RAMSEY COUNTY RAIL RIGHT-OF-WAY DESIGN GUIDE

APRIL 2020

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GLOSSARY

Bioswale (also linear bioswale): A long, channeled depression or trench that receives rainwater runoff and has vegetation, such as grasses, perennials and shrubs, and organic matter to slow water infiltration and filter out pollutants.

Bollards: A series of short posts set at intervals to delimit an area or to exclude vehicles.

Buffer: Something that serves as a protective barrier.

Center refuge islands: Similar to a splitter island, this device can be flush but with a change in pavement material and texture or have a raised curb, intended to separate opposing lanes of traffic as a safety measure at intersections.

Crossing deterrent: A vegetative buffer, fence, railing or comparable treatment intended to deter crossings for safety reasons by making them physically difficult to traverse.

Engineered slopes: A method of holding steep slopes against movement or erosion, built using geotextile fabrics and compacted soils and typically planted with vegetation by seeding.

Entrapment areas: Locations of a site or place that may allow an individual to be lured into committing a crime or becoming a victim of a crime.

Formliner: A rubber or poly liner placed on the inside of cast-in-place concrete forms used to create desired surface textures to suggest materials such as brick, stone or wood.

Geotextiles: A strong synthetic fabric usually used in civil engineering construction projects that stabilizes loose soil and prevents erosion.

Grade separation: Vertically separating the elevation of two crossing vehicle or pedestrian facilities using a bridge or tunnel structure.

Green infrastructure: An approach to water management that protects, restores or mimics the natural water cycle. Practices include rain gardens, vegetated swales, green roofs and porous pavements.

Guideway: The pavement area designed and dedicated for the exclusive use of bus rapid transit (BRT) vehicles and, if needed, emergency vehicles.

High-value trees: Trees that have greater value based on a combination of criteria, including long-lived species, maturity, form, health and contributions to the character and environment they occupy.

Hostile vegetation: Vegetation with thorns, that is extremely dense or vining.

Landscape massings: Large groupings of similar or variable plantings.

Overstory: Trees that contribute to the layer of foliage in a forest canopy.

Reinforced green slopes: Similar to engineered slopes but can be more heavily planted with native shrub and tree plantings.

Screening: Something that shelters, protects or hides, such as a growth or stand of trees, shrubs or plants.

Specimen trees: Similar to high-value trees but may be generally defined and individually designated by the local governing body as notable because of its outstanding size and quality for its particular species.

Splitter islands: A raised or painted traffic island that separates traffic in opposing directions of travel and is typically used at roundabouts and on the minor road approaches to an intersection.

Traversable: To be able to pass or move over, along or through.

Tree trenches: A designed system typically within roadway boulevards that consists of piping for water storage, special soils and trees. This system manages stormwater runoff and promotes the use of trees in urban areas.

Understory: Shrubs and trees that contribute to the layer of vegetation beneath the overstory or canopy of a forest.

Volunteer vegetation: A plant that grows on its own, rather than being deliberately planted.

Wayfinding: All of the ways in which people orient themselves in physical space and navigate from place to place, typically assisted through a system of signage and other physical cues.

EXECUTIVE SUMMARY

The Rush Line Bus Rapid Transit (BRT) Project is a proposed 14-mile BRT route connecting Saint Paul, Maplewood, Vadnais Heights, Gem Lake, White Bear Township and White Bear Lake. Following a three-year pre-project development study of various routes and modes of transit that included light rail, BRT and commuter rail, Ramsey County, in coordination with the project area communities, selected the locally preferred alternative for the Rush Line BRT Project in September 2017. The identified route would generally run in dedicated guideway along Robert Street, Jackson Street, Phalen Boulevard, Ramsey County rail right-of-way (co-located with the Bruce Vento Trail) and Highway 61.

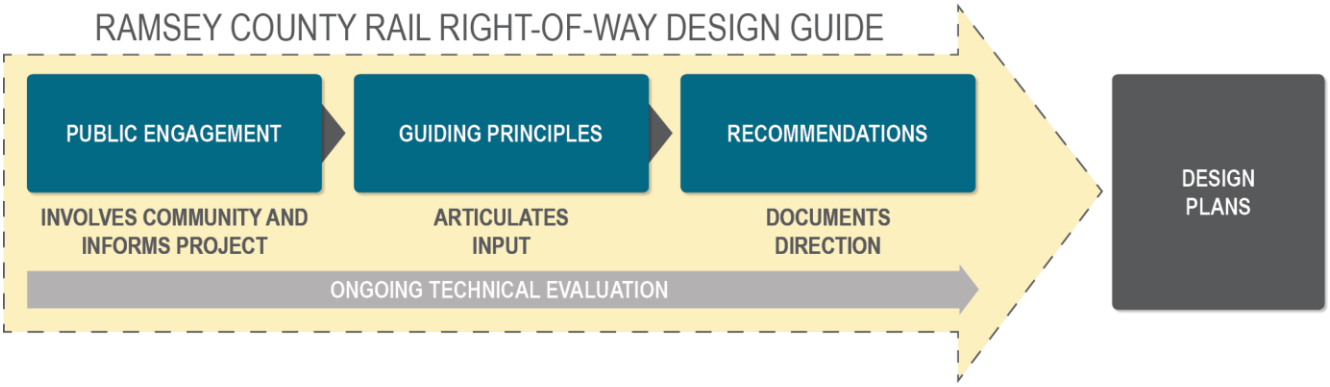
The Ramsey County rail right-of-way was once the Lake Superior & Mississippi Railroad corridor, which was active from the 1870s to 1980s. It was the first direct rail connection between Saint Paul and the Great Lakes Port of Duluth and is eligible for the National Register of Historic Places. This corridor would be impacted by modifications necessary to accommodate the Rush Line BRT Project and is subject to review under Section 106 of the National Historic Preservation Act. Ramsey County is working closely with the Minnesota Department of Transportation Cultural Resources Unit and the Federal Transit Administration to understand the effects to this resource.

Ramsey County purchased the rail right-of-way in the early 1990s to reserve it for future transit use. In 1993, Ramsey County and the city of Saint Paul developed the Bruce Vento Trail Master Plan for a regional trail to be located in the Ramsey County rail right-of-way, and the initial segment of the trail was completed between downtown Saint Paul and Beam Avenue in Maplewood. The Bruce Vento Trail was extended north to Buerkle Road in White Bear Lake in 2005.

In January 2019, Ramsey County adopted the Parks & Recreation System Plan, which identifies community priorities and system gaps, opportunities for development and redevelopment, planned system enhancements and expansions, and natural areas requiring proactive management. The Bruce Vento Trail section of the plan identified the need to adopt a master plan amendment later in 2019. The amendment is intended to identify the alignment for reconstructing and extending the Bruce Vento Trail from Arcade Street to County Road J, accounting for the selected Rush Line BRT route and continued active use of the railway. The amendment will also address other changes to the corridor such as trailhead development, improvements throughout the corridor to address changing trends and demographics and increased recreational opportunities.

The Ramsey County Rail Right-of-Way Design Guide is intended to be complementary to the Bruce Vento Trail Master Plan amendment process, and the goal is to develop a safe dedicated guideway and shared-use trail within the Ramsey County rail right-of-way that fits in with the surrounding landscape and reflects relevant user, stakeholder and public guidance. The Ramsey County Rail Right-of-Way Design Guide process is illustrated in Figure 1.

Figure 1: Ramsey County Rail Right-of-Way Design Guide Process



The Ramsey County Rail Right-of-Way Design Guide area extends north along the proposed BRT route from the Arcade Street station to the Buerkle Road station (see Figure 2). A section of the Ramsey County rail right-of-way between Beam Avenue and County Road D where the dedicated guideway separates from the right-of-way is not included in the design guide area.

The portions of the BRT route outside of the Ramsey County rail right-of-way are not included in this design guide. However, applicable guiding principles and recommendations developed for the Ramsey County rail right-of-way will inform the design of the entire project as design advances, taking into consideration the investments, character and design of the existing roadways the route would follow. To further guide the design of the BRT route and to supplement this design guide, a visual quality manual is being prepared to illustrate the aesthetic design of the primary project elements including bridges, retaining walls, fencing and barriers, and plantings. In addition, as part of the project's environmental analysis phase, station area planning guides will be developed for each community along the route that includes contextual design considerations and recommendations based on a market assessment, health impact assessment and walkshed and bikeshed analysis.

PUBLIC ENGAGEMENT

This document is informed by in-depth public input. Stakeholders gathered at a workshop in March 2019 where they reviewed site-specific opportunities and challenges, discussed the vision and priorities for the Ramsey County rail right-of-way and provided input on potential design solutions. Public engagement activities, including pop-up events, specific stakeholder meetings and community presentations, validated conclusions from the stakeholder workshop and provided additional feedback used to establish the guiding principles.

GUIDING PRINCIPLES

Guiding principles articulate the input received through public engagement activities and help project planners and engineers develop recommendations for design. The public engagement activities related to the Ramsey County Rail Right-of-Way Design Guide identified five overarching themes of highest importance to the community, adjacent property owners and key stakeholders, and a guiding principle was developed for each of the five themes as summarized below.

Character and landscape impacts: Consider impacts to the historic character of the former rail corridor, minimize impacts to existing landscape and enhance the Ramsey County rail right-of-way with ecologically beneficial, resilient, seasonally diverse and low maintenance vegetation.

Safety and security: Address safety and security concerns by reducing and/or removing perceived security risks and minimizing actual physical safety conflicts.

Access and borders: Retain ease of access while promoting safe crossings of the guideway to access the trail, surrounding neighborhoods and transit.

Maintenance: Incorporate design strategies and materials that are durable, affordable and do not require excessive or unanticipated maintenance practices.

Operations: Provide a safe, high-quality trail and BRT user experience.

RECOMMENDATIONS

The guiding principles have been translated into recommendations for design, construction, operations and maintenance specific to the Ramsey County Rail Right-of-Way Design Guide area. The recommendations will be used to develop both preliminary and final plans for the project. They are organized into three design topic categories: proposed typical right-of-way conditions; safety and security; and environment.

The following is a summary of the primary recommendations of the Ramsey County Rail Right-of-Way Design Guide by design topic category.

Proposed Typical Right-of-Way

This design topic category includes recommendations for the basic components within the Ramsey County Rail Right-of-Way Design Guide area.

- Trail and dedicated guideway:
  - Dedicated guideway will be 26 feet wide and used exclusively for buses and, when needed, emergency vehicles.

Figure 2: Ramsey County Rail Right-of-Way Design Guide Area

    - Guideway and trail will be separated by a vegetated buffer.
    - The trail is recommended to remain a 12-foot wide shared-use path.
    - A narrower trail may be used near obstructions.
    - Fences may be implemented where needed for safety.
- Buffers and screening:
    - Preserve existing vegetation as much as possible and add native, diverse plant sizes and species.
    - Use vegetated buffers to preserve privacy between right-of-way and surrounding properties.
    - Use topography, ditches, fencing and railings to deter crossing and access in unsafe locations.
    - Design elements such as fencing and walls with natural appearance and qualities.
- Landscape character:
    - Use hardy, native and low-maintenance vegetation.
    - Design plantings to be organically arranged and diverse in height and spacing.
    - Use ornamental and seasonally diverse plants in station areas.
    - Minimize density and height of plants in station and crossing areas to maintain visibility.

Safety and Security

This design topic category includes strategies for user safety and security.

- Use signage to promote safety and help navigation.
- Use lighting at stations and crossings.
- Lighting the dedicated guideway as a possible operational safety measure will include further coordination with Metro Transit and will be further evaluated as project design advances.
- Lighting the dedicated guideway will consider limiting light pollution by using down-cast lights.
- Avoid obstructing pathway illumination and lines of sight.
- Use pavements, signage and other tools to prevent motor vehicle access.

Environment

This design topic category includes elements and applications related to ecology and resilience as well as specific amenities that enhance the setting and user experience.

- Where possible, preserve existing vegetation and reestablish habitat.
- Manage stormwater using bioswales and other natural management options.
- Use engineered slopes where possible for mitigating steep grade changes.
- Coordinate stormwater treatment needs with community desire to daylight portions of Phalen Creek where applicable.
- Install amenities and wayfinding in a manner consistent with other Ramsey County and Saint Paul parks and trails – benches, trash and recycling receptacles, bicycle repair stations, dog waste pick-up stations, trail route maps, informational kiosks.

1. PROJECT OVERVIEW

1.1. BACKGROUND

The Rush Line BRT Project is a proposed 14-mile BRT route connecting Saint Paul, Maplewood, Vadnais Heights, Gem Lake, White Bear Township and White Bear Lake. Following a three-year pre-project development study of various routes and modes of transit that included light rail, BRT and commuter rail, Ramsey County, in coordination with the project area cities, selected the locally preferred alternative for the Rush Line BRT Project in September 2017. The identified route would generally run in dedicated guideway along Robert Street, Jackson Street, Phalen Boulevard, Ramsey County rail right-of-way (co-located with the Bruce Vento Trail) and Highway 61.

The Ramsey County rail right-of-way was once the Lake Superior & Mississippi Railroad corridor, which was active from the 1870s to 1980s. It was the first direct rail connection between Saint Paul and the Great Lakes Port of Duluth and is eligible for the National Register of Historic Places. This corridor would be impacted by modifications necessary to accommodate the Rush Line BRT Project and is subject to review under Section 106 of the National Historic Preservation Act. Ramsey County is working closely with the Minnesota Department of Transportation Cultural Resources Unit and the Federal Transit Administration to understand the effects to this resource. Based on research and analysis to date, the character-defining features of the railroad corridor are:

- **Railroad roadway:** Earthwork done within the railroad right-of-way to prepare for tracks. Includes the area directly under the tracks (railroad roadbed) and shoulders and ditches. In some places it includes additional earthwork elevating the tracks.
- **Structural elements:** Includes grade separation structures (bridges and tunnels), depots and retaining walls.
- **Sense of linear pathway:** Emphasized by the setting, including adjacent land uses and vegetation between the roadway and the edge of the right-of-way.

Ramsey County purchased the rail right-of-way in the early 1990s to reserve it for future transit use. Ramsey County and the city of Saint Paul developed the Bruce Vento Trail Master Plan in 1993, establishing a long-term vision for the former rail right-of-way with a 13-mile trail corridor with potential shared used for transit between downtown Saint Paul and White Bear Township. The initial segment of the Bruce Vento Trail was completed in 1993 between downtown Saint Paul and Beam Avenue in Maplewood. The trail was extended north to Buerkle Road in White Bear Lake in 2005. Ramsey County Parks & Recreation manages the portion of the trail north of Larpenteur Avenue, and the city of Saint Paul manages the portion of the trail south of Larpenteur Avenue.

