependent upon a traffic analysis balancing acceptable traffic operations for all street users. This work will be completed within the detailed design and engineering phase.

On-street parking will be impacted by this station. The addition of curb bumpouts will result in a reduction of on-street parking on Penn Avenue by approximately four to five parking spaces per platform.

Curb Bumpouts

A micro-simulation traffic model was developed as part of the Penn Avenue Community Works planning process to help determine the feasibility of deploying curb bumpouts at C Line stations throughout the Penn Avenue corridor.

Modeled factors included farside bumpouts at both directional platforms, additional C Line service frequency, and traffic volume growth through year 2035 throughout the corridor. Bumpouts have been included within the station plan resulting from these models indicating future traffic operations would remain acceptable with BRT operations.

Other Alternatives Considered

Site Station Platforms on Farside (NE and SW) Corners of Penn & Dowling Avenue

Station platforms will remain on the nearside of the intersection for both the northbound and southbound buses. The intersection is signalized, suggesting farside platform siting is preferable to maximize transit signal priority potential. However, the Crystal Lake Cemetery in the northeast quadrant of the intersection restricts the feasibility of farside platforms for northbound buses. There are no sidewalks along Penn Avenue cemetery frontage, and a northbound farside platform would function as the only generator of pedestrian activity in the quadrant. In addition, a cemetery driveway restricts the length available to construct a 60' platform.

Since Penn Avenue’s roadway width prevents both bumpouts from being constructed on either the northern or southern halves of the intersection, diagonally opposite bumpouts are required. Therefore, the southbound platform and bumpout must be constructed on the northwest quadrant of the intersection.

Project Delivery

Penn Avenue Community Works Project

Station design and construction will be coordinated with the Hennepin County-led Penn Avenue Community Works project.¹⁷ Hennepin County plans to reconstruct intersections of the Penn Avenue corridor in coordination with C Line construction. Improvements to targeted intersections of Penn Avenue, including C Line stations, are currently planned for construction beginning in 2017. This timeline is subject to change pending full C Line project funding.

¹⁷ Additional information available at: <http://www.hennepin.us/residents/transportation/penn-avenue-community-works>

Figure 13: Station Layout - Penn & Dowling



Station Plan: Penn & 36th Avenue

The Penn & 36th Avenue station will serve a high-ridership area of Penn Avenue between the major intersections of Lowry Avenue and Dowling Avenue. Station spacing guidance suggests a station should be sited between Lowry Avenue and Dowling Avenue, which are approximately 0.75 mile apart. The existing 36th Avenue bus stop serves the greatest number of Route 19 customers between Lowry Avenue and Dowling Avenue. The Penn & Lowry station is about 0.5 mile to the south and the Penn & Dowling station is about 0.25 mile to the north.

Table 9: Station Plan Summary – Penn & 36th Avenue

Penn & 36th Avenue		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Penn & 36th Avenue</u> Provides access to a high-ridership area between major intersections (Lowry Avenue and Dowling Avenue).
	Platform Location	<u>SB: Farside (SW corner)</u> Nearside platform of standard 60' length is not possible due to existing driveway located 50' north of NW quadrant corner. <u>NB: Farside (NE corner)</u> NB platform must be sited farside due to existing SB access conditions and limited Penn Avenue roadway width.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Replace existing shelter</u> Will replace existing shelter with BRT shelter and enhanced amenities. <u>NB: Install new shelter</u> No shelter currently present. Install new shelter with enhanced amenities.
	Curb Configuration	<u>SB: Bumpout</u> Maximizes operational efficiency and pedestrian space. No existing space constraints that restrict bumpout construction. <u>NB: Bumpout</u> Maximizes operational efficiency and pedestrian realm. No existing space constraints that restrict bumpout construction.
	Platform Length	<u>SB: 60' long</u> C Line design standard to accommodate 60' BRT vehicle. <u>NB: 60' long</u> C Line design standard to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

Notes and Discussion

There are no connecting transit routes at this station; however, reduced Route 19 local service will be maintained at this location.

The intersection of Penn Avenue and 36th Avenue is unsignalized. Transit signal priority will not be implemented at this intersection.

On-street parking will be impacted by this station. The construction of curb bumpouts will result in a reduction of on-street parking on Penn Avenue by approximately four to five parking spaces per platform.

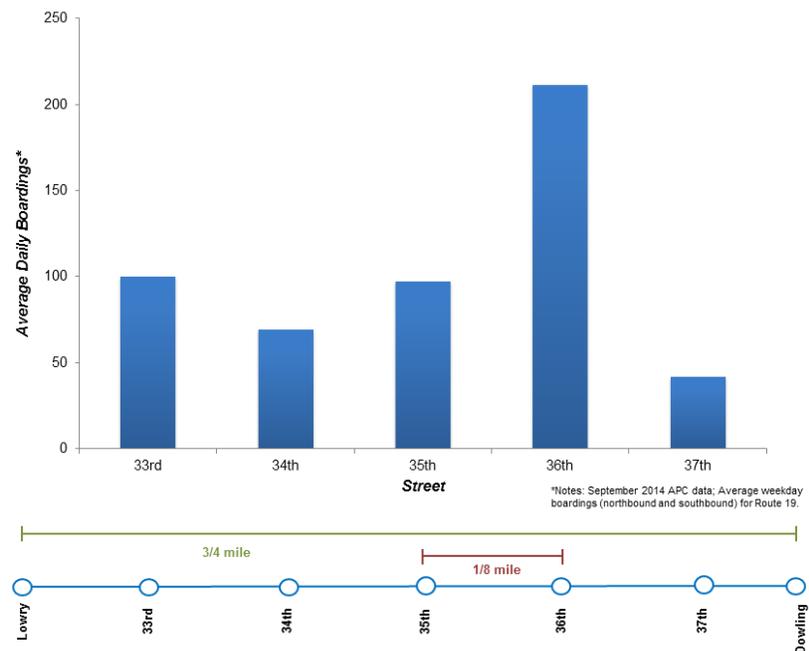
Other Alternatives Considered

Site Station at 35th Avenue

The 2012 ATCS addendum¹⁸ on Penn Avenue initially considered a station at 35th Avenue for more even spacing between Lowry Avenue and Dowling Avenue. Representatives from the Folwell Neighborhood Association and the Cleveland Neighborhood Association also suggested consideration of a station at 35th Avenue instead of 36th Avenue. Neighborhood interest in 35th Avenue was based on reports of current criminal activity at the existing bus shelter at Penn Avenue & 36th Avenue; representatives suggested that moving the station one block south could help provide a safer environment and better experience for C Line customers.

While station spacing between Lowry Avenue and Dowling Avenue is more balanced at 35th Avenue, ridership patterns generally support 36th Avenue as a more effective station location. See Figure 1 for additional information. Higher residential densities surrounding the 36th Avenue intersection likely contribute to increased ridership. The increased ridership of 36th Avenue is anticipated to result in a more effective station while limiting increased walking distance for 35th Avenue customers to approximately 1/8 mile. In addition, pedestrian crossing movements are similar at either intersection since both 35th Avenue and 36th Avenue are unsignalized.

Figure 14: Route 19 Ridership and Station Spacing; 35th Ave. and 36th Ave.



¹⁸ Available at: http://www.metrotransit.org/Data/Sites/1/media/pdfs/atcs/atcs_final_report_addendum.pdf

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C Line Station Plan: Penn & 36th Avenue

C Line design features will address customer security concerns in this segment of Penn Avenue. C Line stations at this and all locations will be designed for customer comfort and safety and to deter criminal activity. Security cameras, lighting, and site-specific shelter designs (e.g., with or without walls, wall design, etc.) will be important features for consideration as the project moves into the design/engineering phase.

Site Station Platforms on Nearside Corners of Penn & 36th Avenue

Existing bus stops are located on the nearside of the intersection for both northbound and southbound buses. Station platforms will be located on the farside of the intersection for both northbound and southbound buses. Since the intersection is not signalized, transit signal priority is not a factor in the farside siting of these platforms. Rather, farside siting for both platforms is the result of existing access conditions on the northwest quadrant of the intersection.

An existing driveway located approximately 50' north of the intersection precludes a standard 60' platform from being constructed on the nearside of the intersection. As a result, the southbound platform and curb bumpout must be constructed on the intersection's southwest quadrant. Since Penn Avenue's narrow width prevents both bumpouts from being constructed on either the northern or southern halves of the intersection, diagonally opposite bumpouts are required. Therefore, the northbound platform and bumpout must be constructed on the northeast quadrant of the intersection.

Project Coordination

Penn Avenue Community Works Project

Station design and construction will be coordinated with the Hennepin County-led Penn Avenue Community Works project.¹⁹ Hennepin County plans to reconstruct intersections on the Penn Avenue corridor in coordination with C Line construction. Improvements to targeted intersections of Penn Avenue, including C Line stations, are currently planned for construction beginning in 2017. This timeline is subject to change pending full C Line project funding.

¹⁹ Additional information available at: <http://www.hennepin.us/residents/transportation/penn-avenue-community-works>

Figure 15: Station Layout – Penn & 36th Avenue



Station Plan: Penn & Lowry

This station will serve the intersection of Penn Avenue and Lowry Avenue. This plan sites stations closer to the 0.25 mile minimum between Lowry Avenue and 29th Avenue to help accommodate consistently high ridership in the area. The Penn & 36th Avenue station will be about 0.5 mile to the north. This intersection has also been the focus of redevelopment efforts, including the Penn-Lowry Crossings opening in 2011 and ongoing Hennepin County efforts on the intersection’s northern half. The intersection is a critical transit node and functions as the highest-ridership northbound and southbound location on Penn Avenue. Outside of Brooklyn Center Transit Center, it has the highest number of southbound boardings on the entire route.²⁰

Table 10: Station Plan Summary – Penn & Lowry

Penn & Lowry		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Penn & Lowry</u> Provides access to high-ridership location at major intersection and transit node.
	Platform Location	<u>SB: Nearside (NW corner)</u> Adequate space available adjacent to Hennepin County-owned parcel. A bus stop currently exists at this location. <u>NB: Farside (NE corner)</u> Adequate space available adjacent to Hennepin County-owned parcel. No bus stop currently exists at this location.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Replace existing shelter</u> Will replace existing shelter with BRT shelter and enhanced amenities. <u>NB: Install new shelter</u> No shelter currently present. Will install new BRT shelter with enhanced amenities.
	Curb Configuration	<u>SB: No bumpout</u> Adequate sidewalk space currently exists for pedestrians and station furnishings. <u>NB: No bumpout</u> Adequate sidewalk space currently exists for pedestrians and station furnishings. Bus stops in through lane; no merge is required.
	Platform Length	<u>SB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle. <u>NB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

²⁰ Source: September 2014 APC data

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. The station will serve connections to Route 32 service between the Robbinsdale Transit Center and the Rosedale Transit Center. Reduced Route 19 local service will also be maintained at this location.

The intersection of Penn Avenue and Lowry Avenue is signalized. Transit signal priority will be considered for implementation during the detailed design and engineering phase. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

The existing bus shelter on the northwest quadrant (southbound) will be relocated to another bus stop and replaced with a BRT shelter with enhanced amenities.

Other Alternatives Considered

Nearside/Farside Station Platform Siting

The southbound platform is planned for a nearside placement at the location of the existing bus stop. Space constraints on the farside southeast quadrant limit the feasibility of constructing a large BRT shelter to serve high numbers of customers while maintaining adequate space for pedestrian traffic. On-street parking adjacent to small businesses is also available for use at this corner and will be retained with a nearside station.

The northbound platform is planned for a farside placement, across Lowry Avenue from the existing bus stop. A farside platform location can maximize the potential operational benefits of traffic signal priority for northbound service.

Importantly, Hennepin County owns the vacant northwest and northeast parcels of the intersection and intends to lead redevelopment of these properties. Both parcels have been replatted to allow additional space for transportation uses, including transit waiting facilities, regardless of future development outcomes and related site designs.

As a result, the nearside and farside platform locations for southbound and northbound service, respectively, balance operational needs with site constraints and development opportunities.

Project Delivery

Penn Avenue Community Works Project

Station design and construction will be coordinated with the Hennepin County-led Penn Avenue Community Works project.²¹ Hennepin County plans to reconstruct intersections on the Penn Avenue corridor in coordination with C Line construction. Improvements to targeted intersections of Penn Avenue, including C Line stations, are currently planned for construction beginning in 2017. This timeline is subject to change pending full C Line project funding.

²¹ Additional information available at: <http://www.hennepin.us/residents/transportation/penn-avenue-community-works>

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C Line Station Plan: Penn & Lowry

Hennepin County-Owned Redevelopment Sites

As previously noted, the parcels adjacent to planned station platforms are owned by Hennepin County and are planned for future redevelopment. Final placement of platforms, sidewalks, and furnishings (e.g., shelter, ticket vending machines, fare card validator, etc.) will be determined during the detailed design and engineering phase, in coordination with redevelopment activities, which may affect final station design.

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Figure 16: Station Layout – Penn & Lowry



Station Plan: Penn & 29th Avenue

This station will serve a high-ridership area of Penn Avenue between Lowry Avenue and West Broadway Avenue. Planned station spacing closer is to the 0.25 mile minimum guidance between West Broadway and Lowry Avenue to accommodate consistently high ridership within this 0.65-mile span. The Penn & Lowry station will be located about 0.25 mile to the north, and the Penn & West Broadway station will be about 0.4 mile to the south. This station will serve the surrounding residential area.

Table 11: Station Plan Summary – Penn & 29th Avenue

Penn & 29th Avenue		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Penn & 29th Avenue</u> Provides additional access within a high-ridership area of the Penn Avenue corridor between two major stations.
	Platform Location	<u>SB: Nearside (NW corner)</u> A bus stop currently exists at this location. No benefit to farside station at this unsignalized intersection. <u>NB: Nearside (SE corner)</u> A bus stop currently exists at this location. No benefit to farside station at this unsignalized intersection.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Install new shelter</u> No shelter currently present. Will install new BRT shelter with enhanced amenities. <u>NB: Install new shelter</u> No shelter currently present. Will install new BRT shelter with enhanced amenities.
	Curb Configuration	<u>SB: Bumpout</u> Bumpout will maximize operational efficiency and pedestrian space. No space constraints exist restricting bumpout construction. <u>NB: Bumpout</u> Bumpout will maximize operational efficiency and pedestrian space. No space constraints exist restricting bumpout construction.
	Platform Length	<u>SB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle. <u>NB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

Notes and Discussion

There are no major transit connections at this location. The station is served by a Route 32 branch for limited school day service to northeast Minneapolis. Reduced Route 19 local service will also be maintained at this location.

The intersection of Penn Avenue and 29th Avenue is unsignalized. Transit signal priority will not be implemented at this intersection.

On-street parking will be impacted by this station. The addition of curb bumpouts will result in a reduction of on-street parking on Penn Avenue by approximately four to five parking spaces per platform.

Other Alternatives Considered

No Station between Broadway and Lowry

The 2012 ATCS addendum²² on Penn Avenue identified C Line stations at Lowry Avenue and West Broadway Avenue, both major commercial nodes with high levels of existing ridership and crosstown bus connections. Initially, no station was planned for the 0.65-mile gap between Broadway and Lowry. This spacing exceeds 0.25-0.5 mile station spacing guidance for arterial BRT. Over this wide space between stations, ridership is high; ridership data indicates over 450 people board the bus each day at bus stops between Lowry Avenue and West Broadway Avenue. Without a station between Broadway and Lowry, this area would have the highest number of customers unserved between C Line stations outside of the downtown area. An additional station would better serve customers and meet station spacing guidance. In addition, the C Line preliminary planning process identified community interest in adding a station between Lowry Avenue and West Broadway Avenue.

27th Avenue Station Location

After the need for a station between Broadway and Lowry was clearly identified, multiple locations were considered for this infill station. Options for a station at either 27th Avenue or 29th Avenue were considered. While station spacing between Lowry Avenue and West Broadway Avenue is more balanced at 27th Avenue, higher ridership patterns generally support 29th Avenue as a more effective station location.

Due to the wide spacing between stations at Lowry Avenue and West Broadway Avenue and the large number of customers that would need to walk several blocks to reach these stations, an additional station at 29th Avenue is recommended. The Jordan Area Community Council has supported the addition of this station to the C Line plan.²³

²² Available at: http://www.metrotransit.org/Data/Sites/1/media/pdfs/atcs/atcs_final_report_addendum.pdf

²³ Jordan Area Community Council meeting minutes available at: <http://www.jordanmpls.org/wp-content/uploads/2015/02/Housing-Committee-Minutes-January-2015.pdf>

Project Delivery

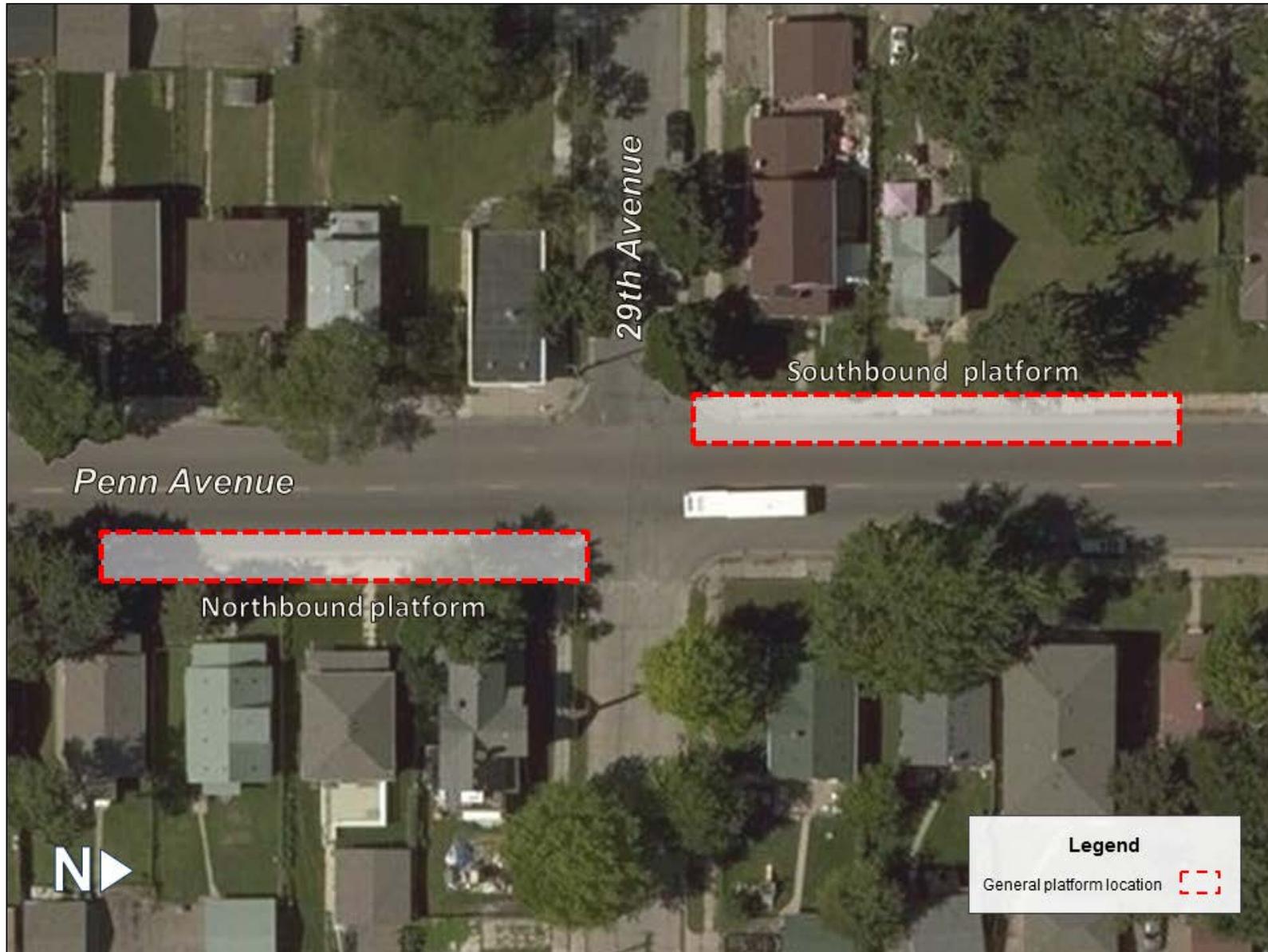
Penn Avenue Community Works Project

Station design and construction will be coordinated with the Hennepin County-led Penn Avenue Community Works project.²⁴ Hennepin County plans to reconstruct intersections on the Penn Avenue corridor in coordination with C Line construction. Improvements to targeted intersections of Penn Avenue, including C Line stations, are currently planned for construction beginning in 2017. This timeline is subject to change pending full C Line project funding.

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²⁴ Additional information available at: <http://www.hennepin.us/residents/transportation/penn-avenue-community-works>

Figure 17: Station Layout – Penn & 29th Avenue



Station Plan: Penn & West Broadway

This station will serve the intersection of Penn Avenue and West Broadway Avenue. This location meets station spacing guidance; the Penn & Golden Valley station will be about 0.35 mile to south and the Penn & 29th Avenue station will be about 0.4 mile to the north. The area is an important commercial center within north Minneapolis, providing a mix of land uses surrounding the five-legged intersection. Within the Penn Avenue corridor, the existing Penn & West Broadway bus stops have the 2nd and 3rd highest number of Route 19 boardings for northbound and southbound trips, respectively.²⁵

Table 12: Station Plan Summary – Penn & West Broadway

Penn & West Broadway		
	Station Characteristic	Planned Condition*
CORE STATION	Intersection Location	<u>Penn & West Broadway</u> Will provide access to high-ridership location at major intersection and transit node.
	Platform Location	<u>SB: Nearside (NW corner)</u> Platform location coordinated with Broadway Flats mixed-use development. <u>NB: Nearside (SE corner)</u> Will be located within existing transit plaza and bus stop.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Use integrated transit waiting area</u> Sheltered transit waiting area will be integrated into Broadway Flats development. <u>NB: Use existing shelter</u> Will use existing custom shelter.
	Curb Configuration	<u>SB: No bumpout</u> Integration of platform with development and space constraints results in curbside siting. <u>NB: No bumpout</u> Traffic model indicates operational inadequacy of NB bumpout.
	Platform Length	<u>SB: 100' long</u> Will exceed 60' standard to provide additional space for local service buses. <u>NB: 100' long</u> Will exceed 60' standard to provide additional space for local service buses.