Figure 3: The Bruce Vento Trail in Ramsey County Rail Right-of-Way

Signs are located in the Ramsey County rail right-of-way indicating that it is reserved for possible future transit and trail use, and Ramsey County is in the process of updating these signs as illustrated in Figure 4.

Figure 4: Bruce Vento Trail Signage

In January 2019, Ramsey County adopted the Parks & Recreation System Plan, which identifies community priorities and system gaps, opportunities for development and redevelopment, planned system enhancements and expansions, and natural areas requiring proactive management. The Bruce Vento Trail section of the plan identified the need to adopt a master plan amendment later in

2019. The amendment is intended to identify the alignment for reconstruction and extending the Bruce Vento Trail from Arcade Street to County Road J, accounting for the selected Rush Line BRT route and continued active use of the railway. The amendment will also address other changes to the corridor such as trailhead development, improvements throughout the corridor to address changing trends and demographics and increased recreational opportunities.

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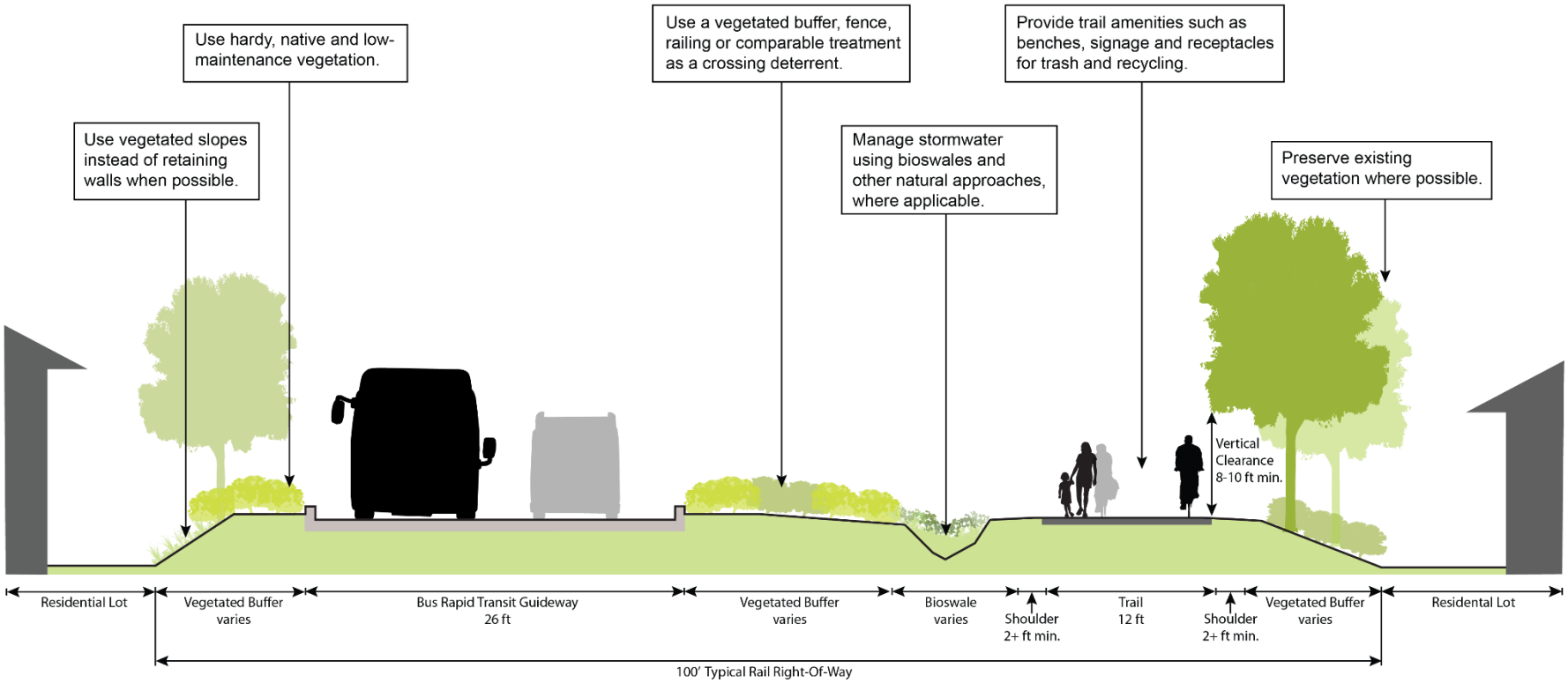
1.2. PROPOSED CONTEXT OF THE RAMSEY COUNTY RAIL RIGHT-OF-WAY

The Rush Line BRT Project is a proposed 14-mile BRT route with 21 stations between Union Depot in downtown Saint Paul and downtown White Bear Lake. Approximately half of the route would be located within Ramsey County rail right-of-way and co-located with a reconstructed Bruce Vento Trail (see Figure 5). The BRT vehicles would be electric, and service would operate seven days a week, arriving every 10 minutes during rush hours and every 15 minutes other times.

Figure 5: Proposed Dedicated Guideway and Bruce Vento Trail in the Ramsey County Rail Right-of-Way at the Typical 100-Foot Right-of-Way Segment



2. EXISTING CONDITIONS

2.1. RAMSEY COUNTY RAIL RIGHT-OF-WAY

2.1.1. Alignment

As the Ramsey County rail right-of-way was previously the location of the Lake Superior & Mississippi Railroad corridor, its alignment is generally straight and level, and it does not typically follow an adjacent roadway.

However, there are two locations where it does:

- Along Phalen Boulevard from south of Arcade Street to Johnson Parkway.
    - In this area, the Ramsey County rail right-of-way parallels Phalen Boulevard, and the Bruce Vento Trail operates as a side path along the north side of Phalen Boulevard. The trail is physically separated from the roadway with a curb and landscaping but is easily visible from the street (see Figure 6).
- Along Hagen Drive from Larpenteur Avenue to Ripley Avenue.
    - In this area, the Ramsey County rail right-of-way is located on the west side of Hagen Drive. The Bruce Vento Trail is visually and physically separated from the roadway by landscaping and grade change and is not easily accessible from Hagen Drive (see Figure 7).

Figure 6: Ramsey County Rail Right-of-Way at Forest Avenue (Looking West)

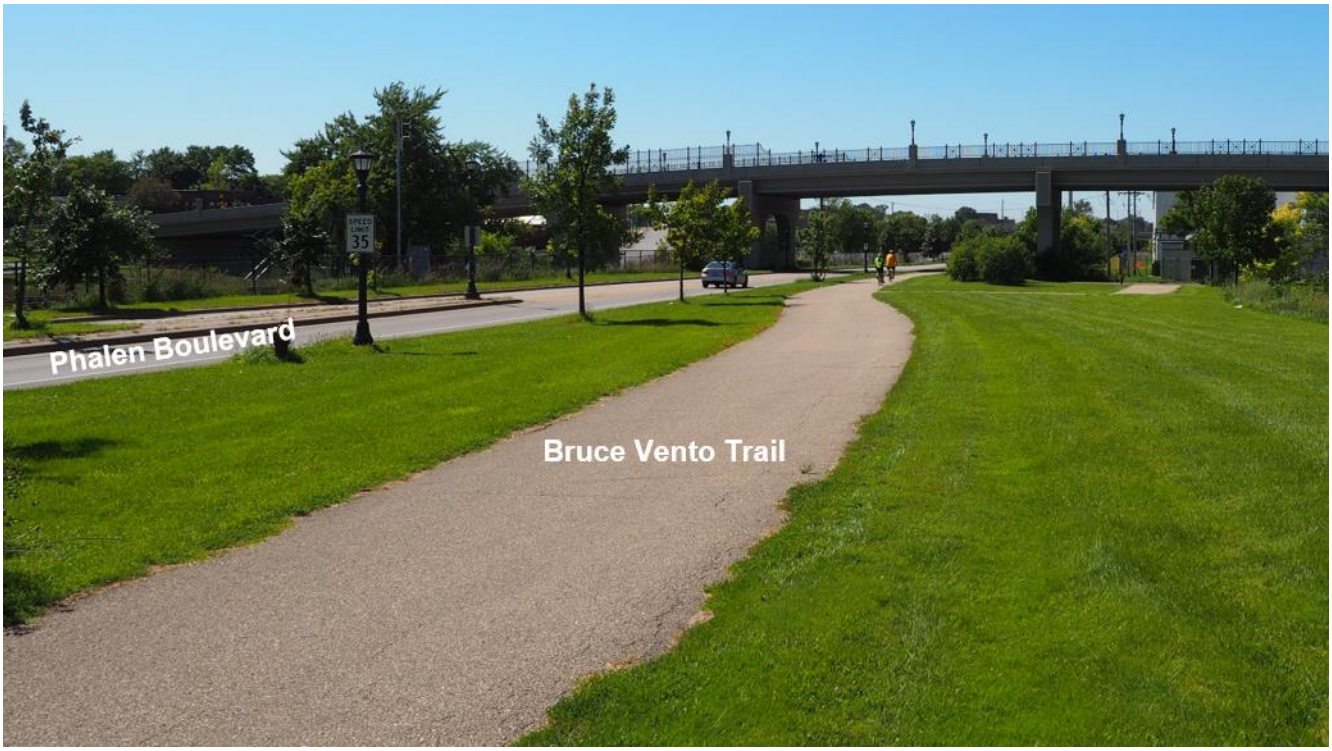


Figure 7: Hagen Drive and Larpenteur Avenue (Looking Northwest)[1]

2.1.2. Width

The typical width of the Ramsey County rail right-of-way in the design guide area is 100 feet. North of County Road C, the right-of-way widens to 150 feet. South of Johnson Parkway along Phalen Boulevard, the Ramsey County rail right-of-way is variable and much narrower than 100 feet. Today, the typical 100-foot right-of-way segment north to Buerkle Road includes the Bruce Vento Trail, landscaping, structural elements and trail amenities.

2.1.3. Grade

There are locations where the grade of the Ramsey County rail right-of-way varies from the adjacent and/or intersecting streets or properties. From Maryland Avenue to Gervais Avenue the rail right-of-way is elevated, and from Gervais Avenue to just north of County Road C the rail right-of-way is generally level with or lower than adjacent grades. In many locations depressed swales for drainage run parallel to the edge of the right-of-way. In a few locations, grade is managed by existing retaining walls, including on the north side of Phalen Boulevard, east of Arcade Street and on the east side of the existing Bruce Vento Trail on the north and south sides of Arlington Avenue. In other locations, there are roadway crossings where bridge abutments, wing walls and retaining wall structures exist. These locations include Highway 36, County Road C East, Beam Avenue and I-694.

[1] Source: Google Earth. Imagery date: May 2019.

Figure 8: Existing County Road C bridge over the Ramsey County Rail Right-of-Way

2.2. BRUCE VENTO TRAIL

2.2.1. Physical Condition

The Bruce Vento Trail is an asphalt, bidirectional, multiuse path. The 7-mile long segment of the trail serves a variety of users and trip types including people walking, riding bicycles, rolling and using mobility devices for transportation and recreation purposes. The trail is generally 12-feet wide and narrows to 10-feet wide in some constrained locations; it does not include directional or modal striping. In most areas, the trail is physically separated from adjacent land uses with thick vegetation including trees and shrubs, and there is typically a mowed edge on both sides of the trail. This gives the corridor a lush and natural feel.

2.2.2. Trail Amenities

Existing trail amenities primarily include wayfinding (signage), seating, trash receptacles and bicycle parking.

Figure 9: Existing Trail with Bench

Figure 10: Existing Trail Intersection with Fix-It Station[2]

2.3. ADJACENT LAND USES

There are three primary land uses that abut the Ramsey County rail right-of-way within the design guide area: parks/open space, residential and industrial/commercial (see Figure 11).

2.3.1. Parks/Open Space

Notable parks and open space along the Ramsey County rail right-of-way include:

- Eastside Heritage Park just west of the design guide area.
- Duluth and Case Recreation Center.
- Phalen Regional Park.
- Weaver Elementary School playfield.
- Harvest Park.
- Natural wetland areas.

2.3.2. Residential

Between Maryland Avenue and Beam Avenue, the primary adjacent land use is residential, including single and multi-family housing. Where residential neighborhood properties are the adjacent use, the Ramsey County rail right-of-way typically abuts homeowners' backyards. In many cases, the Bruce Vento Trail is not easily accessible from private properties due to physical barriers such as homeowner-installed fences, depressed drainage swales and/or dense vegetation.

There is a variation in this condition where a one-block segment of Hagen Drive from Larpenteur Avenue to Ripley Avenue is adjacent to the Ramsey County rail right-of-way. Along this block, 14 residential properties front on Hagen Drive and the Ramsey County rail right-of-way. Dense vegetation and drainage swales make accessing the Bruce Vento Trail in this segment challenging.

2.3.3. Commercial/Industrial

There are areas of industrial and commercial uses along the Ramsey County rail right-of-way. South of Johnson Parkway, there is a mix of larger commercial buildings and smaller retail and business

[2] Source: My Tarry Town, http://www.mytarrytown.com/about-me/.