*Final conditions to be developed during the engineering/design process.

²⁵ Source: September 2014 APC data

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. The station will serve connections to Route 14 on West Broadway Avenue for service between the Robbinsdale Transit Center and Richfield. Reduced Route 19 local service will also be maintained at this location.

The intersection of Penn Avenue and West Broadway Avenue is signalized. Transit signal priority will be considered for implementation during the detailed design and engineering phase. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

Other Alternatives Considered

Curb Bumpouts

A micro-simulation traffic model was developed as part of the Penn Avenue Community Works planning process to help determine the feasibility of deploying curb bumpouts at C Line stations throughout the Penn Avenue Corridor. Modeled factors included a bumpout at the northbound platform, additional C Line service frequency, and traffic volume growth through year 2035 throughout the corridor.

Model results showed that the northbound bumpout would impact traffic operations beyond acceptable levels. As a result, a farside northbound bumpout is not considered feasible at this location.

The northbound platform will use an existing transit plaza with adequate space for pedestrian use without the need for a bumpout. See Figure 1. The C Line project will modify this plaza and shelter to integrate C Line components (e.g., landmark pylon, ticket vending machines, and fare card validator).

Figure 18: Existing Custom Shelter and Plaza at Proposed Northbound Platform



Site Station Platforms on Farside Corners of Penn & West Broadway Avenue

Existing bus stops will remain on the nearside of the intersection for both northbound and southbound buses. Opportunities to use existing transit infrastructure or coordinate with future development contributed to nearside platform siting. Southbound platform and station design will be integrated into the Broadway Flats development on the intersection's northeast corner. The existing transit plaza and custom shelter on the southeast corner will be used for the northbound platform.

Project Delivery

Penn Avenue Community Works

Station design and construction will be coordinated with the Hennepin County Penn Avenue Community Works project.²⁶ Hennepin County plans to reconstruct intersections of the Penn Avenue corridor in coordination with C Line construction. Improvements to targeted intersections of Penn Avenue, including C Line stations, are currently planned for construction beginning in 2017. This timeline is subject to change pending full C Line project funding.

Broadway Flats Development

A mixed-use development is under construction at the northwest corner of Penn Avenue and West Broadway Avenue. In lieu of a standard arterial BRT shelter, a transit waiting area will be integrated into the new building's Penn Avenue frontage for the southbound platform. This design will offer a sheltered alcove with heating/lighting, and leaning rails. A landmark pylon, ticket vending machine, and fare card validator will be included within the southbound platform design; these are key station components shared throughout the arterial BRT system.

²⁶ Additional information available at: <http://www.hennepin.us/residents/transportation/penn-avenue-community-works>

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C Line Station Plan: Penn & West Broadway

Figure 19: Station Layout – Penn & West Broadway



Station Plan: Penn & Golden Valley

This station will serve the intersection of Penn Avenue and Golden Valley Road. This location meets station spacing guidance; the Penn & Plymouth station will be about 0.5 to the south and the Penn & West Broadway station will be about 0.35 mile to the north. Within the Penn Avenue corridor, the existing Penn & Golden Valley bus stops have the 3rd and 6th highest number of Route 19 boardings for northbound and southbound trips, respectively.²⁷ Southbound platform design is being coordinated with current development on the intersection’s southwest corner.

Table 13: Station Plan Summary – Penn & Golden Valley

Penn & Golden Valley		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Penn & Golden Valley</u> Provides access to high-ridership location at major intersection and transit node.
	Platform Location	<u>SB: Farside (SW corner)</u> Farside platform is preferred to maximize transit signal priority potential. Platform location is coordinated with Commons @ Penn mixed-use development. This location does not currently have a bus stop. <u>NB: Farside (NE corner)</u> Farside platform is preferred to maximize transit signal priority potential. This location does not currently have a bus stop.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Integrated transit waiting area</u> No shelter currently present. Sheltered transit waiting area will be integrated into Commons @ Penn development. <u>NB: Install new shelter</u> No shelter currently present. Will install new BRT shelter with enhanced amenities.
	Curb Configuration	<u>SB: Bumpout</u> Maximizes operational efficiency and pedestrian space. No space constraints exist restricting bumpout construction. <u>NB: Bumpout</u> Maximizes operational efficiency and pedestrian space. No space constraints exist restricting bumpout construction.
	Platform Length	<u>SB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle. <u>NB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

²⁷ Source: September 2014 APC data

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. The station will serve connections to Route 14 for service between the Robbinsdale Transit Center and Richfield and Route 30 for service on the Broadway Crosstown. Reduced Route 19 local service will also be maintained at this location.

The intersection of Penn Avenue and Golden Valley Road is signalized. Transit signal priority will be considered for implementation during the engineering phase. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

On-street parking will be impacted by this station. The addition of curb bumpouts will result in a reduction of on-street parking on Penn Avenue by approximately four to five parking spaces per platform.

Curb Bumpouts

A micro-simulation traffic model was developed as part of the Penn Avenue Community Works planning process to help determine the feasibility of deploying curb bumpouts at C Line stations throughout the Penn Avenue corridor.

Modeled factors included farside bumpouts at both platforms, additional C Line service frequency, and traffic volume growth through year 2035 throughout the corridor. Bumpouts have been included within the station plan resulting from these models indicating future traffic operations would remain acceptable with BRT operations.

Other Alternatives Considered

Site Station Platforms on Nearside Corners of Penn & Golden Valley

Existing bus stops are located on the nearside of the intersection for both northbound and southbound buses. BRT platforms will be located on the farside of the intersection for both northbound and southbound buses. Narrow street width on Penn Avenue requires platform bumpouts to be constructed on diagonally opposite corners to allow space for safe turning movements. Therefore, moving one platform to the alternative corner would necessitate moving the other platform.

In addition to the potential for coordination with the Commons @ Penn development, the potential for transit signal priority was an important factor in the farside siting of the southbound platform. Farside platforms are preferred with transit signal priority. For southbound operations, farside siting is possible with adequate length for a 60' platform and no existing access conflicts.

Given the siting of the southbound platform on the southwest corner, the northbound platform must be offset on the northeast corner. Farside siting also optimizes transit signal priority potential for northbound operations. The farside northeast quadrant has adequate length for a 60' platform and no existing access conflicts.

Project Delivery

Penn Avenue Community Works Project

Station design and construction will be coordinated with the Hennepin County-led Penn Avenue Community Works project.²⁸ Hennepin County plans to reconstruct intersections on the Penn Avenue corridor in coordination with C Line construction. Improvements to targeted intersections of Penn Avenue, including C Line stations, are currently planned for construction beginning in 2017. This timeline is subject to change pending full C Line project funding.

Commons @ Penn Development

A mixed-use development, Commons @ Penn, is currently being constructed at the intersection's southeast quadrant. A sheltered transit waiting area will be integrated into the new building's Penn Avenue frontage for the southbound platform. A landmark pylon, ticket vending machines, fare card validator, and other technology components will be included within the southbound platform design.

²⁸ Additional information available at: <http://www.hennepin.us/residents/transportation/penn-avenue-community-works>

Figure 20: Station Layout – Penn & Golden Valley



Station Plan: Penn & Plymouth

This station will serve the intersection of Penn Avenue and Plymouth Avenue. The Plymouth Avenue location meets station spacing guidance; the Olson & Penn station will be situated approximately 0.5 mile to south and the Penn & Golden Valley station will be situated approximately 0.5 to the north. Within the Penn Avenue corridor, the existing Penn & Plymouth bus stops have the 4th and 5th highest number of Route 19 boardings for northbound and southbound trips, respectively.²⁹

Table 14: Station Plan Summary – Penn & Plymouth

Penn & Plymouth		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Penn & Plymouth</u> Provides access to high-ridership location at major intersection and transit node.
	Platform Location	<u>SB: Farside (SW corner)</u> Farside platform is preferred to maximize transit signal priority potential and avoid nearside driveway conflicts. <u>NB: Farside (NE corner)</u> Farside platform is preferred to maximize transit signal priority potential.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Install new shelter</u> Will install new shelter with enhanced amenities. <u>NB: Install new shelter</u> Will install new shelter with enhanced amenities.
	Curb Configuration	<u>SB: Bumpout</u> Bumpout will maximize operational efficiency and pedestrian space. No space constraints currently exist that restrict bumpout construction. <u>NB: Bumpout</u> Bumpout will maximize operational efficiency and pedestrian space. No space constraints currently exist that restrict bumpout construction.
	Platform Length	<u>SB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle. <u>NB: 60' long</u> Will use C Line design standard to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

²⁹ Source: September 2014 APC data

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. The station will serve connections to Routes 7 and 32 on Plymouth Avenue. Reduced Route 19 local service will also be maintained at this location.

The intersection of Penn Avenue and Plymouth Avenue is signalized. Transit signal priority will be considered for implementation during the engineering phase. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

On-street parking will be impacted by this station. The addition of curb bumpouts will result in a reduction of on-street parking on Penn Avenue by approximately four to five parking spaces per platform.

Curb Bumpouts

A micro-simulation traffic model was developed as part of the Penn Avenue Community Works planning process to help determine the feasibility of deploying curb bumpouts at C Line stations throughout the Penn Avenue corridor.

Modeled factors included farside bumpouts at both platforms, additional C Line service frequency, and traffic volume growth through year 2035 throughout the corridor. Bumpouts have been included within the station plan resulting from these models indicating future traffic operations would remain acceptable with BRT operations.

Other Alternatives Considered

Site Station Platforms on Nearside Corners of Penn & Plymouth Avenue

Existing bus stops are located on the nearside of the intersection for both northbound and southbound buses. C Line platforms will be located on the farside of the intersection for both northbound and southbound buses. Narrow street width on Penn Avenue requires platform bumpouts to be constructed on diagonally opposite corners to allow space for safe turning movements. Therefore, moving one platform to the alternative corner would necessitate moving the other platform.

A southbound station platform on the northwest corner of the intersection was explored in order to maximize proximity to the NorthPoint Health and Wellness Center.

Farside platforms are preferred with transit signal priority in order to optimize traffic operations for all street users. For southbound operations, farside siting is possible due to adequate length for a 60' platform and no existing access conflicts. A nearside platform would be potentially in conflict with the Estes Funeral Home driveway.

Farside siting also optimizes transit signal priority potential for northbound operations. The farside northeast quadrant has adequate length for a 60' platform and no existing access conflicts.

Project Delivery

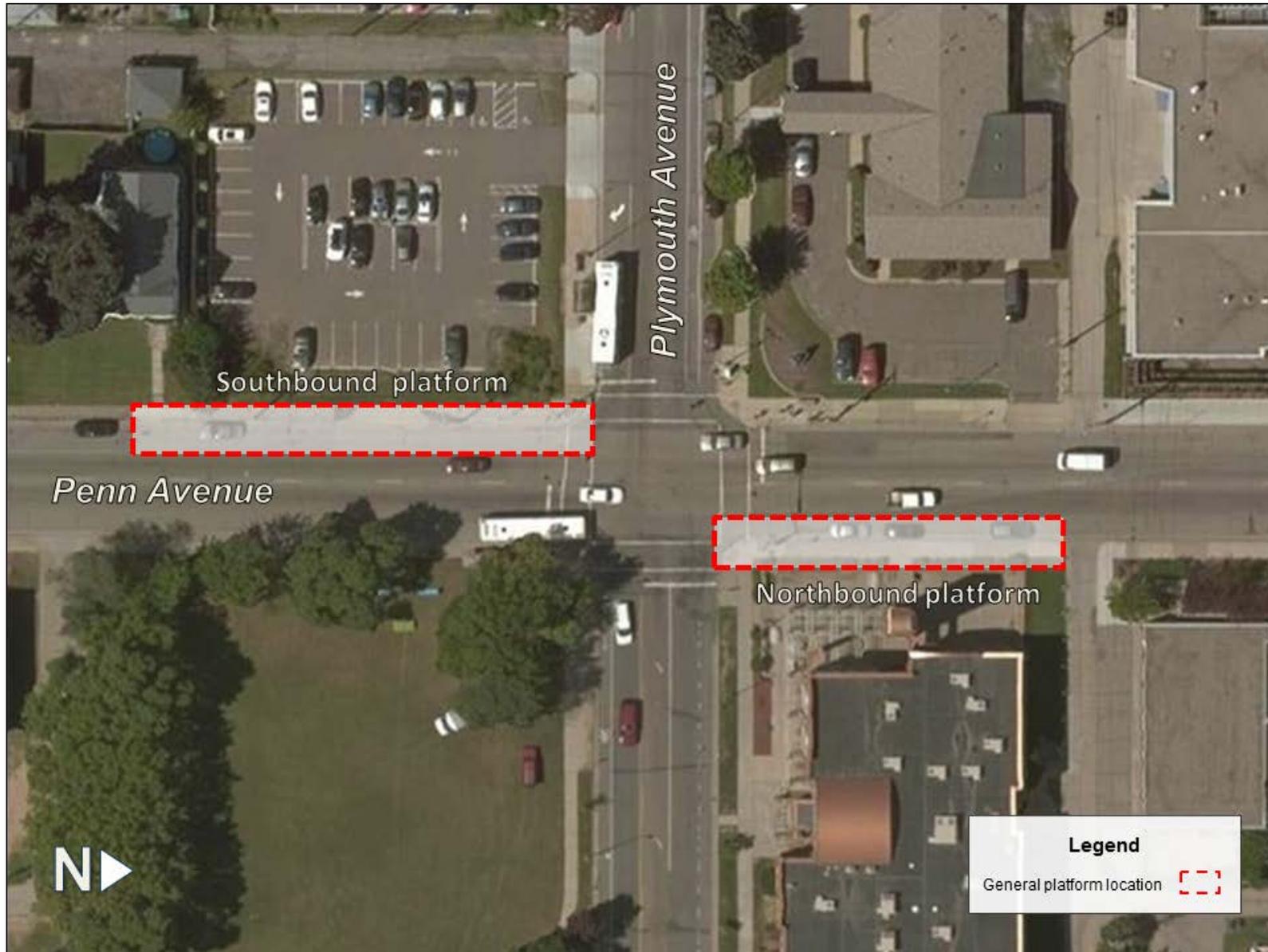
Penn Avenue Community Works

Station design and construction will be coordinated with the Hennepin County-led Penn Avenue Community Works project.³⁰ Hennepin County plans to reconstruct intersections on the Penn Avenue corridor in coordination with C Line construction. Improvements to targeted intersections of Penn Avenue, including C Line stations, are currently planned for construction beginning in 2017. This timeline is subject to change pending full C Line project funding.

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³⁰ Additional information available at: <http://www.hennepin.us/residents/transportation/penn-avenue-community-works>

Figure 21: Station Layout – Penn & Plymouth



Station Plan: Olson Memorial Highway Stations

The C Line will run on Olson Memorial Highway between Penn Avenue and 7th Street North. The limited-stop C Line will serve three stations in this segment, planned for the near-term as temporary upgrades to existing bus stop locations.

- Olson & Penn
- Olson & Humboldt
- Olson & Bryant

These stations are planned to be temporary because they will be displaced when Blue Line Extension light rail construction begins on Olson shortly after the C Line opens. The Blue Line Extension light rail project, currently in development, will construct light rail along Olson Memorial Highway, with construction anticipated from 2018 to 2020. Service on the line is scheduled to begin in 2021.

The C Line will travel on the same portion of Olson Memorial Highway prior to the start of Blue Line Extension construction. See Figure 1 for additional information. Any permanent BRT stations on Olson built prior to Blue Line Extension light rail construction would be completely removed during a reconstruction of Olson Memorial Highway for light rail operations. As a result, permanent C Line investments cannot be built at this time.

Figure 22: Blue Line Extension and C Line Olson Memorial Highway Alignment



Source: METRO Blue Line Extension Minneapolis Open House Presentation, 07.29.2015

Pre-light rail C Line operations on Olson Memorial Highway are planned to utilize temporary station improvements at existing bus stops to support near-term BRT operations and be easily moved when displaced by expected Blue Line Extension construction beginning as early as 2018. Existing shelter structures, boarding areas, and curb lines will remain in place for C Line service. Additional equipment will be installed at bus stops to support C Line operations.

Long-Term East-West Alignment Study: Olson Highway and Glenwood Avenue

Metro Transit is committed to identifying the best long-term location for C Line BRT and local bus service after LRT service on the Blue Line Extension begins in 2021. Although it will serve a very different area than the C Line north and west of Olson, the Blue Line Extension will significantly increase transit access along Olson Memorial Highway.

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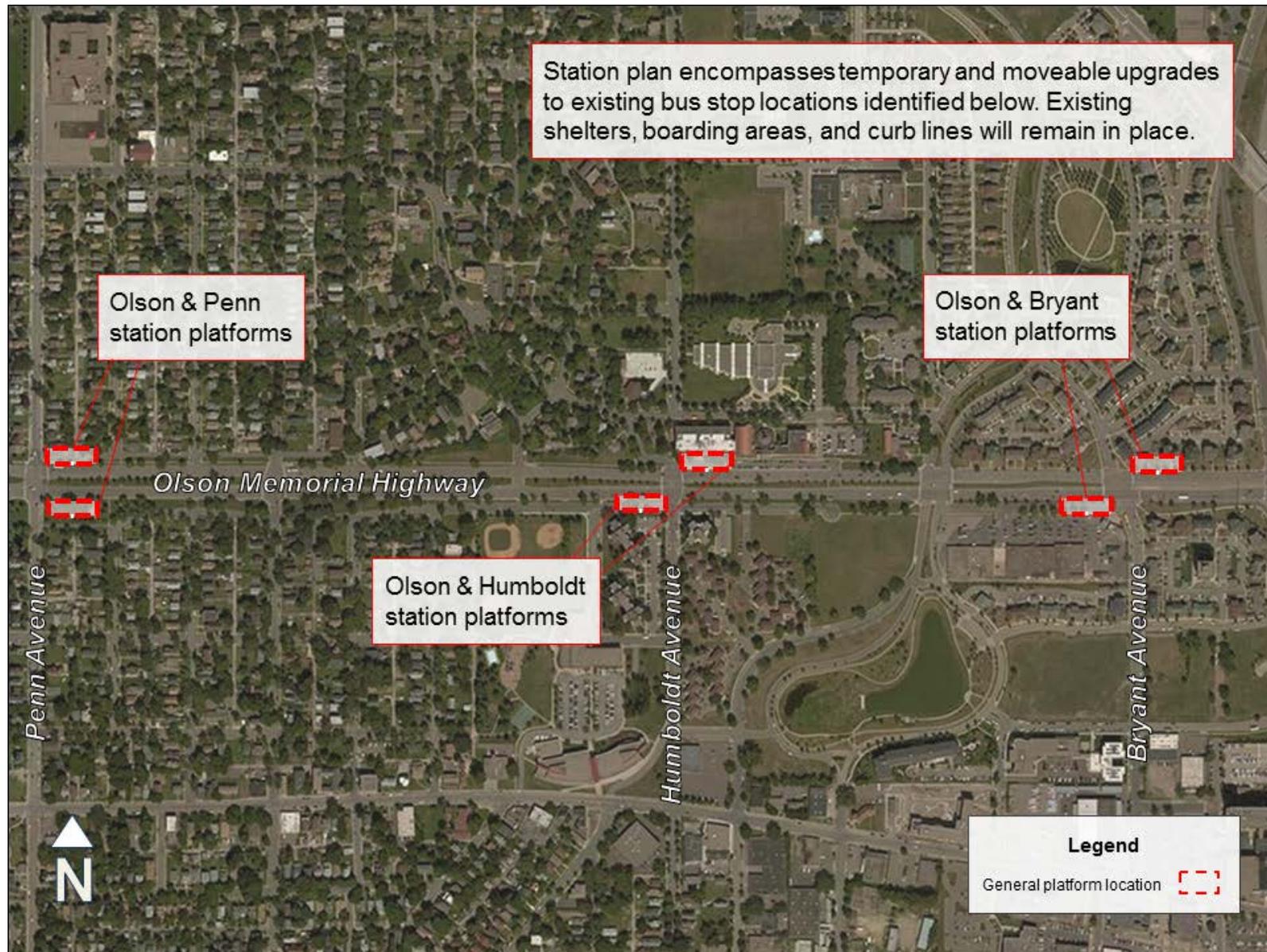
C Line Station Plan: Olson Memorial Highway Stations

Many stakeholders have questioned whether Glenwood Avenue could be an appropriate east-west alternative to Olson Memorial Highway for the C Line between Penn Avenue and downtown Minneapolis. Additional study regarding a BRT concept on Glenwood Avenue is necessary to determine its feasibility as a long-term option.

This study will occur in 2016, and will recommend permanent station locations for the C Line, either on Olson Highway or Glenwood Avenue. Permanent station locations, either on Olson Memorial Highway or Glenwood Avenue, will move through an additional station plan approval process. Stations would be implemented in a second phase of C Line construction, coordinated with light rail and other road construction in the area.

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Figure 23: Station Layout – Olson Memorial Highway Stations



Station Plan: Olson & 7th Street

This station will serve the major intersection of Olson Memorial Highway and 7th Street. The Olson and 7th Street station will be in close proximity to the Blue Line and Green Line LRT extensions currently in project development. Platform locations have been coordinated with these planned projects. The intersection is a key transit node outside of the downtown area and experiences heavy ridership, especially northbound, with over 175 daily northbound boardings³¹. The location meets station spacing guidance; the 7th Street Transit Center station will be located about 0.55 mile southeast and the Olson & Bryant station will be about 0.35 mile to the west.

Table 15: Station Plan Summary – Olson & 7th Street

Olson & 7th Street		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Olson & 7th Street</u> Provides access to high-ridership location at major intersection and transit node.
	Platform Location	<u>SB: Farside on 7th Street (SW corner) at BRT-ready station</u> Location provides increased potential for use under long-term coordination with LRT extensions. This platform will be available for future use by the D Line as well. <u>NB: Farside on Olson Memorial Highway (NW corner) at BRT-ready station</u> This platform will upgrade an existing Route 19 stop, sited on Olson Memorial Highway to accommodate turning maneuvers of left-turning buses. Siting a station nearside of Olson Highway on NB 7th Street is not feasible due to the length of maneuver required to reach the left-turn lane.
ADDITIONAL STATION DETAILS	Shelter	<u>SB: Use existing shelter</u> Will use shelter to be installed in 2016. <u>NB: Use existing shelter</u> Will use shelter to be installed in 2016.
	Curb Configuration	<u>SB: Use existing bumpout</u> Will use existing bumpout constructed via previous project; C Line project will not modify curbs further. <u>NB: Use existing bumpout</u> Will use existing bumpout constructed via previous project; C Line project will not modify curbs further.
	Platform Length	<u>SB: 80' long</u> Will exceed 60' standard to provide additional flexibility for local service gate operations. <u>NB: 80' long</u> Will exceed 60' standard to provide additional flexibility for local service gate operations.