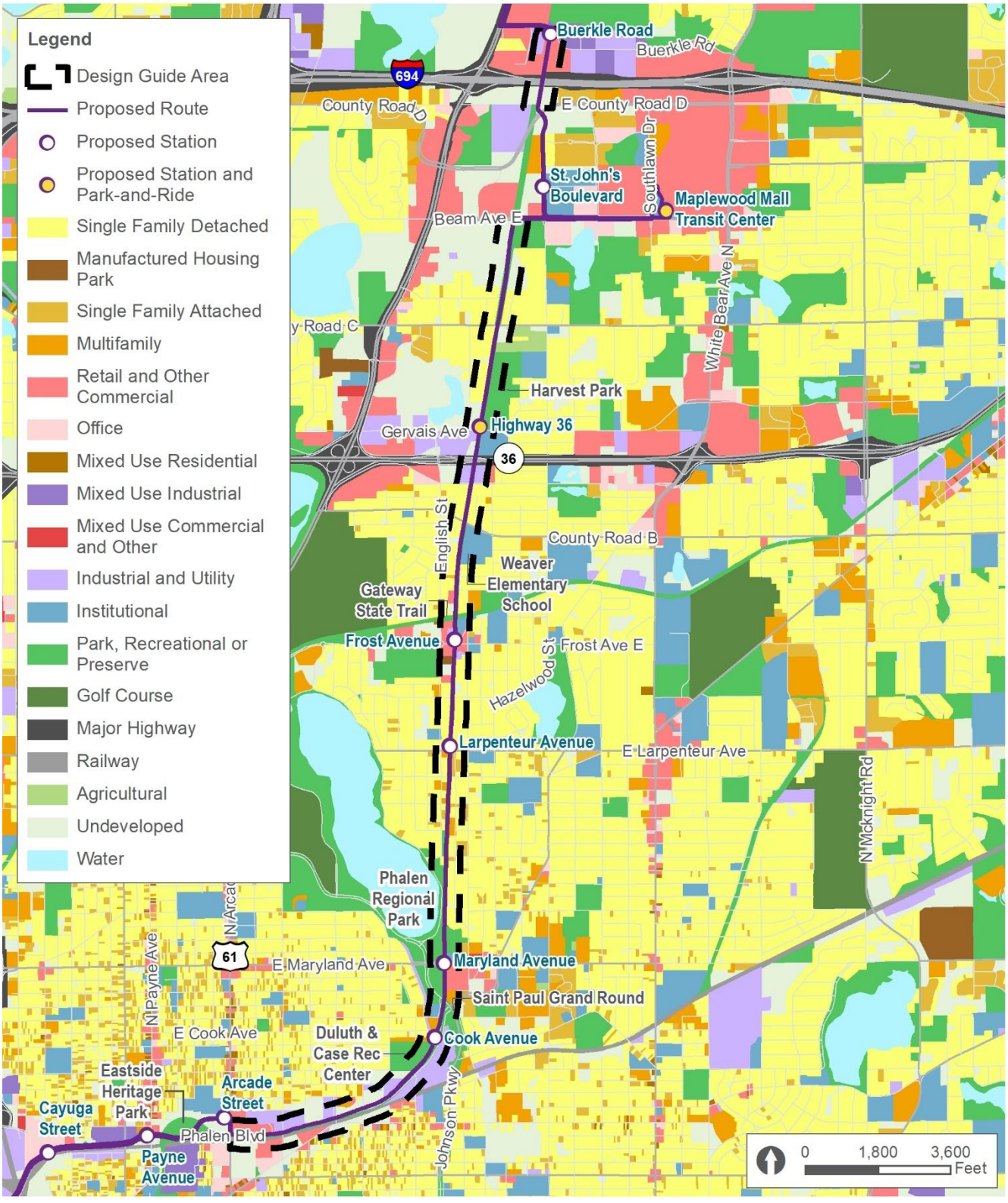
offices. While visible from the roadway, the buildings are not adjacent to Phalen Boulevard, and in a most locations large customer and employee parking lots front on the roadway. North of Johnson Parkway, the commercial and industrial businesses are typically smaller, and their buildings front the crossing street or next roadway over that is parallel to the Ramsey County rail right-of-way. Business parking, ancillary buildings and storage typically back up to the rail right-of-way. Industrial and commercial uses are concentrated at the following locations:

- Light industrial uses between Arcade Street and Johnson Parkway.
- Retail at Maryland Avenue.
- Retail and light industrial at Frost Avenue.
- Light industrial and medical near Highway 36 and Beam Avenue.
- Light industrial along Buerkle Road.

2.4. INTERSECTING MULTI-USE PATHS AND TRAILS

There are many existing and proposed on-street and off-street multi-use paths and trails that approach or directly intersect the Bruce Vento Trail, providing connecting bicycle and pedestrian routes from neighborhoods, parks and open spaces. There are approximately 10 intersecting and connecting facilities in Saint Paul, Maplewood and White Bear Lake. Two significant regional and statewide trails intersect the Bruce Vento Trail: the Saint Paul Grand Round at Johnson Parkway in Saint Paul and the Gateway State Trail just north of Frost Avenue in Maplewood (see Figure 11).

Figure 11: Existing Land Use in the Ramsey County Rail Right-of-Way Design Guide Area



Source: Metropolitan Council 2016 Generalized Land Use

3. PUBLIC ENGAGEMENT

3.1. PURPOSE

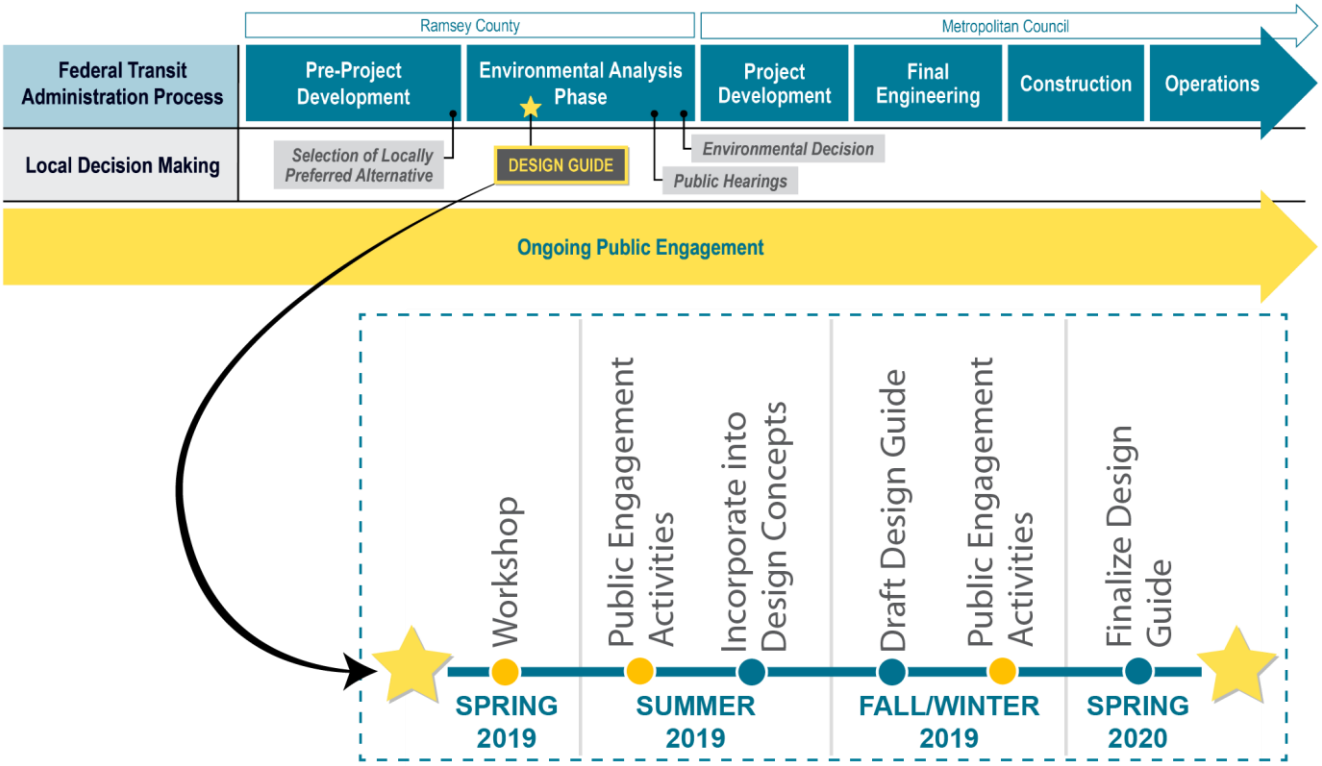
The purpose of the Ramsey County Rail Right-of-Way Design Guide is to develop a safe dedicated guideway and shared-use trail that fits within the surrounding landscape. Public engagement supports this goal through a collaborative process between technical professionals and the community, resulting in guidance and decision-making support for the project's design, implementation, operations and maintenance.

3.2. ACTIVITIES

Public engagement was a key component of the previous phase of the Rush Line BRT Project (the pre-project development study), which resulted in the selection of the locally preferred alternative route generally along Robert Street, Jackson Street, Phalen Boulevard, Ramsey County rail right-of-way (co-located with the Bruce Vento Trail) and Highway 61. The focus on public engagement has continued as part of the current environmental analysis phase.

The Ramsey County Rail Right-of-Way Design Guide builds upon work completed to date, including additional public engagement tailored to the communities within the design guide area (see Figure 12). These activities connected project staff with trail users and residents, businesses and institutions adjacent to the corridor. Public engagement activities also gathered input from agencies, elected officials, advocacy groups, community leaders and representatives, institutional stakeholders, and those ultimately responsible for operating and maintaining the facilities.

Figure 12: Public Engagement Activity Schedule



Project staff hosted a workshop to introduce the Ramsey County Rail Right-of-Way Visioning Framework[3] (now called the Ramsey County Rail Right-of-Way Design Guide) and solicit initial feedback on a variety of guideway and trail aspects on March 27, 2019. Attendees included representatives from the project's Policy, Technical and Community Advisory Committees as well as other stakeholders with interest in the Ramsey County Rail Right-of-Way Design Guide process. The workshop was designed to gather input on opportunities and challenges in the design guide area and identify potential design elements and solutions for consideration. To accomplish this goal, Rush Line BRT Project staff led the workshop participants through two exercises: a table exercise reviewing the proposed dedicated BRT and Bruce Vento Trail alignment and a visual preference survey of possible design elements and solutions. Design elements that were poorly rated during the visual preference survey were eliminated from further consideration.

Figure 13: Ramsey County Rail Right-of-Way Visioning Framework Workshop

The challenges and opportunities and high-ranking design elements prioritized during the workshop were then presented to a wide range of community residents, business owners and institutions at multiple public engagement activities throughout June 2019 to further refine the direction of the Ramsey County Rail Right-of-Way Design Guide. Events included a series of four "Tuesdays on the Trail" pop-up events to gather input from trail users and nearby residents about how they use the trail and what they would like to see when it is reconstructed. Project staff invited residents to these pop-ups with a targeted mailer sent in the weeks prior to the meetings. These efforts were supplemented by pop-ups at Hmong Village and Sun Foods, two local commercial centers frequented by members of the Hmong community, as well as a Hmong neighborhood meeting hosted at an elementary school

[3] At the time the workshop and June 2019 engagement activities occurred, the work being done was referred to as the Ramsey County Rail Right-of-Way Visioning Framework. Since that time, this process and document has changed in name to the Ramsey County Rail Right-of-Way Design Guide to more accurately reflect the purpose of the work and its applicability.

proximate to the Ramsey County rail right-of-way. The visual preference survey conducted at the "Tuesdays on the Trail" events was also available online.

Figure 14: Tuesday on the Trail Pop-Up Event

Using input from these events, project staff created the Ramsey County Rail Right-of-Way Design Guide and shared key elements of the draft document at a series of drop-in discussions in December 2019. More than 50 people attended these events to review elements of the Ramsey County Rail Right-of-Way Design Guide. Input gathered through these drop-in discussions confirmed that the draft Ramsey County Rail Right-of-Way Design Guide addresses the areas of greatest interest for trail users and residents who live near the trail, though some nearby residents continue to have concerns about BRT operations near their homes and the trail.

3.3. SUMMARY

The public engagement process, events and activities were thoughtfully designed to reach multiple stakeholder groups, inform them about the project and gather input on topics including:

- Where people access the Bruce Vento Trail.
- How people use the trail today and how they anticipate using it in the future.
- Trail user destinations.
- How to separate the trail and dedicated guideway.
- Solutions for grade separation.
- Desired landscape aesthetic and function.
- Environmental, ecological and stormwater treatment opportunities.
- Buffers and/or screening between the corridor and adjacent properties.
- Lighting, amenities and signage.

This section summarizes public input received during spring and summer 2019 and outlines the key themes that provided the basis for the guiding principles. The results listed do not represent the professional opinions of the project staff and/or Ramsey County, but they help inform the decision-making process. Full results and analysis from the public engagement events can be found in Appendix A.

3.3.1. Public Engagement Themes

The collective input received during the spring and summer 2019 public engagement activities has been summarized into five overarching themes of highest importance to the community, adjacent property owners and key stakeholders. They include: character and landscape impacts; safety and security; access and borders; maintenance; and operations.

- Character and landscape impacts:
  - Protect and enhance natural features where feasible.
  - Protect existing high-value specimen trees where feasible.
  - Consider reforestation opportunities.
  - Consider landscape elements as green infrastructure.
  - Retain the natural aesthetic where feasible to provide users a sense of “escaping to nature.”
  - Maximize the use of low maintenance, resilient vegetation that provides seasonal interest (i.e., planting of a wide variety of plants with varying bloom times and seasonal characteristics).
- Safety and security:
  - Address actual and perceived safety factors.
  - Minimize the risk of intersection conflicts between travel modes.
  - Use pavement markings for trail crossings and other speed reduction elements.
  - Address localized BRT crossings between intersections. Grade-separation for trail crossings is preferred.
  - Consider potential for vehicle and wildlife conflicts.
- Access and borders:
  - Consider retaining access for adjacent property owners.
  - Apply appropriate screening between the right-of-way and adjacent properties as well as a visually inhibiting, yet traversable, visual buffer between the dedicated guideway and Bruce Vento Trail.
- Maintenance:
  - Minimize landscape and snow removal maintenance activities.
  - Promote the use of a low maintenance landscape.
- Operations:
  - Prioritize trail crossing operations at signals to lessen crossing wait time for trail users.
  - Educate trail users about BRT operations.
  - Provide warnings at intersections for crossing vehicle and trail traffic.

3.3.2. Public Input on Design Elements and Potential Solutions

As part of the engagement activities that occurred in spring and summer of 2019, more specific input related to design elements and potential solutions was solicited. To help facilitate these discussions, a graphic depicting a typical section of the rail right-of-way was prepared that included images of different types of design elements (see Figure 15). Respondents were able to select their preferred designs.

The input on these specific design elements was organized into three primary design categories: proposed typical right-of-way conditions; safety and security; and environment. These categories are listed below, along with the specific design elements and a brief summary of the general input provided. More detailed discussions follow in Sections 3.4, 3.5 and 3.6, respectively.

PROPOSED TYPICAL RIGHT-OF-WAY CONDITIONS

- **Trail:** Provide a trail with space for buffers, plantings and other features.
- **Dedicated guideway:** Allow for access along and across the Ramsey County rail right-of-way to allow for community connectivity.
- **Trail and BRT separation:** Maximize horizontal separation between trail users and the BRT.
- **Buffers and screening:** Utilize native landscape features to help address visual impacts.
- **Landscape character within typical right-of-way:** Maximize green space and limit constructed elements.

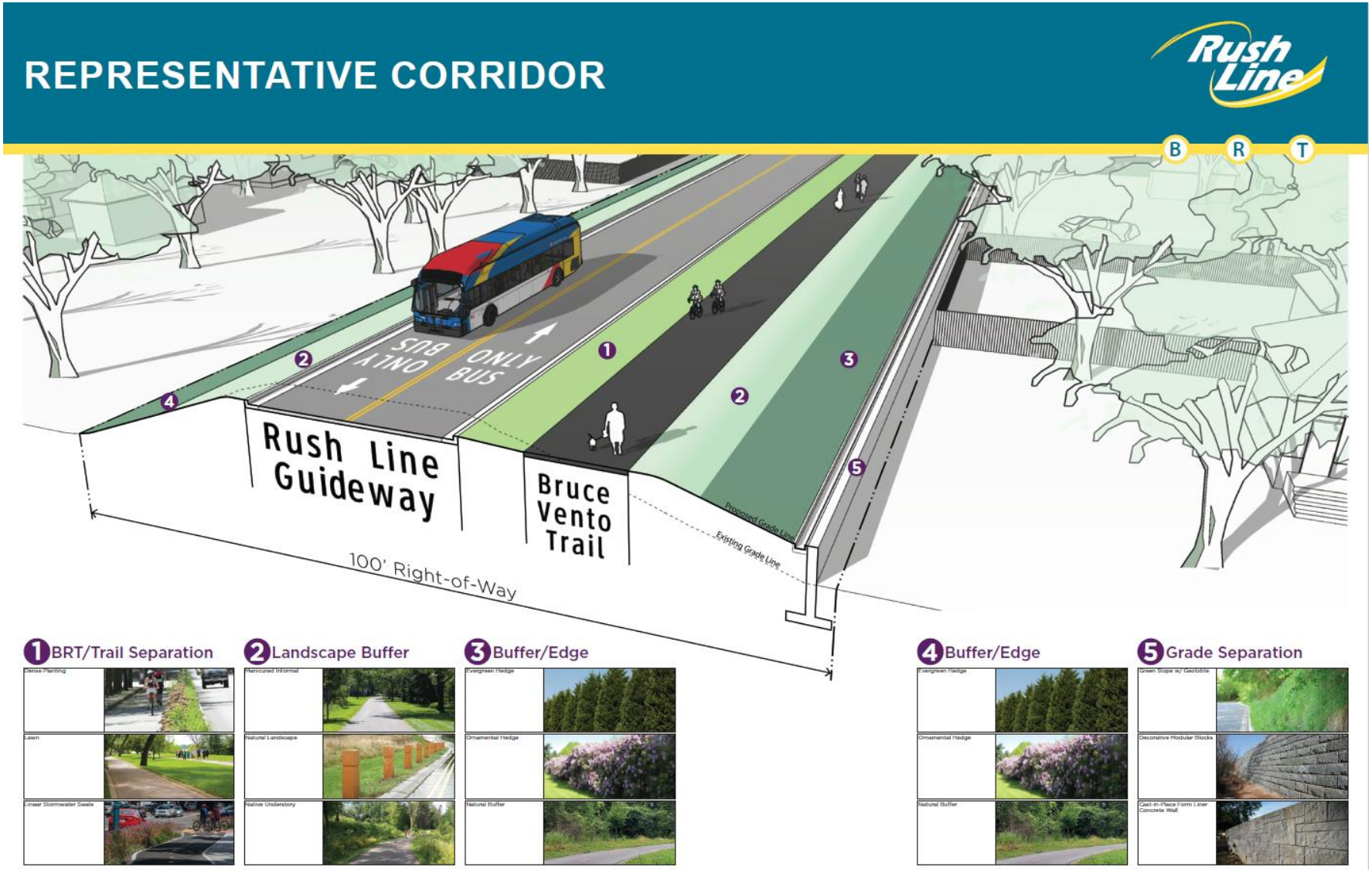
SAFETY AND SECURITY

- **Crime Prevention Through Environmental Design:** The design of screening and buffer elements should be human-scaled and provide visibility and transparency.
- **Corridor lighting:** Use low to mid-level lighting to provide pools of light along the right-of-way.
- **Signage:** Use signage and markings to provide clear instructions for other users whose route might intersect the guideway.

ENVIRONMENT

- **Landscape impacts**: Protect and enhance vegetation for screening and wildlife habitat and preserve high-value trees whenever feasible.
- **Stormwater treatment:** Use natural methods, including rain gardens and linear bioswales.
- **Trail amenities:** Install practical amenities such as trash receptacles, drinking fountains, informational kiosks and benches.
- **Wayfinding:** Include corridor wayfinding signage at intersections and station locations.
- **Grade separation:** Limit the use of retaining walls by providing reinforced green slopes, but when needed wall materials should have a natural appearance.
- **Fencing:** Limit the addition of fencing throughout the corridor to maintain ease of access except when necessary for safety.

Figure 15: Image Preference Board Used for Public Engagement Activities with Typical 100-Foot Right-of-Way Graphic



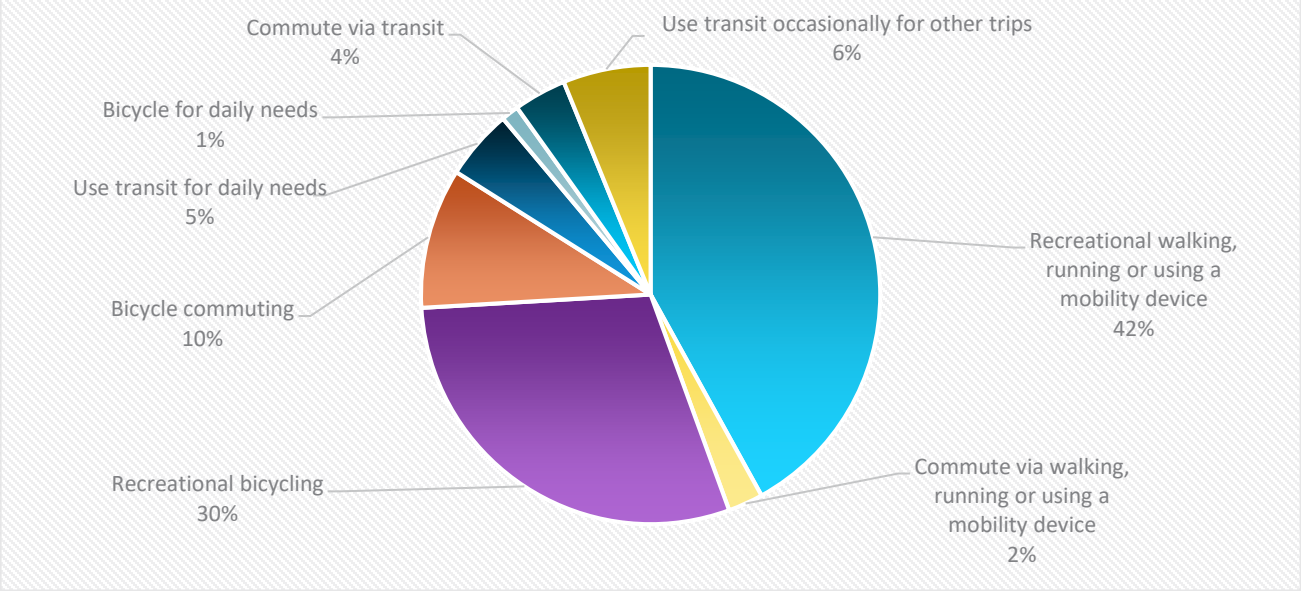
3.4. PROPOSED TYPICAL RIGHT-OF-WAY CONDITIONS

The Ramsey County rail right-of-way, where the dedicated guideway would be co-located with the Bruce Vento Trail, is generally 100 feet wide, allowing for a 26-foot-wide dedicated guideway and 12-foot-wide trail while leaving space for buffers, plantings and other features. As part of the visual preference survey, stakeholders provided input on specific aspects of the typical cross section for the design guide area, including the separation between the guideway and the trail; landscape buffer between the trail or the guideway and the edge of the right-of-way; the buffer between the edge of the right-of-way and the surrounding area; and vertical structures where grade separation is pursued.

3.4.1. Right-of-Way Use

When asked how they would use the right-of-way once the Rush Line BRT Project is constructed, respondents primarily indicated that they would continue using the right-of-way for recreational walking, running or biking as well as for their commute, as shown in Figure 16. Some expressed that they would sometimes use transit for their commute, other daily needs and miscellaneous trips. Few people indicated that they would walk, run or use a mobility device for a commute in the right-of-way.

Figure 16: Survey Results for Future Right-of-Way Use



3.4.2. Trail

The reconstructed Bruce Vento Trail would be 12-feet wide with space for buffers, plantings and other features. Respondents favored maximizing separation of the trail from the dedicated guideway and stressed the importance of creating safe crossings where the guideway intersects local streets. This can be accomplished through several methods. Some specific suggestions include the use of signing and green pavement markings to highlight trail crossings at key intersections, curb extensions or center refuge islands, signalization at key intersections that include bike-sensing technology, and the incorporation of tabled intersections at trail crossings. Tabled intersections elevate roadway grades at crosswalk areas to match the elevation of the trail and provide level pedestrian and bicycle crossings.

3.4.3. Dedicated Guideway

In terms of the guideway itself, respondents expressed a concern about the frequency, location and quality of crossings throughout the design guide area. The Ramsey County rail right-of-way has the potential to act as a barrier as well as a connector. As much as possible, the dedicated guideway should be designed as an integral part of the urban fabric and transportation network with easy access along and across it. Intersection conflicts between transportation modes should be addressed with special attention at high-use locations.

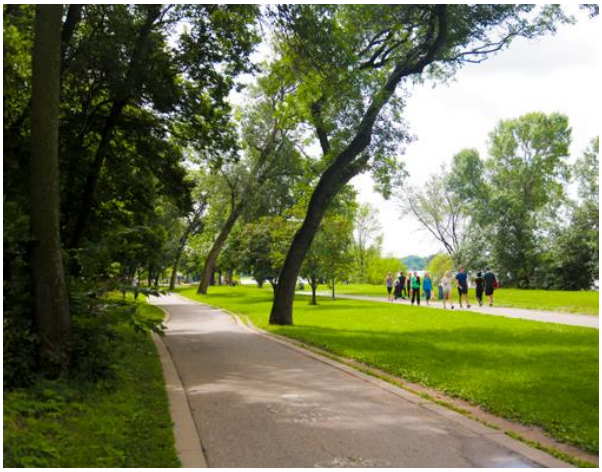
3.4.4. Trail and BRT Separation

A clear desire to maximize the horizontal distance between the guideway and the trail was expressed, even if the width of the landscape buffer between the guideway and the right-of-way edge were reduced. The buffer between the Bruce Vento Trail and dedicated guideway should be traversable in localized areas where needed to provide safe crossings. Providing clear visual and consistent separation throughout the corridor is necessary. Consider vertical separation between the dedicated guideway and the trail to reduce grading impacts at the corridor edge.

In terms of the preferred landscape quality/character for the separation, most respondents favored linear stormwater swales that support pollinator-friendly habitat, with a preference for low maintenance options. There was also a considerable amount of feedback in favor of dense planting areas with a mixture of coniferous and deciduous trees. Respondents were most opposed to lawn treatments due to concerns about sustainability and long-term maintenance.

Figure 17: Dense Planting Separation Example

Figure 18: Maximum Separation Example



3.4.5. Buffers and Screening

The incorporation of the guideway through residential neighborhoods has elicited concerns about the potential for increased light, visibility and noise from BRT improvements and vehicles. Landscape buffers and screening elements can be used to mitigate BRT vehicle lights and station-area safety and security lighting. Natural buffers would also help screen views from the right-of-way. The project plans to use electric buses, which would minimize noise impacts.

Respondents overwhelmingly selected native understory as their preferred buffer/screening option due to a desire for maintaining the existing tree canopy to the greatest extent possible. The perception that native plants would better contribute to a healthy ecosystem was also highly favorable. In narrower segments and areas that may require greater screening, landscape massings may prove valuable. In this instance, the preference was for ornamental trees and shrubs that are native and easy to maintain as opposed to evergreens. The final design should also consider year-round seasonal interest, which can be achieved through the planting of a wide variety of plants that have varying bloom times and seasonal characteristics.

Figure 19: Ornamental Hedge Example[4]

[4] Source: Pinterest, https://www.pinterest.com/pin/579979258243208557/?lp=true.

3.4.6. Landscape Character within Typical Ramsey County Rail Right-of-Way

General feedback in terms of the landscape quality and character within the Ramsey County rail right-of-way was highly in favor of native, multi-functional plantings that are low maintenance and drought tolerant. Respondents wanted to maximize green space in the right-of-way, limiting hardscape features. The visual preference survey revealed a desire for both native understory treatments and landscape examples that have a more manicured garden feel. With this in mind, project staff should look to incorporate a predominately native, low maintenance treatment for the majority of the right-of-way. Select locations may warrant a garden-style landscape that would require more maintenance.

Figure 20: Garden Landscape Example[5]

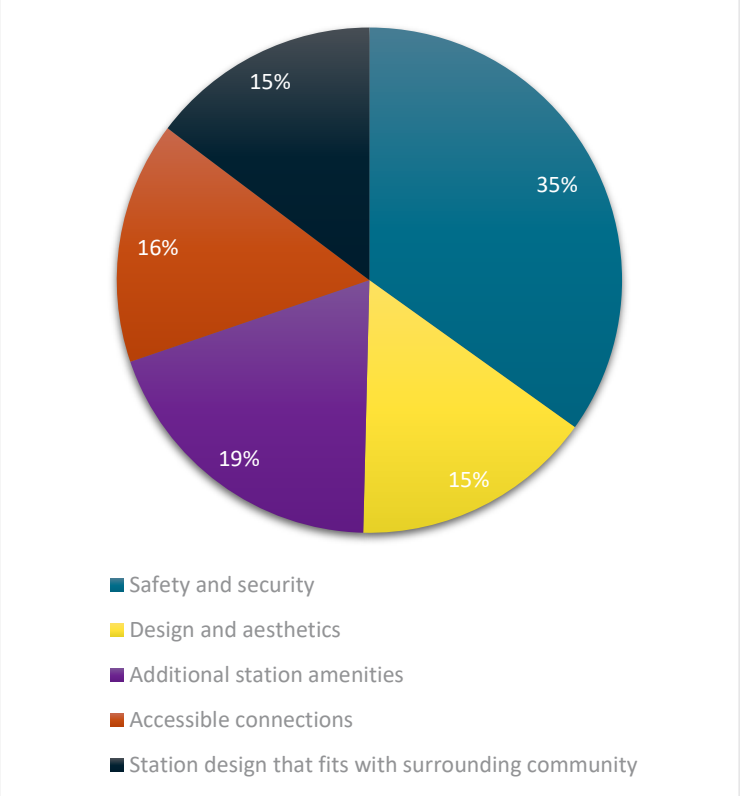
Figure 21: Native Understory Example

[5] Source: Creative Commons/Doug Kerr, https://www.minnpost.com/politics-policy/2015/05/minneapolis-and-st-paul-tied-atop-list-americas-best-park-systems/.

3.5. SAFETY AND SECURITY

Survey respondents' top priority for right-of-way elements was safety and security. There are a number of physical design strategies that can be used to enhance actual and perceived traffic and personal safety, some of which are identified within Section 3.5.1. Long-term maintenance of the physical landscape is also required to meet the perceived safety expectations. Respondents also expressed a desire to vertically separate the guideway at trail or pedestrian crossings whenever possible.