*Final conditions to be developed during the engineering/design process.

³¹ Source: September 2014 APC data

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. Nearby connections on 7th Street to Routes 5 and 22 provide service to south Minneapolis, Richfield, Bloomington, and the Mall of America. The station will also serve Route 755 for limited stop service between New Hope and downtown Minneapolis. The station will also serve Route 755 for limited stop service between New Hope and downtown Minneapolis. Reduced Route 19 local service will also be maintained.

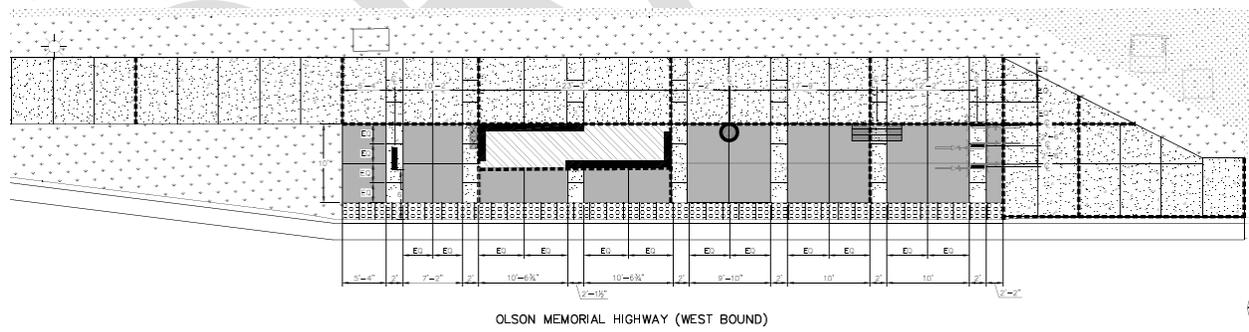
A future connection to the Green Line Extension (Southwest LRT) will be made at this station. Customers may transfer here between the Olson & 7th Street C Line station and the Royalston LRT station without the need to travel all the way into downtown Minneapolis.

7th Street and Olson Memorial Highway is a major signalized intersection. Transit signal priority will be considered for implementation during the detailed design and engineering phase, acknowledging that two light rail lines will also converge in this location to further complicate the intersection's operations. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

Curb Bumpouts

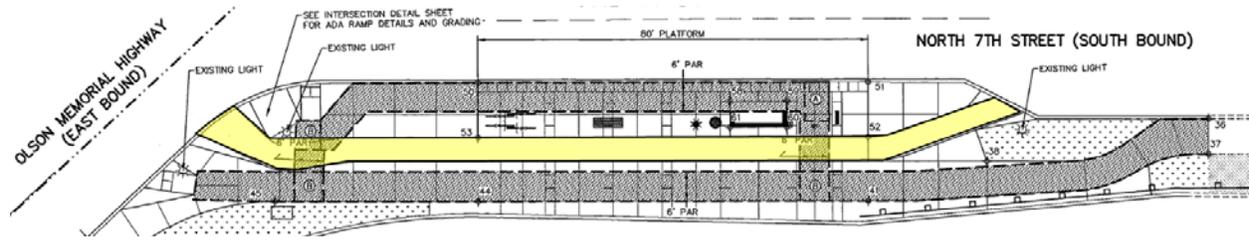
Curb bumpouts improve the operational efficiency of bus service by eliminating merging movements. They also provide additional space for waiting customers. The westbound/northbound platform bumpout will be created by shortening an existing right-turn lane onto Oak Lake Avenue. See Figure 1 for additional information.

Figure 24: WB/NB station bumpout



The eastbound/southbound platform bumpout will be built on a segment of 7th Street with existing on-street bicycle lanes. To eliminate bus/bike conflicts and accommodate bicycle traffic, a bicycle lane realignment will move bicycle traffic from the roadway onto a cycle track behind the station, returning to the on-street bicycle lane shortly after passing through the station area. See Figure 2 for additional information. The cycle track is depicted in yellow in Figure 2. A separate sidewalk will be provided for pedestrians.

Figure 25: EB/SB platform bumpout



Other Alternatives Considered

Given transit connections, high ridership, and BRT readiness of 2016 transit investments at this location, no alternative intersection locations were considered for this station.

Project Delivery

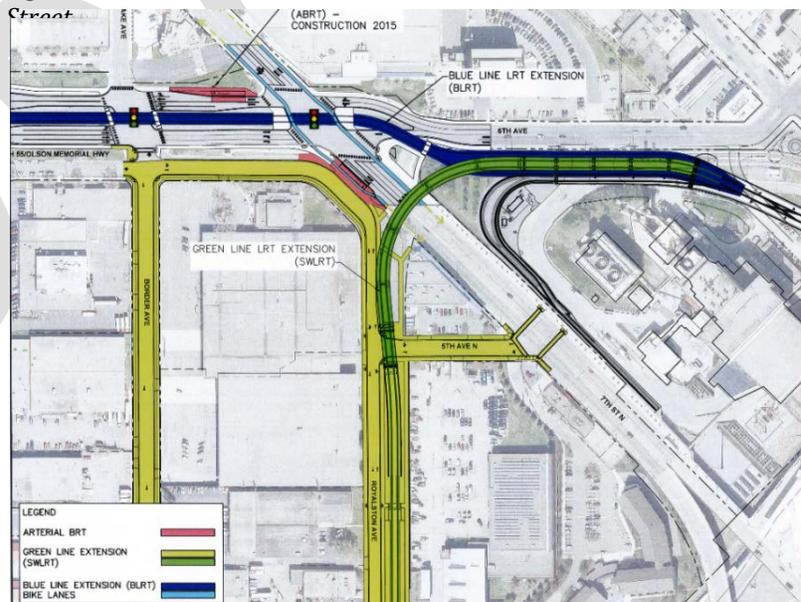
7th Street Pilot Station Project

Design of the Olson & 7th Street station was coordinated through a previous project as a “pilot station” to improve an existing high volume bus stop while also piloting BRT improvements. Pilot station construction will be completed in 2016 and will immediately improve the transit experience for existing service. It will also be used by the C Line at the start of revenue service. Pilot station improvements to be completed in 2016 include bumpouts, new curb and gutter, wider sidewalks, and enhanced shelters. Landmark pylons housing real-time signage and other technology will also be constructed.

This pilot station will be constructed as “BRT-ready.” To prepare for C Line operations, the C Line construction phase will install fare collection equipment and additional arterial BRT branded signage.

Station platform locations have been coordinated with planned future projects, including the Blue Line Extension light rail project, Southwest LRT, and the planned D Line (BRT upgrade to Route 5). See Figure 3 for additional information. C Line BRT investments at this location could ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

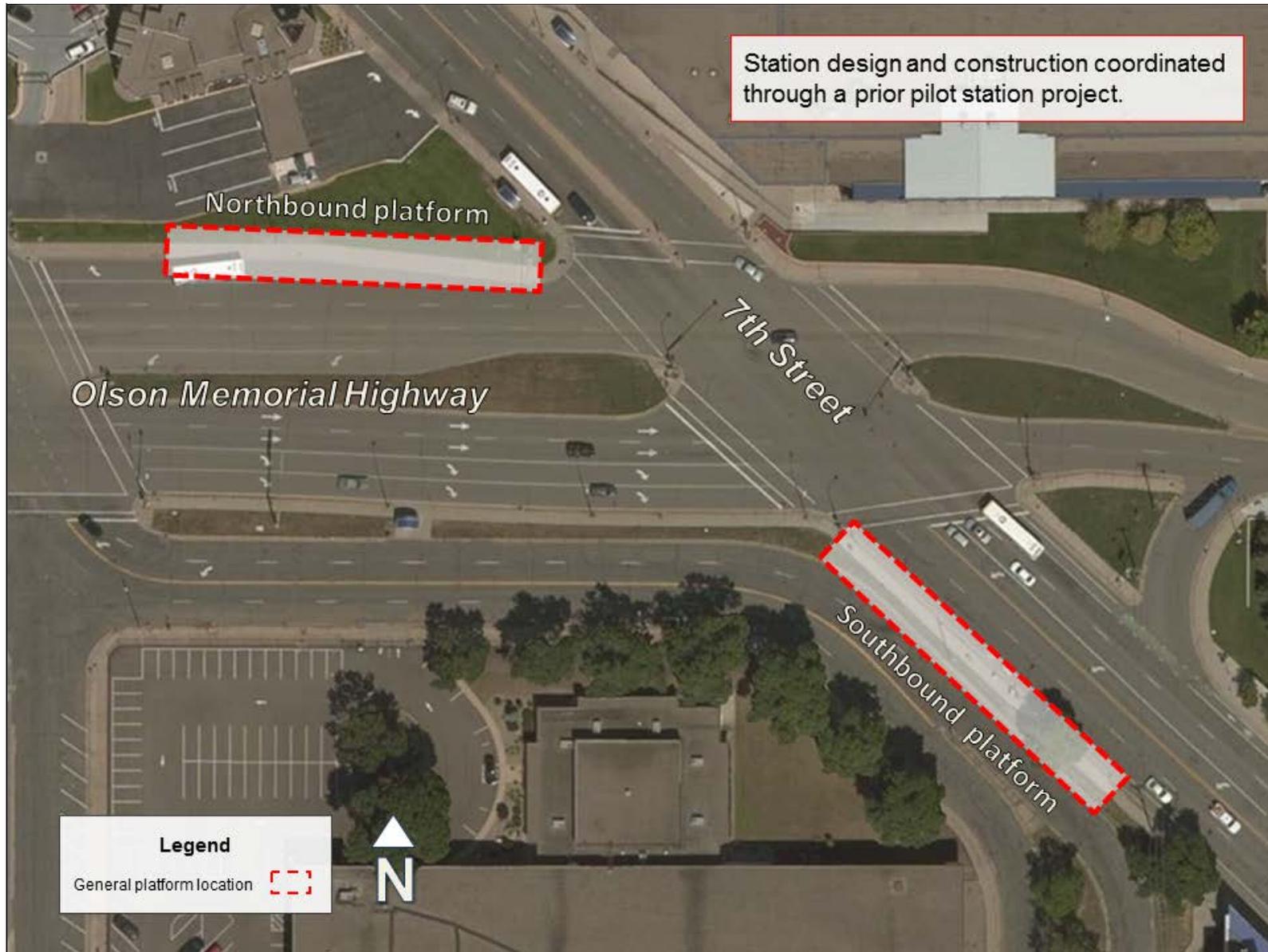
Figure 26: Blue Line LRT, Green Line LRT, and C Line at Olson & 7th Street



Source: Metro Blue Line Extension Minneapolis Open House Presentation, 07.29.2015

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C Line Station Plan: Olson & 7th Street

Figure 27: Station Layout – Olson & 7th Street



Station Plan: Ramp A/7th Street Transit Center

This station will serve the existing Ramp A/7th Street Transit Center as the C Line enters downtown Minneapolis. The 8th Street & Nicollet station will be approximately 0.30 mile to the east and the Olson & 7th Street station will be over 0.5 mile to the west. The existing transit facility will be retrofitted to include core BRT improvements.