Figure 22: Survey Results for Right-of-Way Element Prioritization



3.5.1. Crime Prevention Through Environmental Design

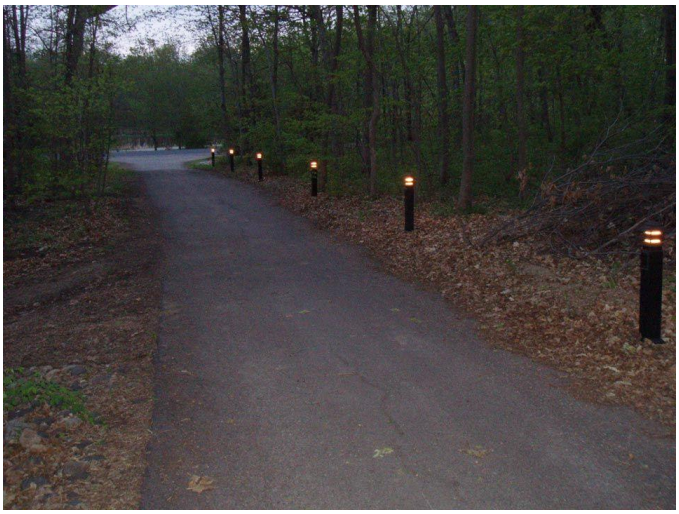
The goal of Crime Prevention Through Environmental Design is to prevent crime by designing a physical environment that positively influences human behavior. The four principles of Crime Prevention Through Environmental Design include natural access control, natural surveillance, territorial reinforcement and maintenance. Perceived safety for trail users is reduced in narrowed locations of the right-of-way. The design of screening and buffer elements should be human-scaled and provide visibility and transparency.

3.5.2. Corridor Lighting

The design of the right-of-way will need to balance proper levels of lighting with minimizing light pollution into adjacent residences and the night sky. Proper placement, orientation and scale are essential for creating an environment that allows one to see and be seen. In terms of lighting quality, respondents generally favored mid-level lighting providing pools of light along the right-of-way. They also responded favorably to low-level bollard lighting at continuous intervals.

Figure 23: Mid-Level Lighting Example

Figure 24: Low-Level Lighting Example[6]



3.5.3. Signage

Respondents were in favor of using signage to specify BRT vehicle speeds and provide clear instructions for other users whose route might intersect the guideway. Pavement marking should be used in conjunction with appropriate signage to reinforce safe pedestrian, bicycle and vehicular maneuvers.

[6] Source: Terre Design Studio, http://www.terredesignstudio.com/23583/lights/awesome-outdoor-driveway-lights-outdoor-driveway-lighting-ideas-bollard-lights-illuminating-the/.

3.6. ENVIRONMENT

3.6.1. Landscape Impacts

The guideway and trail would have an impact on the existing landscape of the right-of-way and may impact both the physical character and the ecological function of the surrounding environment. Some respondents expressed concern that vehicles on the guideway and trail users may cause potential collisions with wildlife. To limit the potential for animal collisions, clear sightlines must be maintained.

Construction activity in the corridor would also impact the existing vegetation and require tree removal. During public engagement events, a strong desire was expressed to preserve trees and wildlife habitat as much as possible. Avoiding the removal of trees, especially high-value or specimen trees, will be a high priority in the design process.

3.6.2. Stormwater Treatment

The treatment of stormwater in an urban environment always poses a challenge. The dedicated guideway would add additional impervious area to the right-of-way, producing an increased amount of runoff. Given options to address this runoff, respondents favored natural methods, including rain gardens and linear bioswales. Rain gardens could be located in station areas in order to capture the increased runoff from platforms, and linear swales can be used throughout the right-of-way to provide separation between the guideway and trail. These linear swales may also provide potential locations for winter snow storage. Further study of topography and grading constraints will be needed to optimize their locations. Maintenance activities, such as the use of de-icing chemicals and their impact to rain gardens and bioswales, will need to be considered.

Figure 25: Rain Garden Example

Figure 26: Linear Swale Example

3.6.3. Trail Amenities

A number of trail amenities were presented during the public engagement activities, including informational kiosks, trailhead signage, benches, gateway elements, bike parking, bike fix-it stations, drinking fountains, public art, trash receptacles and dog pick-up stations. The most desired elements included trash receptacles, drinking fountains and informational kiosks. Benches and dog pick-up bags were also popular. Art installations, gateway features, trailhead signs and bike parking options were the lowest ranked amenities.

Figure 27: Trash Receptacle Example[7]

[7] Source: The Green Dandelion, https://blogs.rochester.edu/thegreendandelion/.

Figure 28: Informational Kiosk Example

3.6.4. Wayfinding

Respondents favored increased wayfinding signage at station locations. A base level of signage would be required throughout the right-of-way.

3.6.5. Grade Separation

A change in grade can effectively create separation between the guideway and trail, addressing one of the concerns raised by respondents. In other cases, grading constraints of the guideway and trail may create steep slope conditions along the edges of the right-of-way. Presented with options to address this possibility, respondents strongly favored maintaining a steep green slope reinforced with geotextile to create stability. This treatment provides a more natural character that complements the existing right-of-way.

Respondents also expressed preference for using natural stone in instances where a wall is required, though this may be cost prohibitive and, depending on the stone type, not as durable as other man-made products. Because grade separation approaches vary widely in cost, aesthetics, footprint and structural integrity, cast-in-place concrete with formliner and decorative modular block would also be viable options where a reinforced green slope is not sufficient, and a natural stone wall is cost prohibitive. People who commented on the concrete wall options stated a general distaste for the appearance and expressed concerns about graffiti.

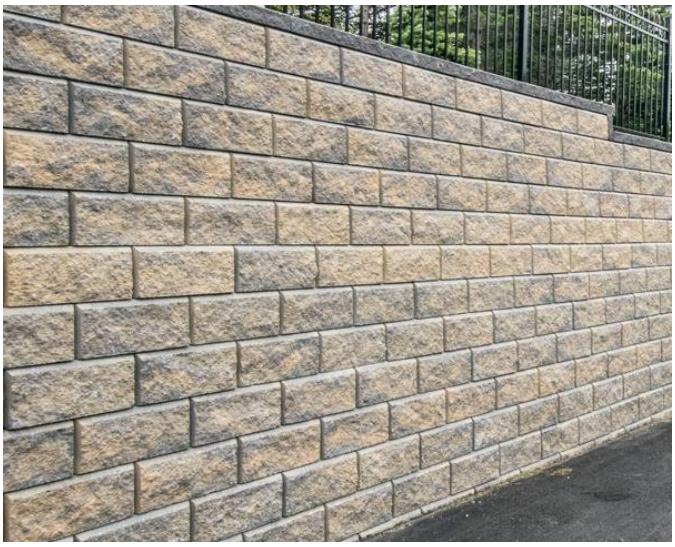
Figure 29: Stone Wall Example[8]

Figure 30: Steep Green Slope Example

[8] Source: VC Photography, http://vcphotography.co/build-stacked-stone-wall/.

Figure 31: Cast-in-Place Concrete with Formliner Example[9]

Figure 32: Decorative Modular Block Example[10]



3.6.6. Fencing

Overall, the use of fencing was not favored. Many respondents expressed concern over the existence of fencing in the right-of-way, which supports the previously stated preference for separated but traversable access between the guideway and trail. In scenarios where fencing is necessary, respondents preferred options that had high aesthetic appeal, including metal fence options and those that contain branding elements.

[9] Source: Walt Tools, https://www.walttools.com/product-categories/category/wall-liners.
[10] Source: Keystone: Retaining Wall Systems, https://www.keystonewalls.com/.

Figure 33: Branded Fence Example[11]

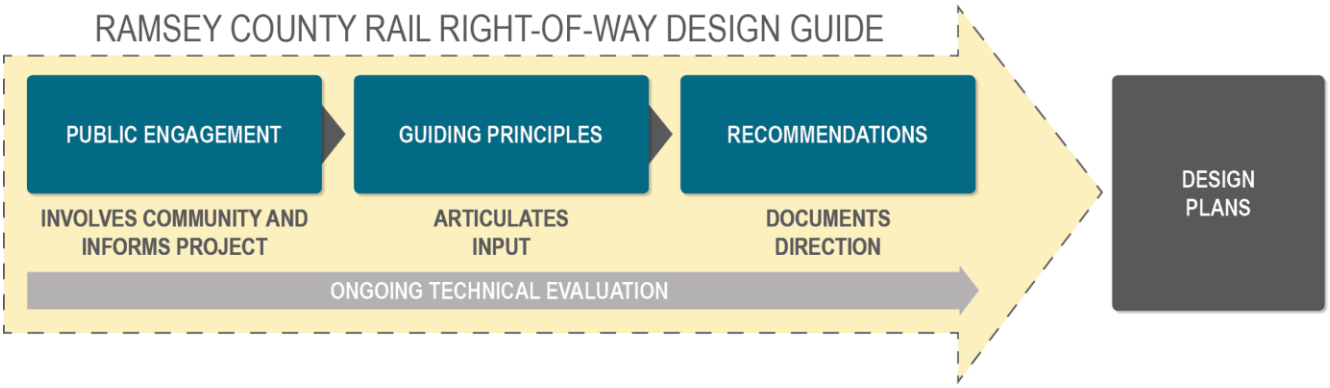
Figure 34: Metal Fence Example[12]

[11] Source: Loyola University Chicago: https://www.luc.edu/civicengagement.
[12] Source: A Better Fence Company, https://abetterfencecompany.com/.

4. GUIDING PRINCIPLES

Guiding principles articulate the input received through public engagement activities and help project planners and engineers develop recommendations for design. These recommendations identify and document design decisions that will be used to develop both preliminary and final plans for the project. The Ramsey County Rail Right-of-Way Design Guide process is illustrated in Figure 35. As the project advances, the guiding principles will be used to inform the design work and ensure the collective input received through the public engagement activities is incorporated. This design guide will remain relevant beyond design and construction into the facilities' operation and maintenance.

Figure 35: Ramsey County Rail Right-of-Way Design Guide Process



The public engagement activities related to the Ramsey County Rail Right-of-Way Design Guide identified five overarching themes of highest importance to the community, adjacent property owners and key stakeholders. They include character and landscape impacts; safety and security; access and borders; maintenance; and operations. These themes are discussed in Section 3.3.1 and were foundational to the development of the guiding principles as a framework for design.

4.1. CHARACTER AND LANDSCAPE IMPACTS

The community embraces the natural feel of the existing Bruce Vento Trail within the Ramsey County rail right-of-way, while also recognizing the historic character of the Lake Superior & Mississippi Railroad corridor. This design guide seeks to preserve the existing landscape and enhance the Ramsey County rail right-of-way with ecologically beneficial, resilient, seasonally diverse and low maintenance vegetation while striving to maintain a sense of the historic rail right-of-way. This design guide also includes revegetation strategies that have the potential to return the right-of-way to its current natural condition.

4.2. SAFETY AND SECURITY

The community has expressed concern about the introduction of BRT, which would run adjacent to residential, public, commercial and industrial properties, changing the current right-of-way's function and use. A specific concern related to this change is safety and security. The Ramsey County Rail Right-of-Way Design Guide addresses safety and security concerns by reducing and/or removing perceived security risks and minimizing actual physical safety conflicts. Areas of concern that this design guide addresses include providing visible and marked BRT crossings; grade separating BRT and crossing trails where feasible; and reducing potential vehicle and wildlife interactions.

4.3. ACCESS AND BORDERS

Currently, residents enjoy trail access through a relatively barrier-free border. However, there are safety concerns associated with crossing the dedicated guideway. The Ramsey County Rail Right-of-Way Design Guide recommends retaining ease of access while promoting safe crossings of the guideway to access the trail, surrounding neighborhoods and transit. Strategies include a relatively barrier-free vegetated screen buffer between the right-of-way and adjacent properties where feasible and desired and a landscaped buffer between the dedicated guideway and the Bruce Vento Trail that appears difficult to cross but possible if necessary for safety.

4.4. MAINTENANCE

The dedicated guideway and Bruce Vento Trail are expected to be accessible and utilized year-round, and this everyday use will require ongoing maintenance. The Ramsey County Rail Right-of-Way Design Guide recommends design strategies and materials that are durable, affordable and do not require excessive or unanticipated maintenance practices. Designs should consider seasonal changes and the dramatic affects they can have on materials, as well as the procedures to keep the BRT and trail operational throughout the year. Low maintenance and native plantings are also a requirement of this design guide.

4.5. OPERATIONS

Safe interactions between trail users and BRT vehicles and interactions with roadways at intersections are a priority. The Ramsey County Rail Right-of-Way Design Guide seeks to provide a safe, high-quality trail and BRT user experience. Designs should consider prioritizing trail crossing operations at signals to lessen crossing wait time for trail users and plan for educational outreach strategies to further enhance user experience and safety.

5. RECOMMENDATIONS

The guiding principles have been translated into recommendations for design, construction, operations and maintenance specific to the Ramsey County Rail Right-of-Way Design Guide area. The recommendations are organized into three design topic categories: proposed typical right-of-way conditions; safety and security; and environment. The guiding principles that informed the recommendations within each category are indicated by the icons in the section heading.

Proposed typical right-of-way contains recommendations for the basic components within the design guide area. Safety and security covers design strategies for user safety and security. Environment includes elements and applications related to ecology and resilience as well as specific elements, like amenities, that enhance the setting and user experience.

The following information is provided for each recommendation category:

- General design practices describing components and their uses.
- Typical application and locations where components could be used.
- Design features defining standards and best practices.
- Further considerations for specific situations.
- Component maintenance.
- Representative illustrations, diagrams and images.

5.1. PROPOSED TYPICAL RIGHT-OF-WAY CONDITIONS

5.1.1. South of Johnson Parkway

A majority of the Ramsey County rail right-of-way is 100-feet wide, except north of County Road C where it increases to 150 feet. The recommendations of this design guide apply to both segments.

However, for the segment south of Johnson Parkway and along Phalen Boulevard, the condition is different. The BRT would run in a dedicated guideway west of southbound Phalen Boulevard, and the trail would be located west of the dedicated guideway in Ramsey County rail right-of-way that is variable in width. The recommendations within Section 5.1.2 should be applied to this segment with anticipated adjustments because of the varied conditions in this part of the design guide area.