Table 16: Station Plan Summary – Ramp A/7th Street Transit Center

Ramp A/7th Street Transit Center		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>Ramp A / 7th Street Transit Center</u> Existing transit center connection will serve as downtown Minneapolis entry/exit point.
	Platform Location	<u>SB: Existing transit stop location</u> Will modify existing Ramp A / 7th Street Transit Center facilities
ADDITIONAL STATION DETAILS	Shelter Size	<u>SB: No new shelter</u> Will use existing enclosed waiting area within the transit center.
	Curb Configuration	<u>SB: No bumpout</u> Platform will be located off-street in existing transit-only busway.
	Platform Length	<u>SB: Greater than 60' long</u> Platform is long enough to accommodate 60' BRT vehicle.

*Final conditions to be developed during the engineering/design process.

Notes and Discussion

As an existing transit center, the station will offer connections to many transit routes. Reduced Route 19 local service will also be maintained at this location.

Retrofit of Existing Facility

The C Line project will leverage existing transit infrastructure to implement a BRT station. C Line construction improvements will include the landmark pylon housing real-time signage and other technology, fare collection equipment, and additional BRT branded signage. Figure 1 highlights existing conditions.

Figure 28: Existing Ramp A/7th Street Transit Center



Other Alternatives Considered

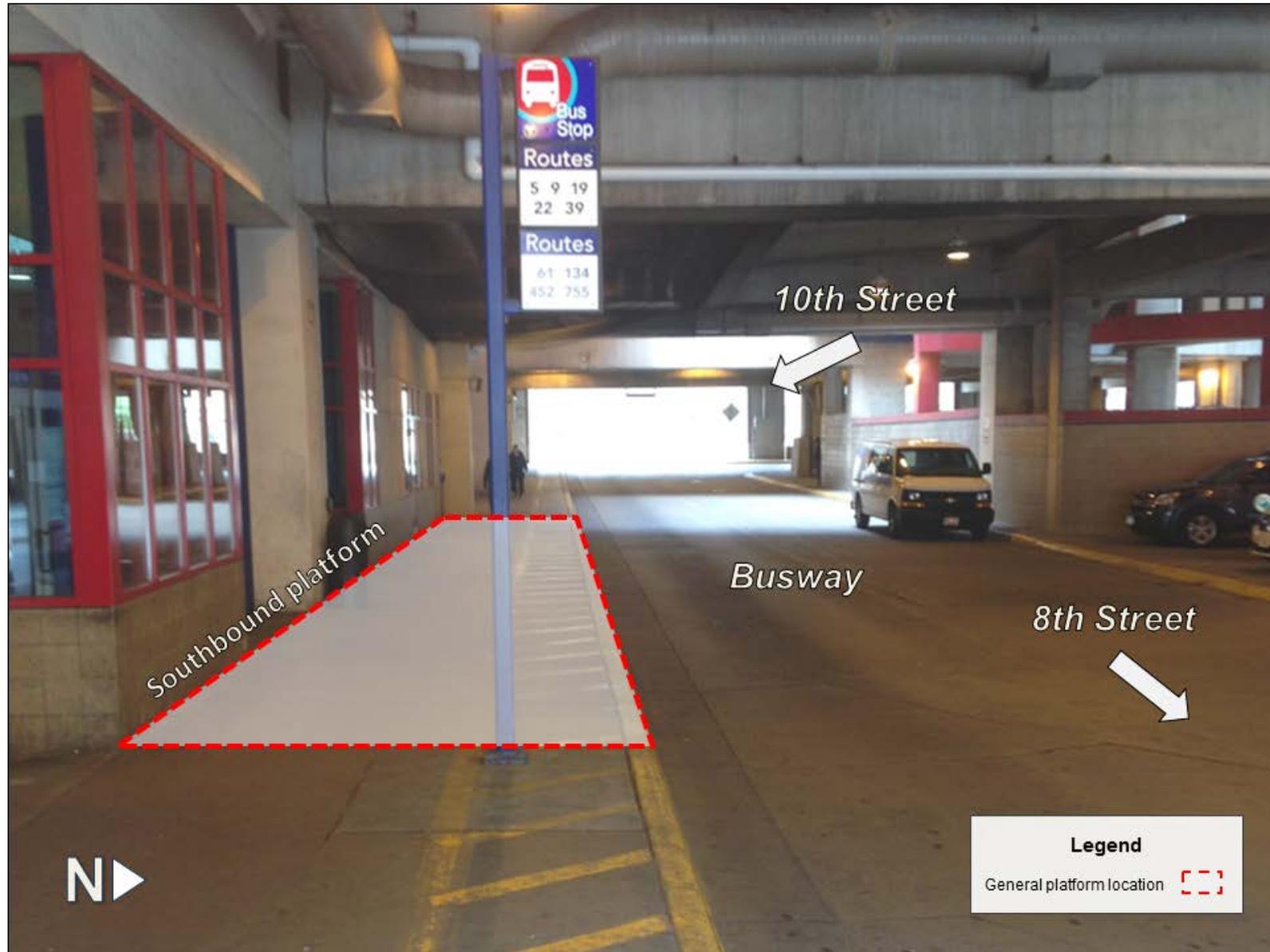
No alternative locations were considered for this station.

Project Delivery

Permanent station improvements at the Ramp A/7th Street Transit Center are anticipated to be constructed independently of any larger infrastructure project in 2017. The station will be operational at the start of C Line revenue service. This timeline is subject to change pending full C Line project funding.

C Line BRT investments at this location may ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

Figure 29: Station Layout – Ramp A/7th Street Transit Center



Station Plan: 8th Street Stations

East of the Ramp A/7th Street Transit Center, the C Line will run on 8th Street in downtown Minneapolis. The limited-stop C Line will serve three stations, planned as upgrades to existing bus stop locations.

- 8th Street & Nicollet
- 8th Street & 3rd/4th Avenue
- 8th Street & Park Avenue

The City of Minneapolis plans to reconstruct 8th Street from Hennepin Avenue to Chicago Avenue in 2019-2020.³² Because 8th Street is slated for major construction in the next few years, these permanent stations will not be built as part of the C Line project in 2017. Temporary station improvements will be deployed when the C Line opens. C Line buses will move to detour routes throughout 8th Street reconstruction activities.

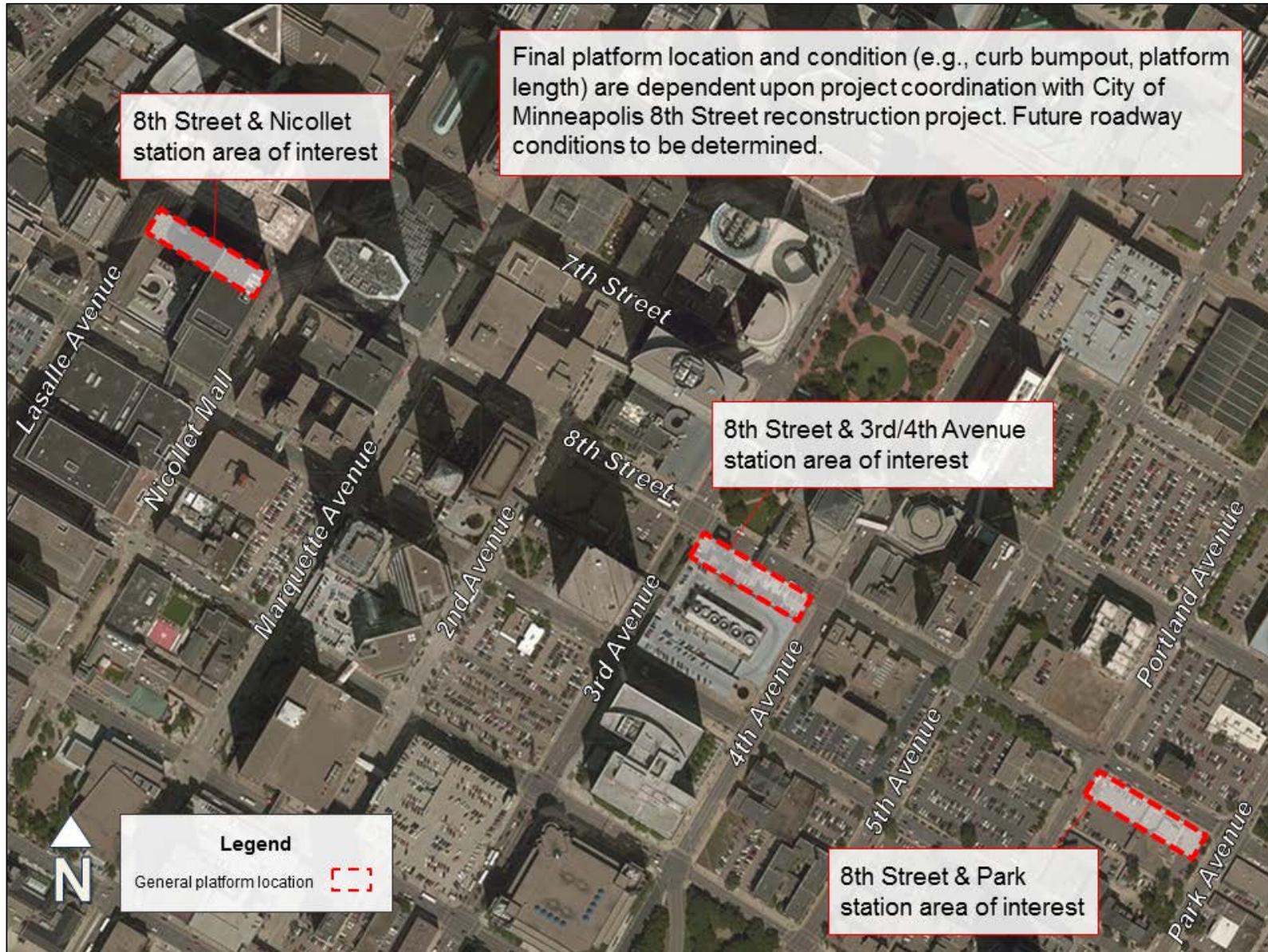
Station design and construction will be coordinated with planned reconstruction. These stations will also establish long-term transit infrastructure for use by the planned D Line (Chicago/Emerson-Fremont) corridor. Future street configuration will be established within the reconstruction project's detailed design and engineering phase, and may include bumpouts at BRT stations to improve bus operations and provide space for station infrastructure. Shelter placement and platform length will also be determined through future coordination.

The 2012 ATCS addendum³³ initially considered a station at 8th Street and Hennepin/1st Avenue. However, a station at 8th Street and Hennepin Avenue would result in very close station spacing. The Ramp A/7th Street Transit Center station would be less than 0.1 mile to the west and the 8th Street & Nicollet station would be less than 0.15 mile to the east. As a result, a station is not proposed for 8th Street and Hennepin.

³² Additional information available at: <http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/images/wcms1p-142016.pdf>

³³ Available at: http://www.metrotransit.org/Data/Sites/1/media/pdfs/atcs/atcs_final_report_addendum.pdf

Figure 30: Station Layout – 8th Street Stations



Station Plan: 7th Street & Hennepin

This station will serve the major intersection and transit node of 7th Street and Hennepin Avenue. This intersection currently functions as one Metro Transit’s busiest bus stops. Over 400 Route 19 customers board at this intersection on weekdays, the fourth largest number of boardings at any stop along the route³⁴. The 7th Street & Nicollet station will be less than 0.15 mile to the east and the Olson & 7th Street station will be more than 0.6 mile to the west. The existing transit stop will be substantially improved and made BRT ready as part of the 7th Street Transit Advantages project prior to C Line construction. The C Line will use these existing improvements and enhance them with additional C Line components.