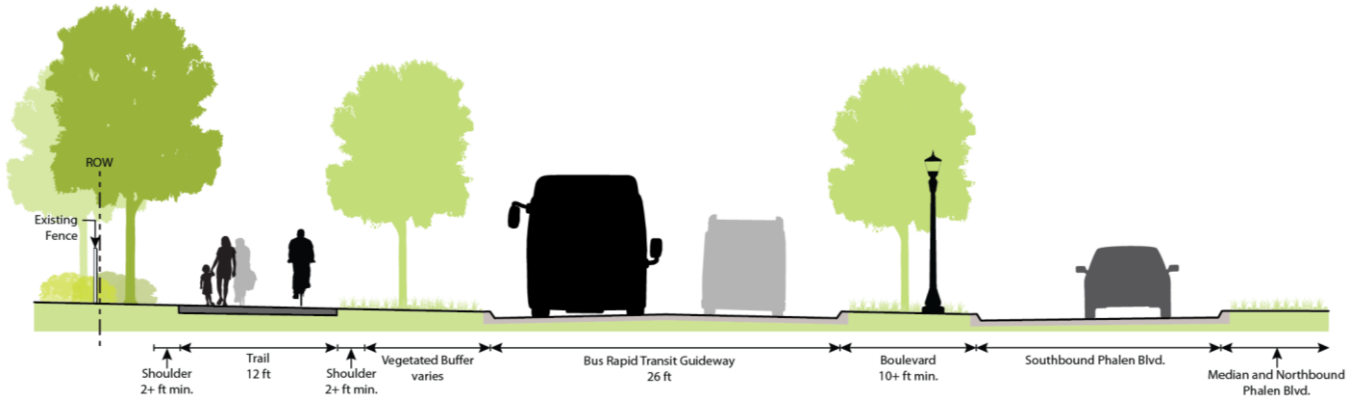
Because of the character, design and investment in the streetscape of the existing Phalen Boulevard, it is anticipated that with the construction of BRT and reconstructed Bruce Vento Trail, many of the existing features would be reconstructed and replicated. These include:

- Generally level grades between the right-of-way line and Phalen Boulevard.
- Saint Paul standard roadway lighting lanterns within the boulevard adjacent to Phalen Boulevard.
- Maintained turf boulevards between Phalen Boulevard and the right-of-way.
- Boulevard trees.
- Trail amenities to include benches, trash receptacles and signage.

Within this southern segment there has been interest from other organizations and agencies in opening up portions of the currently undergrounded Phalen Creek. Daylighting the creek to provide visibility to and possible interaction with the water is the primary request. Consider coordinating

stormwater treatment needs of the Rush Line BRT Project with the desire to daylight portions of Phalen Creek, where applicable.

Figure 36: Typical BRT and Trail Section Along Phalen Boulevard



5.1.2. North of Johnson Parkway

While the position and use of elements and features within the design guide area may vary, typical elements and features are discussed in this section. These basic components are included in the proposed typical right-of-way conditions: the Bruce Vento Trail, the dedicated guideway, the area separating the trail from the BRT, the areas between the trail or BRT and adjacent properties, and the typical landscape character.

TRAIL[13]

General Design Practices

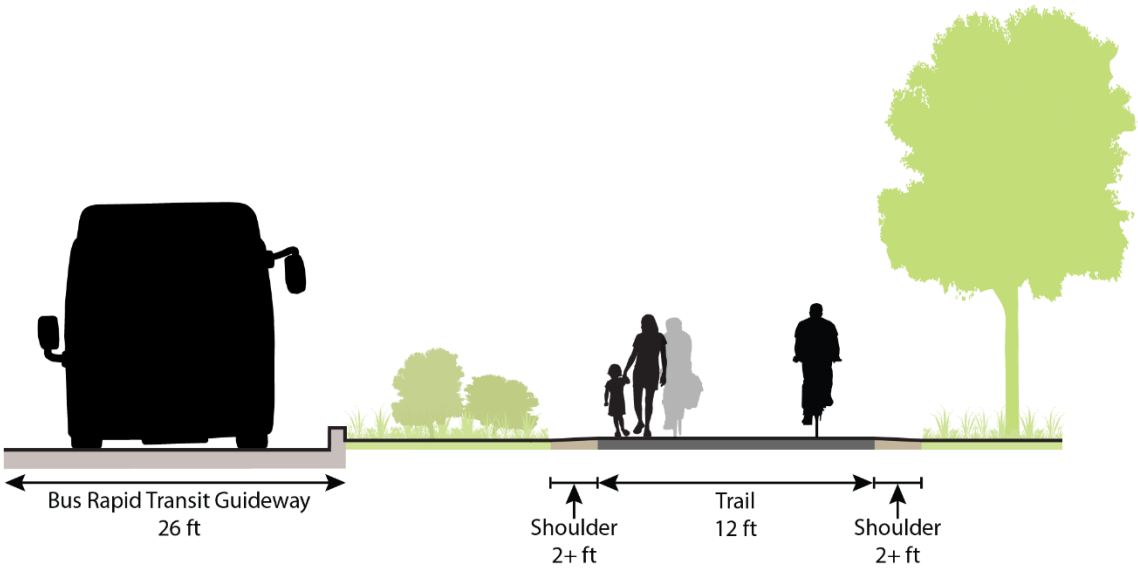
A shared-use path would provide a travel area separate from motorized traffic for bicyclists, pedestrians, skaters, wheelchair users, joggers and other users. Shared-use paths are desirable for bicyclists of all skill levels that prefer being separated from traffic. These off-road paths generally provide routes and connections not provided by existing roadways. Most shared-use paths are designed for two-way travel of multiple user types.

Typical Application and Locations

A shared-use path would be located within the Ramsey County rail right-of-way, separate from the dedicated guideway and adjacent roadways. This trail would extend the entire length of the design guide area, from Arcade Street to Buerkle Road.

[13] References: *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials, 2012; *Minnesota Manual on Uniform Traffic Control Devices,* Minnesota Department of Transportation, 2018; *Greenways: A Guide to Planning Design and Development*, C. Flink, 1993.

Figure 37: Typical Trail Section



Design Features

- The standard shared-use path width is 12 feet, which is suitable for use by average concentrations of multiple user types. This width is needed to enable a bicyclist to pass another path user going the same direction, while a third path user is approaching from the opposite direction.
- The minimum width of a shared use path is 10 feet, which is adequate for infrequent use or a low level of mixing between bicyclists and pedestrians.[14]
- In rare circumstances a constrained minimum width of 8 feet may be used for short distances at obstructions. Designs should avoid narrowing the trail to be less than 10 feet.[14] Warning signing and striping is required.
- A shoulder that is 2 feet or wider should be provided free of obstacles on both sides of the path.
- A 2-foot lateral clearance from the edge of the path is required for post mounted sign faces or other traffic control devices.[15]
- At stations, an additional 5-foot width of pavement between the back of the platform and the edge of the trail should be provided for clearance and safety.
- Standard clearance of overhead signs and traffic control devices should be minimum of 8 feet.

[14] Section 5.2.1 of the *Guide for the Development of Bicycle Facilities*. American Association of State Highway and Transportation Officials, 2012.
[15] *Minnesota Manual on Uniform Traffic Control Devices*. Minnesota Department of Transportation, 2018.

Further Considerations

- Under most conditions, centerline markings are not necessary. Centerline markings should only be used to clarify user positioning or preferred operating procedure. A solid line indicates no passing, and a dashed line indicates lane placement.
- Trails with a high volume of bidirectional traffic should include a centerline. This can help communicate that users should expect traffic in both directions and encourage users to travel on the right and pass on the left.
- Where there is a sharp blind curve, painting a solid yellow line with directional arrows reduces the risk of head-on collisions.
- Word pavement markings should be applied differently on a path context than on a roadway.
- Small scale signs should be used in path environments.[16]

Maintenance

Trail width can influence maintenance vehicle access. Asphalt is the most common surface for bicycle paths and is the recommended surface for the Bruce Vento Trail.

DEDICATED GUIDEWAY[17]

General Design Practices

A separate dedicated guideway consists of a road dedicated to buses built on its own alignment (typically not shared with an existing road). It can include both at-grade and grade-separated intersections with cross-streets or pedestrian facilities. A dedicated guideway allows buses to travel freely and without obstruction, which provides a clear travel time and reliability advantage relative to bus routes that operate in mixed traffic.

Typical Application and Locations

The dedicated guideway would be located within the Ramsey County rail right-of-way, separate from the shared-use path and adjacent roadways. A dedicated guideway would extend the entire length of the design guide area, from Arcade Street to Buerkle Road. From Beam Avenue to County Road D, BRT would operate within public roadway right-of-way outside of the Ramsey County Rail Right-of-Way Design Guide area.

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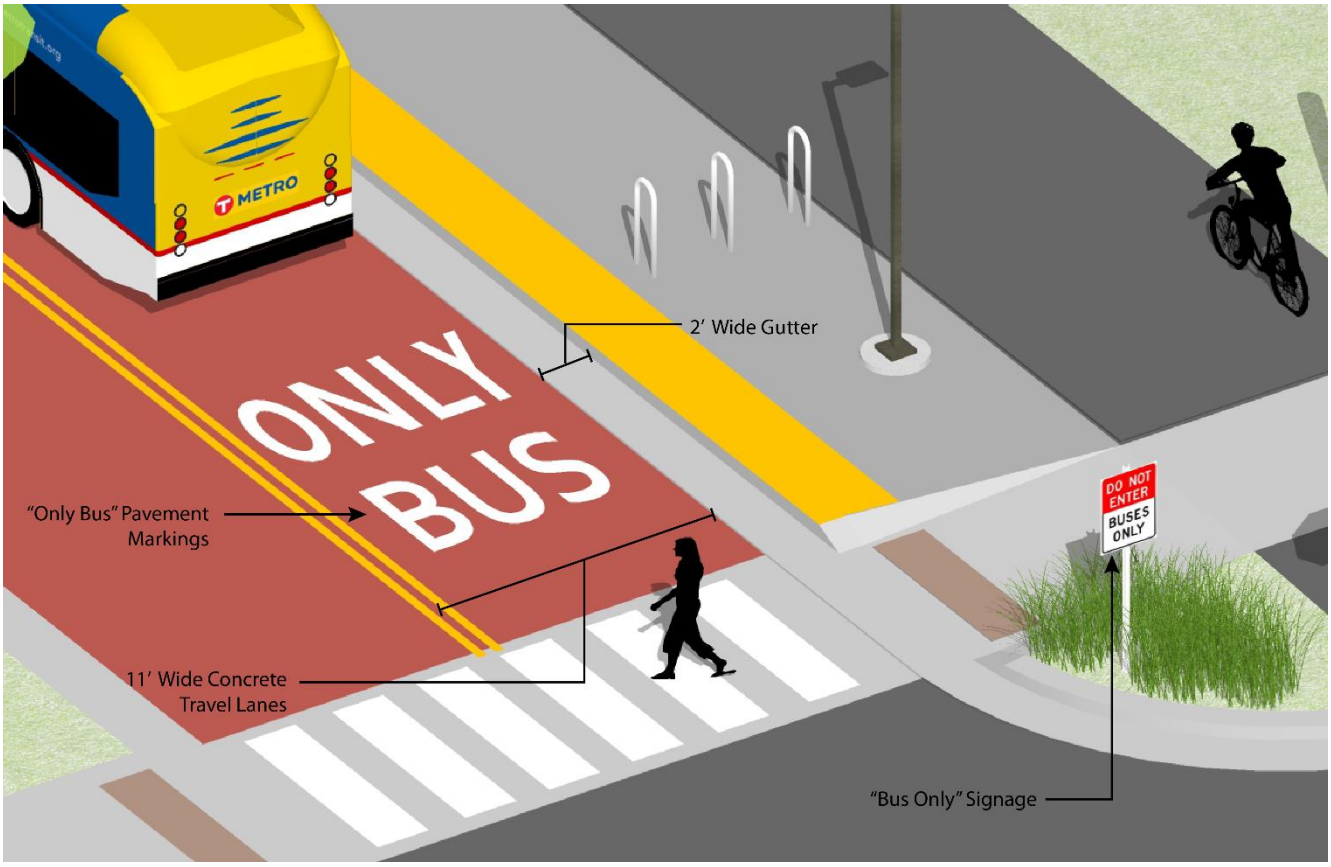
[16] Section 9B.2 of the *Minnesota Manual on Uniform Traffic Control Devices*. Minnesota Department of Transportation, 2018.

[17] References: *Guide for the Design of Transit Facilities on Highways and Streets*, American Association of State Highway and Transportation Officials, 2014; *Manual on Uniform Traffic Control Devices*, Federal Highway Administration, 2009.

Figure 38:Typical Dedicated Guideway Dimensions



Design Features

- The standard width of a dedicated guideway within the Twin Cities region includes two 11-foot lanes (one for each direction of bus travel) and an adjacent 2-foot shoulder or gutter in each direction.
- A 6-foot clear zone free of obstructions is desired from the edge of the travel lane.
- Vertical and horizontal curves must be consistent with local roadway design criteria for a 45 mile per hour roadway.
- Pavement messages and signage at intersections must be installed to clearly indicate that the dedicated guideway is for buses only.

Further Considerations

In certain circumstances, the use of red colored pavement can reinforce the messaging that the dedicated guideway is for buses only. The Federal Highway Administration issued interim approval of red pavement markings for transit use in December 2019. Red pavement markings can be used by agencies with Federal Highway Administration authorization and are anticipated but will require further study as the project progresses. Graphics within this document generally illustrate potential applications.

Maintenance

Concrete pavement should be used to provide the longest lifespan of the guideway.

TRAIL AND BRT SEPARATION[18]

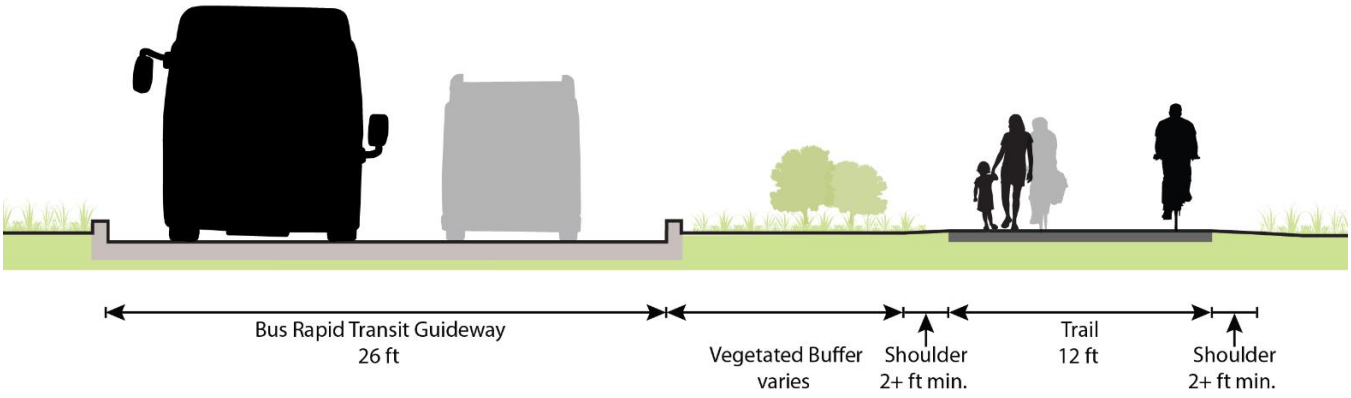
General Design Practices

BRT systems have a mutually beneficial relationship with bicycle and pedestrian facilities due to their infrastructural requirements, planning needs and the connectivity and accessibility that is provided for all systems. Proposed elements in the right-of-way may vary based on physical constraints.

Typical Application and Locations

The dedicated guideway would be located in the Ramsey County rail right-of-way adjacent to the reconstructed Bruce Vento Trail.

Figure 39: Typical BRT and Trail Section



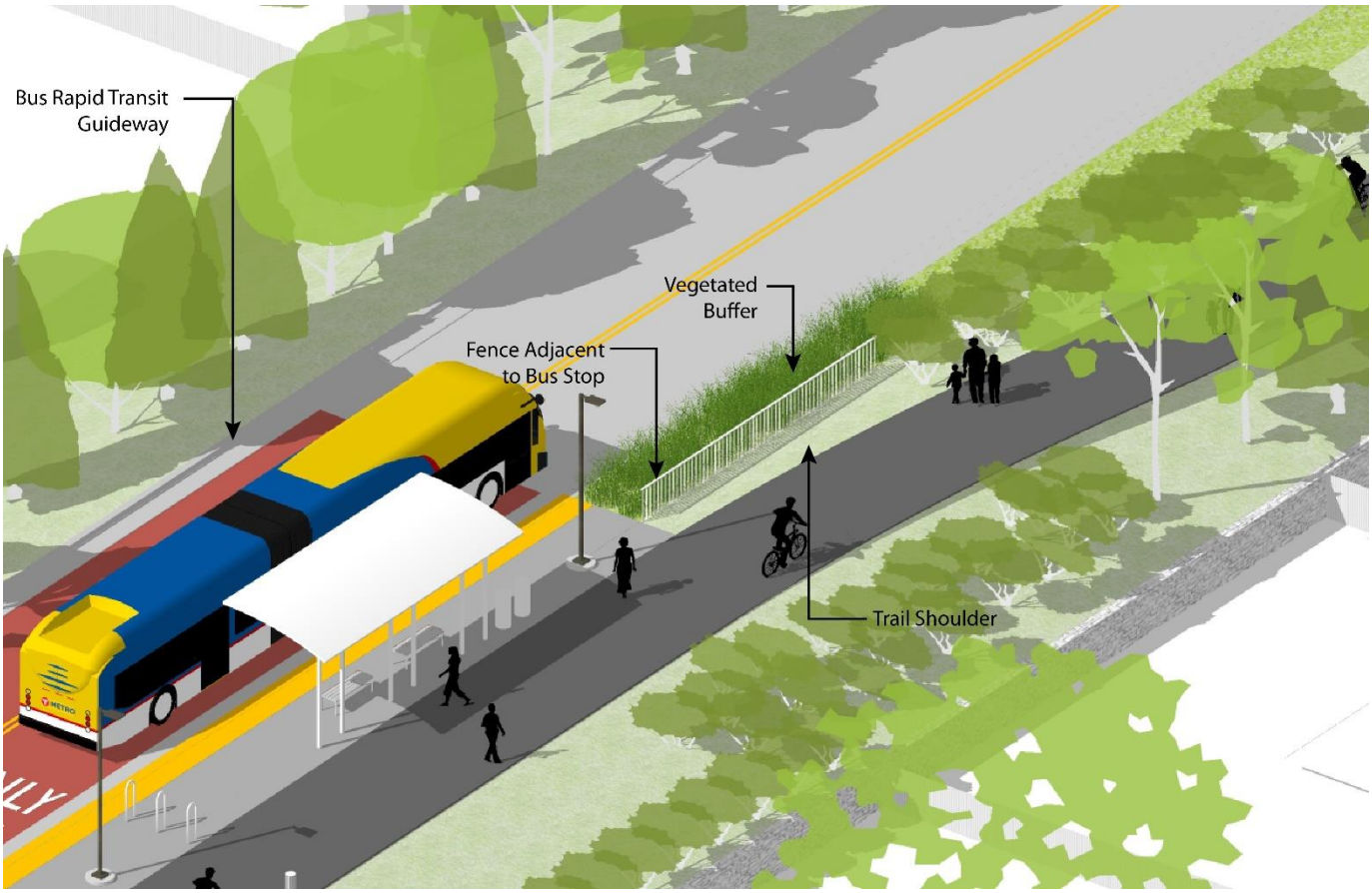
Design Features

- A 26-foot wide guideway would be used exclusively for buses. The guideway would be separated from the trail by a vegetated buffer.
- The vegetated buffer would vary in width due to right-of-way constraints. The vegetative buffer may contain a variety of plants, depending on growing conditions and the amount of screening desired.
- Where there is limited space for a vegetated buffer or there is a particular safety concern, a fence or comparable crossing deterrent may be included in the buffer area. See the Section 5.3.6 for more information on fencing.
- The separation between the dedicated guideway and the trail would vary in width. The maximum separation possible will be determined by grading constraints, construction limits

[18] References: *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials, 2012; *MnDOT Bikeway Facility Design Manual*, Minnesota Department of Transportation, 2007; *American Standard for Nursery Stock*, American Horticulture Industry Association, 2014; Sections 2571 and 2575 of the *Standard Specifications for Construction*, 2018 edition, Minnesota Department of Transportation; *Station and Support Facility Design Guidelines User Guide*, Metropolitan Council.

and tree preservation efforts and balancing the desire to also provide buffers to adjacent properties.

Figure 40: BRT and Trail Separation Strategies



Further Considerations

- The guideway would typically be lined with concrete curbs. Curbs create another form of separation between the buses and trail users. However, the addition of curbs would require additional infrastructure and increase costs, especially for stormwater treatment. Curb placement and curb cuts should be thoughtfully considered and should be planned in conjunction with potential bioswales for stormwater runoff.
- The vegetated buffer should allow the area between the trail and guideway to appear difficult to cross but possible if necessary for safety. If a fence, railing or comparable crossing deterrent is needed, the design and length should take egress locations into account.

Figure 41: BRT and Trail Separation Examples[19]

Maintenance

Although plants in the vegetated buffer should be selected for their drought tolerance and perennial nature, regular maintenance would still be required. Routine checks for weeds, loss of plants or pruning are necessary to ensure tidiness of the trail and longevity of the plants. Recording any patterns of wear over time is useful to predict patterns from trail usage and strategize the best adjustments for maintenance.

Vegetative buffers would also likely be used for snow storage during winter months. Salt tolerance and spring maintenance requirements should also be considered when selecting plant species.

BUFFERS AND SCREENING[20]

General Design Practices

Buffers and screening refer to the physical separation and visual permeability between residential properties adjacent to the right-of-way and the right-of-way itself. Vegetation, topographic changes, ditches/bioswales, fencing, railings, bollards and/or retaining walls may be used as buffers and screening of the trail or the dedicated guideway. Such features serve multiple purposes, including,

- Providing visual separation/privacy screens.
- Delineating public space from private property adjacent to the trail.
- Discouraging the development of informal access trails.
- Indicating and separating users from abrupt grade changes and potential conflicts with trail and BRT operations.

Typical Application and Locations

Buffers and screens would be located within the right-of-way outside of the guideway and trails, adjacent to adjoining property. The area available for screening will vary based on multiple factors such as guideway and trail alignment and separation, topography and adjacent land use. Providing

[19] Source: Bicycle Dutch, https://bicycledutch.wordpress.com.

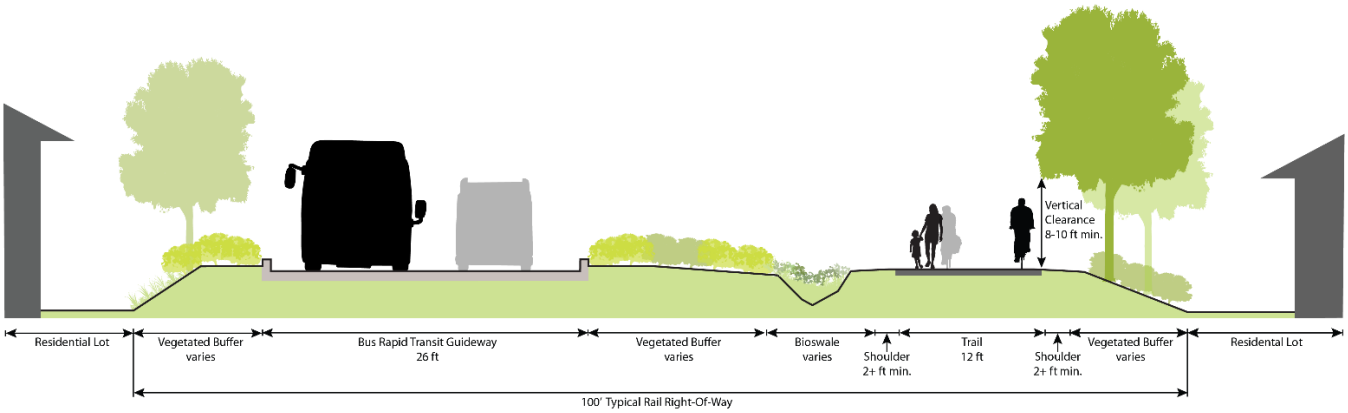
[20] References: *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials, 2012; *MnDOT Bikeway Facility Design Manual*, Minnesota Department of Transportation, 2007; *American Standard for Nursery Stock*, American Horticulture Industry Association, 2014; Sections 2571 and 2575 of the *Standard Specifications for Construction*, 2018 edition, Minnesota Department of Transportation; *Station and Support Facility Design Guidelines User Guide*, Metropolitan Council.

buffers and screens for residential properties will be a higher priority than for parallel public-street and commercial adjacent properties.

If separation is desired purely for privacy reasons, vegetated buffers or the use of topography are recommended where possible. For physical separation aimed at preventing trespassing, guarding against hazardous slopes or maintaining separation from the guideway, the use of topography, ditches/bioswales, semi-transparent fencing or railings, and hostile vegetation (e.g., vegetation with thorns) should be considered. Access management strategies, such as the use of signage, landscaping and curbed medians in the trail to reduce the likelihood of motor vehicle access, may be installed at road crossings.

Buffers and screens may be needed on both sides of the rail right-of-way north of Johnson Parkway and along the west side of the right-of-way south of Johnson Parkway.

Figure 42: Typical Buffer and Screening Treatment



Design Features

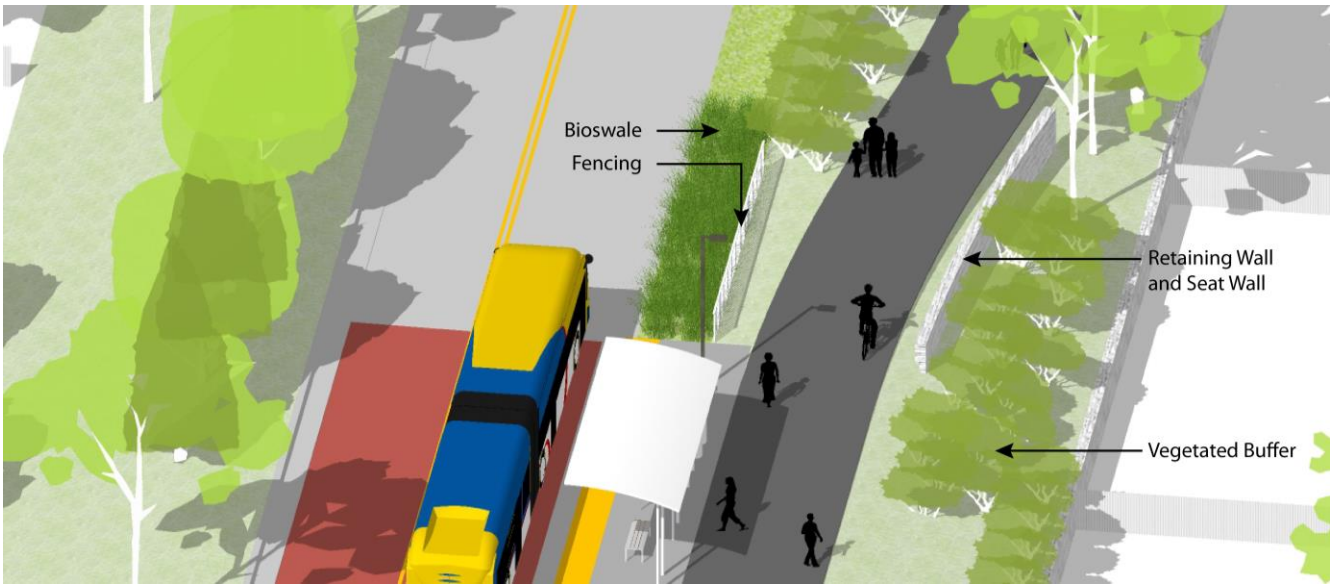
Several methods have been identified to provide buffering and screening in varied locations and applications. Recommendations that consider context and environmental issues include:

- Avoid disturbing existing vegetation where feasible.
- Use methods that provide the most screening while also preserving the natural character of the right-of-way, such as using changes in topography or vegetation as a visual barrier along with maintaining the historic corridor elements, to the extent possible. However, drastically changing the topography within the right-of-way may not be feasible as grading work would impact the health of existing vegetation, and maintaining existing vegetation was one of the highest priorities expressed during public engagement activities. Another important consideration related to topography is ensuring that the trail is compliant with requirements of the Americans with Disabilities Act.
- While vegetation can produce the desired buffering and screening effect, avoid using heavy and dense plantings that can be a safety concern. This is further discussed as part of Crime Prevention Through Environmental Design in Section 5.2.1.
- Use native plants with numerous species and sizes that are planted organically and randomly to create vegetated screening that helps reestablish the natural character of the right-of-way.

Understory plantings should be included along with overstory deciduous and evergreen trees to provide screening at multiple heights.

- Use bioswales and low fencing to create buffers that suggest cross-travel and cut-throughs are not permitted. Bioswales have the added function of creating stormwater basins along the trail.
- If used for buffering and screening, topographic changes and bioswales should be curvilinear and varied in height to appear natural in form.
- Consider using splitter islands for at-grade crossings to prevent motorists from accessing the trail and to provide a visual cue for trail users to take caution before crossing the road. Splitter islands introduce a median area in between directional lanes and typically include vertical elements such as curbs, signage, lighting and landscape.
- Avoid the use of bollards in the trail surface because they present a safety hazard to trail users. Bollards may be placed outside of the trail to limit access where appropriate.
- Do not place vertical elements such as fences and walls within 1 foot of the trail edge; 2 feet or more is desired for trail user comfort and safety.
- Design constructed elements such as fencing, bollards and walls as backdrop elements that have natural forms, are finished naturally or with muted, earth tone shades and do not dominate the landscape. Walls should be textured to deter graffiti.