Table 17: Station Plan Summary – 7th Street & Hennepin

7th Street & Hennepin		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>7th Street & Hennepin</u> Provides access to high-ridership location with connections to many transit routes.
	Platform Location	<u>NB: Farside (NW corner)</u> Will use existing BRT-ready transit waiting area constructed via separate project.
ADDITIONAL STATION DETAILS	Shelter Size	<u>NB: Use existing shelter</u> Will use existing BRT-ready custom shelter to be installed via separate project.
	Curb Configuration	<u>NB: Use existing bumpout</u> Will use existing BRT-ready bumpout constructed via separate project.
	Platform Length	<u>NB: More than 100’ long</u> Will exceed 60’ standard to accommodate additional routes serving this station.

*Final conditions to be developed during the engineering/design process.

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. As one of the highest ridership stops in the Metro Transit system, the station will serve many transit routes, including Routes 5, 22, 94, 721, 724, 755, 758, and 764, as well as connections to service on Hennepin Avenue. Reduced Route 19 local service will also be maintained at this location.

³⁴ Source: September 2014 APC data

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C Line Station Plan: 7th Street & Hennepin

The intersection of 7th Street and Hennepin Avenue is signalized. Transit signal priority will be considered for implementation during the detailed design and engineering phase. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

Other Alternatives Considered

The location's substantial existing ridership and recent infrastructure improvements via the 7th Street Transit Advantages project make it a critical C Line station. Location alternatives were not considered, but coordination with the 7th Street Transit Advantages project resulted in distinctions from other BRT stations.

Project Delivery

7th Street Transit Advantages Project

Station design and construction was coordinated through a previous project, the Metro Transit and City of Minneapolis 7th Street Transit Advantages project. Construction will be completed by spring 2016 and will immediately improve the transit experience for existing service. Project improvements include a bumpout, new curb and gutter, a wider sidewalk, and an enhanced shelter. This is a custom shelter distinct from standard BRT structures. A landmark pylon housing real-time signage and other technology will also be installed as part of the Transit Advantages project. See Figures 1 and 2 for site improvement details.

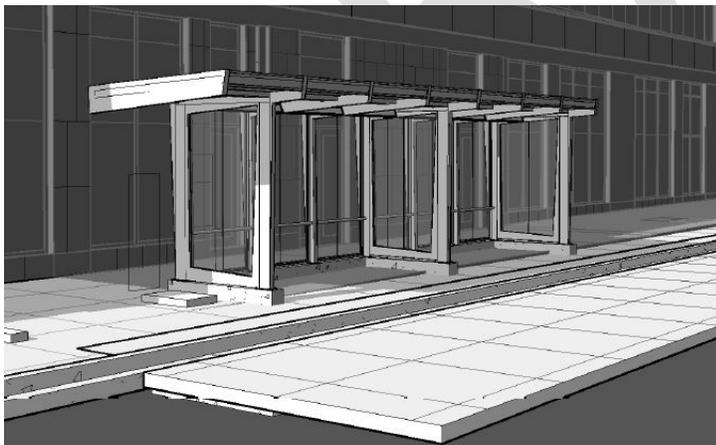


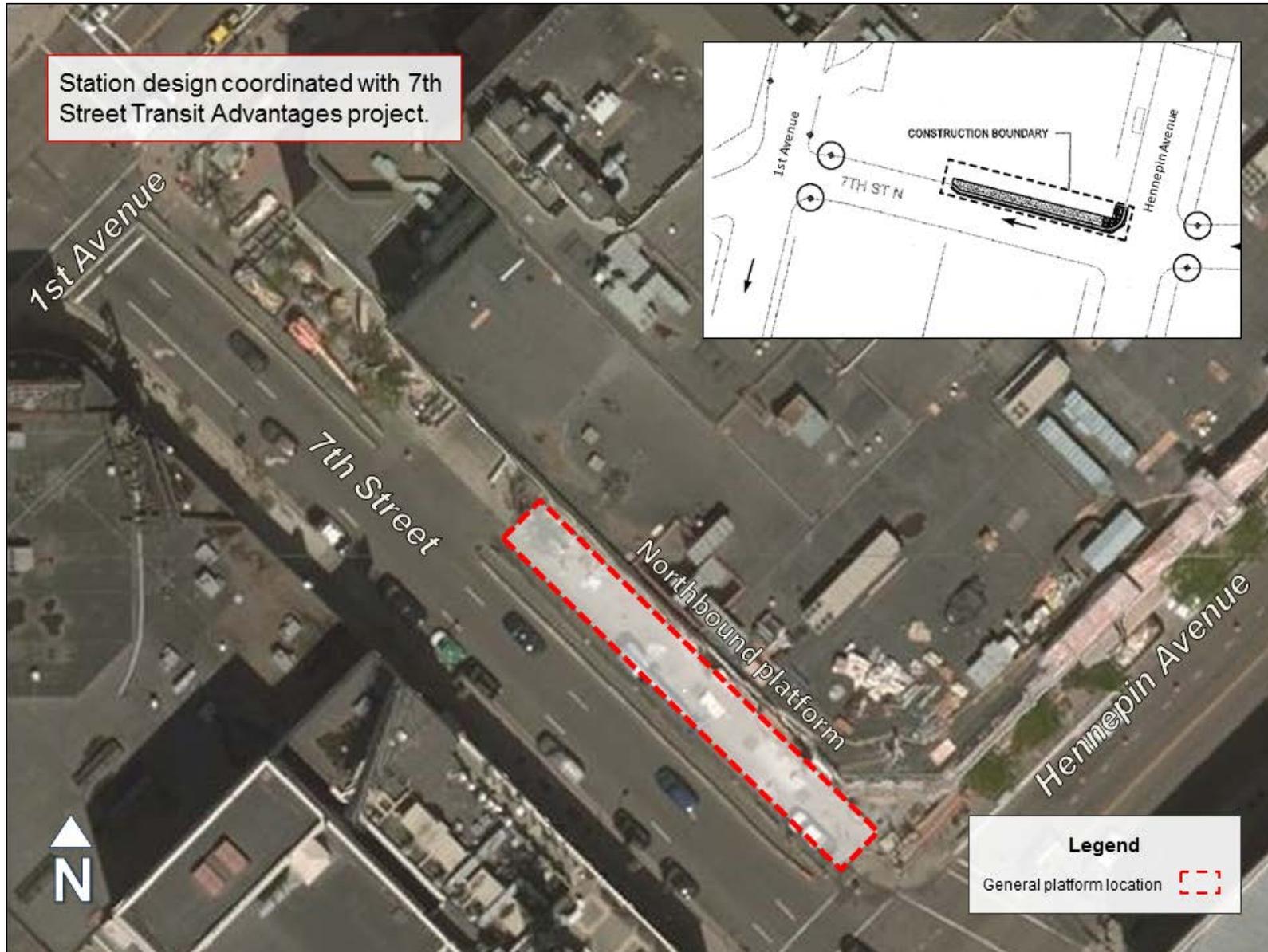
Figure 31: Custom Shelter Rendering



Figure 32: Constructed Station

To prepare for C Line operations, the C Line project will install fare collection equipment and additional BRT branded signage during the construction phase in 2017. C Line BRT investments at this location would ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

Figure 33: Station Layout – 7th Street & Hennepin



Station Plan: 7th Street & Nicollet

This station will serve the major intersection and transit node of 7th Street and Nicollet Mall. This intersection functions as one of the busiest transit stops in the metro area. Over 950 Route 19 customers board at this intersection on weekdays, the largest number of boardings at any stop along the route³⁵. The downtown setting allows station spacing denser than the standard 0.25 to 0.50 mile guidance to adequately serve large numbers of customers. As a result, the 7th & Hennepin station is less than 0.15 mile to the west. The 7th Street & 3rd Avenue station is approximately 0.25 mile to the east. The existing transit stop will be substantially improved as part of the 7th Street Transit Advantages project prior to C Line construction. The C Line will use these existing improvements and enhance them with additional C Line components.

Table 18: Station Plan Summary – 7th Street & Nicollet

7th & Nicollet		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>7th Street & Nicollet</u> Provides access to high-ridership location with connections to many transit routes.
	Platform Location	<u>NB: Farside (NW corner)</u> Will use existing BRT-ready transit waiting area constructed via separate project.
ADDITIONAL STATION DETAILS	Shelter	<u>NB: Use existing shelter</u> Will use existing BRT-ready custom shelter to be installed via separate project.
	Curb Configuration	<u>NB: Use existing bumpout</u> Will use existing BRT-ready bumpout constructed via separate project.
	Platform Length	<u>NB: More than 100' long</u> Will exceed 60' standard to accommodate additional routes serving this station.

*Final conditions to be developed during the engineering/design process.

³⁵ Source: September 2014 APC data

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. As one of the highest ridership stops in the Metro Transit system, the station will serve many transit routes, as well as connections to service on Nicollet Mall. Reduced Route 19 local service will also be maintained at this location.

The intersection of 7th Street and Nicollet Mall is signalized. Transit signal priority will be considered for implementation during the detailed design and engineering phase. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

Other Alternatives Considered

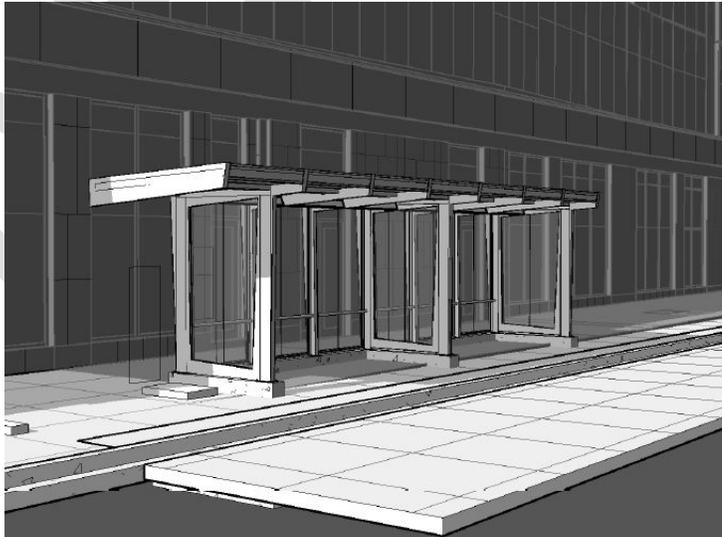
The location's substantial existing ridership and recent infrastructure improvements via the 7th Street Transit Advantages project make it a critical C Line station. Location alternatives were not considered, but coordination with the 7th Street Transit Advantages project resulted in distinctions from other BRT stations.

Project Delivery

7th Street Transit Advantages Project

Station design and construction was coordinated through a previous project, the Metro Transit and City of Minneapolis 7th Street Transit Advantages project. Construction will be completed by spring 2016 and will immediately improve the transit experience for existing service. Project improvements include a bumpout, new curb and gutter, a wider sidewalk, and an enhanced shelter. This is a custom shelter distinct from standard BRT structures. See Figure 1 for more information. A landmark pylon housing real-time signage and other technology will also be installed as part of the Transit Advantages project.

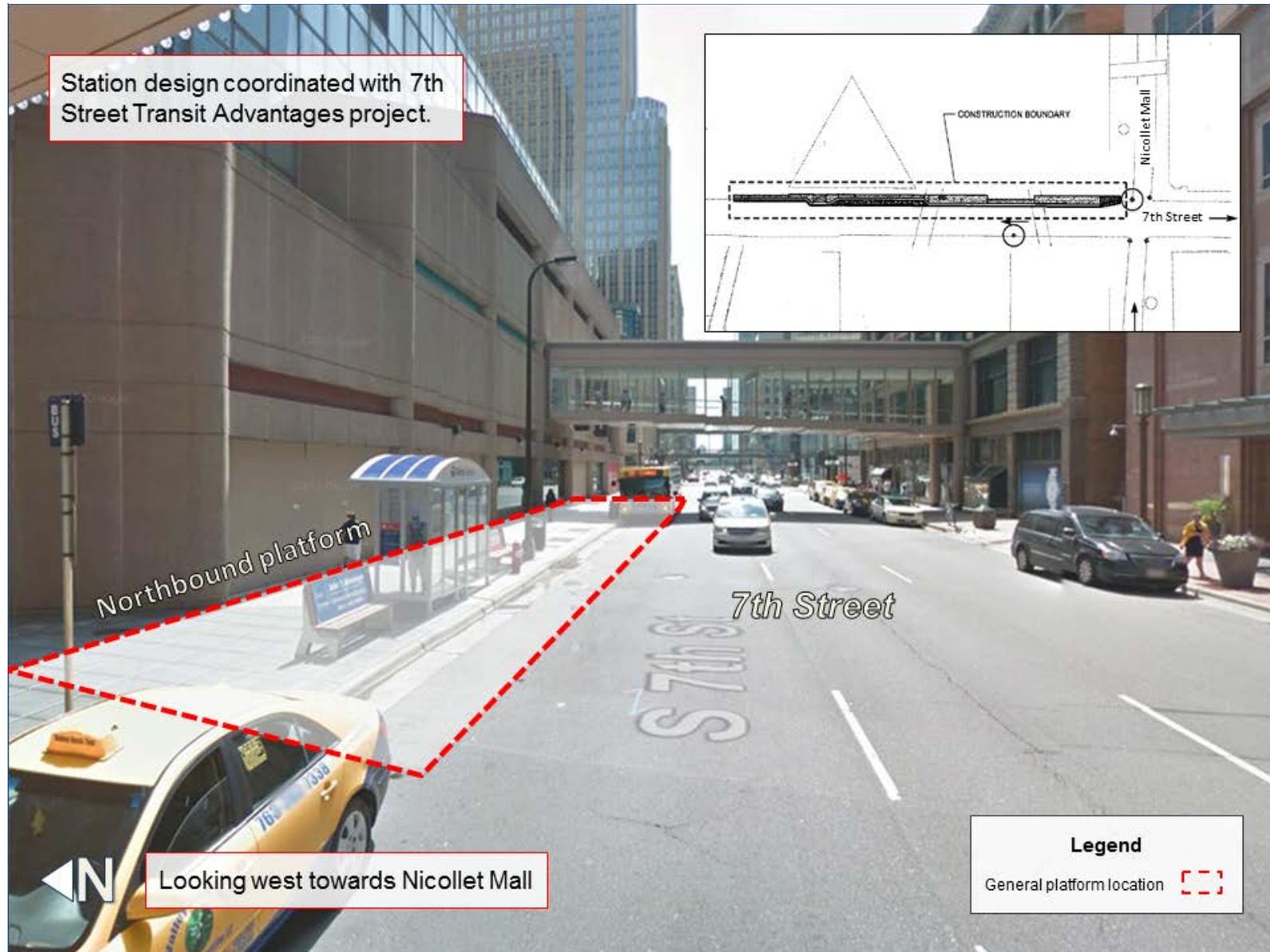
Figure 34: Custom Shelter Rendering



To prepare for C Line operations, the C Line project will install fare collection equipment and additional BRT branded signage during the construction phase in 2017. C Line BRT investments at this location would ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

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C Line Station Plan: 7th Street & Nicollet

Figure 35: Station Layout – 7th Street & Nicollet



Station Plan: 7th Street & 3rd Avenue

This station will serve the major intersection and transit node of 7th Street and 3rd Avenue. This intersection functions as one of the busiest transit stops in the metro area, with over 540 boardings per day across all transit routes. Route 19 accounts for over 175 boardings, with Route 5 adding about 125 additional rides.³⁶ A station at this location will provide an enhanced waiting area for all customers, including local route riders. It will also establish long-term transit infrastructure for use by the planned D Line. The downtown allows more dense station spacing than typical to adequately serve large numbers of customers and provide transit connections. As a result, the 7th Street & Nicollet station will be about 0.25 mile to the west and the 7th Street & Park station will be about 0.25 mile to the east.

Table 19: Station Plan Summary – 7th Street & 3rd Avenue

7th & 3rd Ave		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>7th Street & 3rd Avenue</u> Provides access to a major downtown location with connections to many transit routes.
	Platform Location	<u>NB: Block face between 3rd and 4th Avenues</u> Existing bus stop location; adequate length and space exists on existing stop location to facilitate large numbers of customers. Different locations along the block will be considered.
ADDITIONAL STATION DETAILS	Shelter	<u>NB: Install new shelter</u> Install new BRT shelter with enhanced amenities.
	Curb Configuration	<u>NB: To be coordinated with future traffic analysis</u> A bumpout and curbside configuration will both be considered.
	Platform Length	<u>SB: At least 60' long</u> C Line design standard to accommodate 60' BRT vehicle; longer platform could serve other routes.

*Final conditions to be developed during the engineering/design process.

³⁶ Source: September 2014 APC data

Notes and Discussion

The station will serve 10 local and express bus routes that stop at this location today. Reduced Route 19 local service will also be maintained at this location. Many other transit connections are available throughout the downtown area.

The intersections of 7th Street and 3rd and 4th Avenues are signalized. Transit signal priority will be considered for implementation during the detailed design and engineering phase. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

Other Alternatives Under Consideration

Bumpout

The implementation of a bumpout would use the existing right-turn lane to provide station space and eliminate bus merge movements and delay. An existing right-turn lane and its approach onto 3rd Avenue could be utilized for bumpout construction. In coordination with the City of Minneapolis, traffic operations will be analyzed within the project's detailed design and engineering phase to examine traffic operations under a bumpout condition. A traffic analysis will help determine the feasibility of a bumpout at this location.

If determined to be feasible (e.g., can balance safe and efficient traffic operations for all users), a bumpout may be incorporated into the final station design. A curbside platform maximizing available sidewalk space on 7th Street between 3rd and 4th Avenues could also be constructed as an alternative.

Nearside or Mid-Block Platform Location

The frequency of intersections and traffic signals within the downtown area decreases the operational differences between nearside and mid-block platform placement. The final station design will be determined within the detailed design and engineering phase and will be dependent upon traffic analysis, potential bumpout construction, right-of-way availability, and compatibility with the Hennepin County Government Center Plaza site design.

Project Delivery

Permanent station improvements at 7th Street & 3rd Avenue are anticipated to be constructed independently of any larger infrastructure project in 2017. The station will be operational at the start of C Line revenue service. This timeline is subject to change pending full C Line project funding.

C Line BRT investments at this location would ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

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C Line Station Plan: 7th Street & 3rd Avenue

Figure 36: Station Layout – 7th Street & 3rd Avenue



Station Plan: 7th Street & Park

This station will serve the major intersection and transit node of 7th Street and Park Avenue. This intersection functions as one of the busiest transit stops in the metro area and will also serve as the C Line’s first northbound station. Across all routes, over 1,100 customers board at this location per day. Route 19 accounts for over 500 of those boardings, with Route 5 encompassing nearly 400 additional boardings.³⁷ A station at this location will provide an enhanced waiting area for all customers, including local route riders. It will also establish long-term transit infrastructure for use by the planned D Line. The downtown setting requires more dense station spacing than typical to adequately serve large numbers of customers and provide transit connections. As a result, the 7th Street & 3rd Avenue station will be about 0.25 mile to the west.

Table 20: Station Plan Summary – 7th Street & Park

7th Street & Park		
	Station Characteristic	Planned Condition*
CORE STATION PLAN	Intersection Location	<u>7th & Park</u> Functions as C Line’s first northbound boarding location. Will provide access to a major downtown intersection with connections to many transit routes.
	Platform Location	<u>NB: Nearside</u> Adequate length and space exists at existing nearside stop location to accommodate large numbers of customers.
ADDITIONAL STATION DETAILS	Shelter	<u>NB: Replace existing shelter</u> Replace existing shelter with enhanced amenities.
	Curb Configuration	<u>NB: To be coordinated with future traffic analysis</u> If feasible, a bumpout may support transit operations.
	Platform Length	<u>NB: At least 60’ long</u> C Line design standard to accommodate 60’ BRT vehicle. A longer platform may be explored through design to accommodate the many additional routes serving this station.

*Final conditions to be developed during the engineering/design process.

³⁷ Source: September 2014 APC data

Notes and Discussion

A major station planning consideration is the potential for connections to existing transit service. The station will serve connections to Routes 5, 14, 94, 134, 353, 355, 365, 375, 452, 721, and 724. Many other transit connections are available throughout the downtown area. Reduced Route 19 local service will also be maintained.

The intersection of 7th Street and Park Avenue is signalized. Transit signal priority will be considered for implementation during the detailed design and engineering phase. Implementation is dependent upon a traffic analysis balancing acceptable traffic operations for all street users.

Other Alternatives Considered

Bumpout

While adequate space may exist behind the existing curb line to provide BRT infrastructure without widening the sidewalk, a bumpout will also be considered through the design phase at this location. A bumpout would use either a turn lane or parking lane to provide station space and eliminate bus merge movements and delay. In coordination with the City of Minneapolis, traffic operations will be analyzed within the project's detailed design and engineering phase to examine traffic operations under a bumpout condition. A traffic analysis incorporating the completion of the I-94 7th Street³⁸ exit ramp project will help determine the feasibility of a bumpout at this location. A bumpout is the optimal BRT condition.

If determined to be feasible (e.g., can balance safe and efficient traffic operations for all users), a bumpout may be incorporated into the final station design. A curbside platform maximizing available sidewalk space nearside of Park Avenue could also be constructed as an alternative.

Farside Platform Location

Limited right-of-way exists on the farside of Park Avenue to accommodate the large numbers of customers using the existing stop. In addition, limited available length would not allow multiple buses to simultaneously berth at the stop without potentially queueing into the intersection. The space cannot practicably meet the needs of transit service in the area.

Project Delivery

Permanent station improvements at 7th Street & Park Avenue are anticipated to be constructed independently of any larger infrastructure project in 2017. The station will be operational at the start of C Line revenue service. This timeline is subject to change pending full C Line project funding.

C Line BRT investments at this location would ultimately be shared by planned service on the D Line (Chicago/Emerson-Fremont) corridor.

³⁸ Additional information available at: <http://www.ci.minneapolis.mn.us/cip/all/WCMS1P-121854>

Figure 37: Station Layout – 7th Street & Park