Figure 43: Buffer and Screening Strategies



Further Considerations

- The type of wildlife in the right-of-way may influence certain separation and buffer features. Wildlife expected in this area include deer, rabbits, turkey, squirrels, opossum, turtles and other smaller rodents and reptiles. Decisions such as height and permeability of a fence or crossing deterrent and type of vegetation may be adjusted depending on whether the wildlife is desired or discouraged from entering the right-of-way.
- Additional buffer and screening guidance is provided in Section 5.3.

- The historic character of the former rail corridor should be taken into account as design moves forward, which may mean limiting the height of plantings between the guideway and the trail.

Maintenance

- Maintain the vegetated buffer so that it does not impede sight lines at conflict points or interfere with trail circulation.
- Maintain the vegetated buffer to avoid overgrowth and control invasive species.

LANDSCAPE CHARACTER[21]

General Design Practices

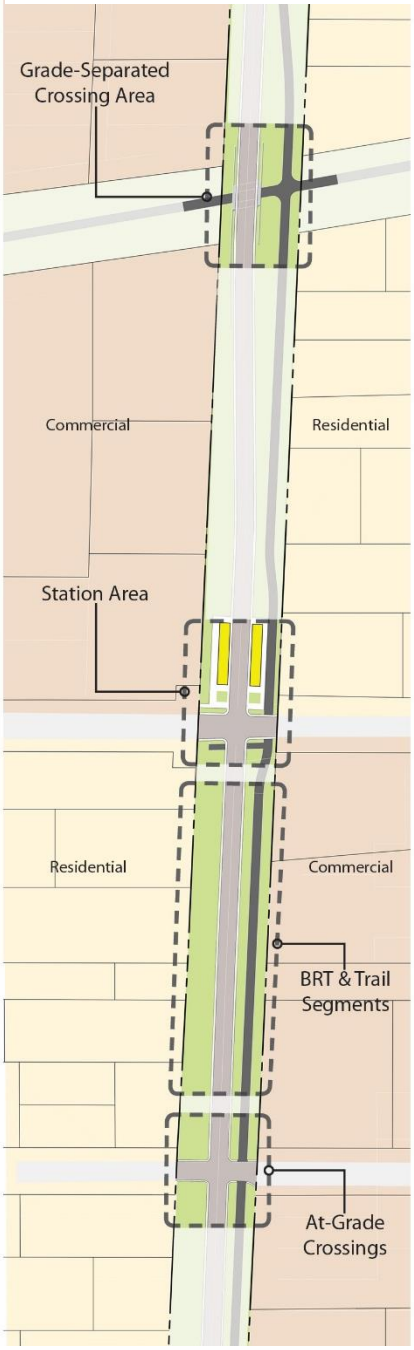
Construction of the Rush Line BRT Project would require disturbance of the existing native and volunteer vegetation in the design guide area. This vegetation is unmaintained except for periodic trimming of overhead trees and mowing of the turf approximately 4 to 6 feet beyond the edge of the existing trail. Reestablishment of the vegetation that would be impacted during construction is a high priority.

Typical Application and Locations

The reestablishment of vegetation within the right-of-way would vary based on the location and purpose of the new landscape materials. Typical planting areas, shown on Figure 44, include:

- Station areas: The area around each of the stations where transit users spend the greatest amount of time in one place. Plantings in station areas should be the most deliberate, designed and concentrated.
- At-grade crossings: The area where the guideway and trail cross local streets at-grade will require plantings that allow for visibility yet highlight the location and opportunity to access the trail.
- Grade-separated crossings: The dedicated guideway is planned to be vertically separated from other roads and trails in some locations. Like at-grade crossings, the landscape in these locations should allow for visibility and access while softening the appearance of the underpass structures.

Figure 44: Typical Landscape Application Areas



[21] References: *American Standard for Nursery Stock*, American Horticulture Industry Association, 2014; Sections 2571 and 2575 of the *Standard Specifications for Construction*, 2018 edition, Minnesota Department of Transportation; *Station and Support Facility Design Guidelines User Guide*, Metropolitan Council.

- Bioswales and other stormwater facilities: Plantings within and surrounding these areas should support the function of stormwater treatment and correspond to the natural character of the right-of-way.
- Dedicated guideway and trail segments: Most of the landscaping would occur within the right-of-way adjacent to the guideway and trail. Plantings should provide buffering and screening and reestablish the pre-existing natural character and feel.

The reestablishment of vegetation will generally be required wherever existing vegetation is disturbed and where new plantings are desired in the specific locations identified above.

Design Features

- Throughout the right-of-way: Use plantings that are hardy, native, diverse in species and sizes, and randomly placed and planted to achieve overstory and understory growth. Plantings should provide seasonal interest. Plantings should be selected and placed to avoid sight line obstructions.
- Station areas and throughout the right-of-way: Use overstory deciduous trees to provide shade and a canopy for physical and psychological comfort.
- Station areas: Use variable plant types, concentrating on more ornamental, flowering and generally interesting plants, including upright or columnar trees, flowering shrubs/low hedges, perennial massings and ornamental grasses.
- Bioswales and other stormwater facilities: Consider using large massings of shrubs, multi-stem and single stem trees with natural and irregular characteristics.
- Open areas: Minimize density and height of plants to maintain visibility, especially at crossings and station areas. Hardy and native turf varieties should be used to control erosion and should be selected for their ability to tolerate and thrive with infrequent mowing and without the need for supplemental watering.

Figure 45: Landscape Character Examples

Further Considerations

- Protecting and maintaining existing vegetation within the right-of-way is a primary goal. Landscape designs will need to integrate and complement existing and new plantings.
- Priority should be given to the preservation of existing vegetation when adjacent to residential properties, especially those properties with limited existing vegetation.

- Landscape should be considered integral to the overall design. Green infrastructure should contribute to the identity of the right-of-way and be well designed and maintained.
- The historic character of the former rail corridor should be taken into account as design moves forward, which may mean limiting the height of plantings between the guideway and the trail.

Should more intensive and enhanced plantings be considered, these types of plantings need to be restricted to station areas, where Metro Transit will be responsible for maintenance. If this type of additional landscaping is pursued at station areas or at other locations in the corridor, agreements with partners on maintenance responsibilities will need to be reached.

- Additional landscape guidance is provided in Section 5.3.

Maintenance

- Infrastructure design, plant varieties and other landscape materials should focus on low maintenance needs.
- The need for automatic irrigation to maintain plantings is discouraged. Plant selections should be made to reduce supplemental watering needs.

5.2. SAFETY AND SECURITY

The operation of a multi-modal transportation corridor requires careful consideration of the safety and security of its users. The Ramsey County Rail Right-of-Way Design Guide aims to address safety and security concerns by employing tested strategies and thoughtful use of elements like lighting to reduce and/or remove perceived security concerns and minimize actual physical safety conflicts. This section discusses specific crime prevention and safety strategies.

5.2.1. Crime Prevention Through Environmental Design[22]

OVERVIEW

There are many benefits from following Crime Prevention Through Environmental Design practices in the design, implementation and maintenance of a trail system. Crime Prevention Through Environmental Design principles support the design and use of the built environment to encourage a reduction in the fear of crime, a reduction in the actual number of crimes, an improvement in community safety, an improvement in the perception of safety and an improvement in the overall quality of life in a community.

PRINCIPLES

The four principles of Crime Prevention Through Environmental Design include the following:

- Natural access control helps to clearly differentiate public and private space. Strategies include the placement of entrances, exits, fencing, landscaping, hours of operation and lighting.
- Natural surveillance increases the opportunity “to be seen” and therefore deters unwanted behavior. Strategies include the placement of physical features, activities and people to maximize visibility.

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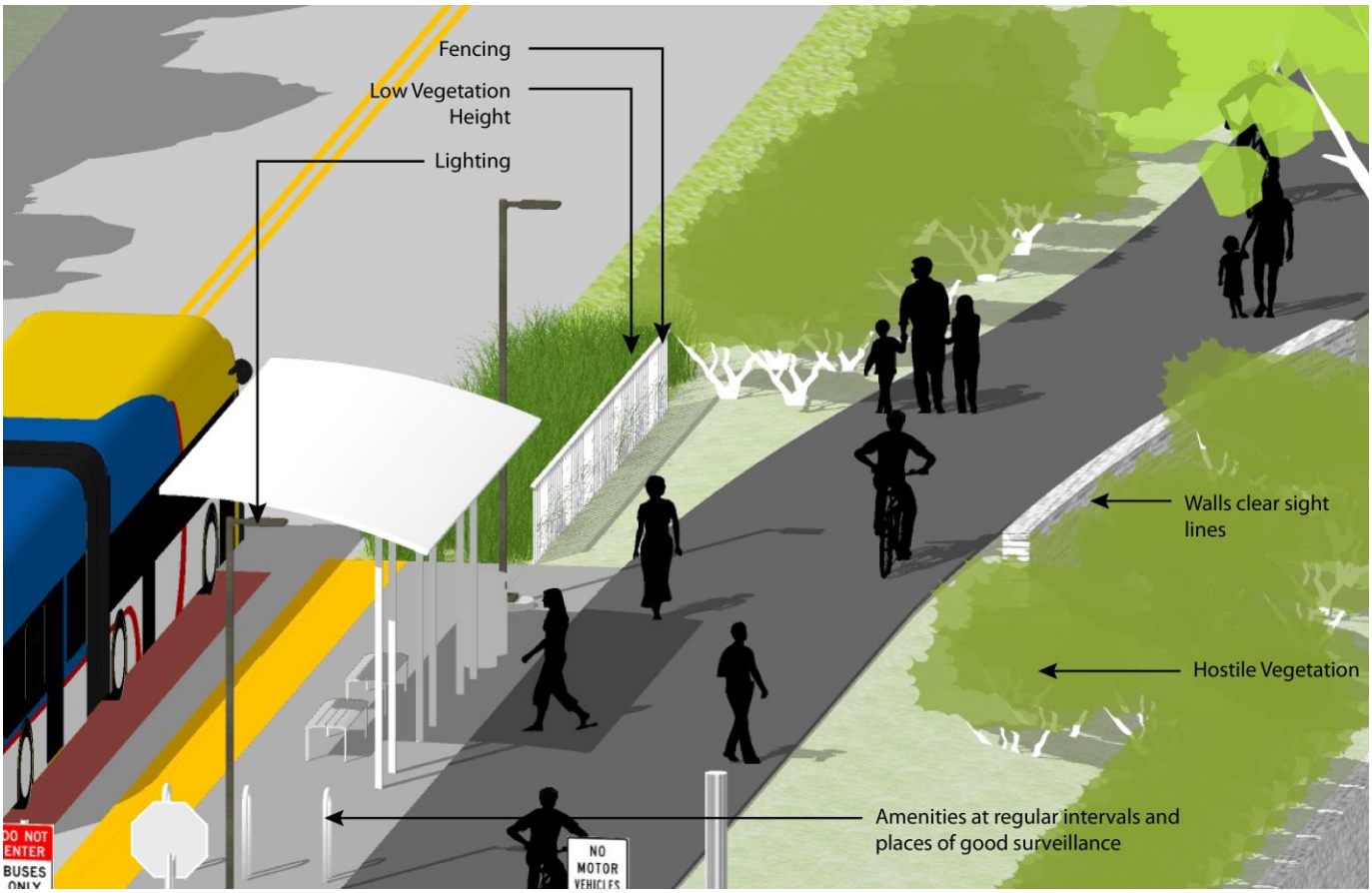
[22] Reference: *Best Practices for Using Crime Prevention through Environmental Design in Weed and Seed Sites*, National Crime Prevention Council, 2009.

- Territorial reinforcement strategies put the spotlight on undesired behavior and activities, increasing the perception of being watched. Strategies include the use of physical attributes such as fences or crossing deterrents, paving materials, public art, signage and “security” (dense and nearly opaque) landscaping materials to convey ownership of the space and buffer private properties.
- Maintenance allows for the continued use of space for its intended purpose. Maintenance is an expression of ownership of a property. Unmaintained facilities indicate that there is a greater tolerance of disorder and less control by the intended users.

TYPICAL APPLICATION AND LOCATIONS

The principles of Crime Prevention Through Environmental Design can help improve several potential safety issues associated with trails, as well as issues that increase the perception of an unsafe environment such as litter and dumping, unwanted vehicle access on the trail and vandalism. Designing for safety as guided by these principles will be considered for the entire project area.

Figure 46: Crime Prevention Through Environmental Design Strategies



DESIGN FEATURES

- For maximum surveillance among vegetation, select shrubs that grow below 2 feet in height and trees that branch out at heights greater than 8 feet. For trees that naturally branch out lower than 8 feet, pruning to this height is necessary.

- Use hostile vegetation (e.g., vegetation with thorns) to eliminate entrapment areas and control off-path usage.
- All vegetation must avoid obstructing pathway illumination.
- Select benches, bollards, signage and other site amenities that are durable, low maintenance and vandal resistant.
- Place benches and other trail amenities at locations with good visual surveillance and high activity.
- Place garbage receptacles at trailheads and at regular intervals along the trail.
- Use permeable fencing or crossing deterrents wherever possible. Not only does the permeability increase surveillance along a trail, it is also less conducive to vandalism than a solid fence or wall. Any long stretches of fence or crossing deterrents should have thoughtful openings in areas of high visibility.
- To prevent motor vehicles from accessing the right-of-way, use landscaping to define the edge of the right-of-way and trail, including topographic changes, large boulders and fencing, as well as bollards at intersections.
- Emergency locators should be installed at regular intervals in the form of vertical elements like mileposts or in-pavement markers.
- At stations, security cameras for remote monitoring will be provided as a standard practice.
- Provide sufficient lighting and clear sight lines into and out of pedestrian underpasses.

FURTHER CONSIDERATIONS

- Getting the community invested in the trail system is important to creating a safe environment. Involving neighbors in trail projects can build a sense of ownership that contributes to natural surveillance and trail maintenance. Encouraging community members to report vandalism and initiating a “Trail Watch Program” within the neighborhood are both strategies to get people invested and encourage safety practices.
- Should graffiti continually occur in a certain spot, consider the introduction of a mural or public art. This strategy may deter people from interfering with another artist’s work. In addition, including human features or windows in a mural conveys the perception of being watched.

MAINTENANCE

- Trail maintenance plays a large role in the perception of safety. If a trail is not maintained, it gives the impression that it is not surveilled. This will ultimately discourage people from using a trail, which has the ripple effect of decreasing natural trail surveillance and increasing the possibility of crime.
- Dumpsites, litter, graffiti and vandalized objects beyond repair should be removed in a rapid manner. Vegetation should be managed so that the right-of-way can be visually surveyed from adjacent streets and residences.
- Community members that have pride in their trail system will likely respect trail amenities, keep other community members accountable if they see a misuse of the facilities, or become involved with beautification by organizing clean-ups.

5.2.2. Corridor Lighting [23]

GENERAL DESIGN PRACTICES

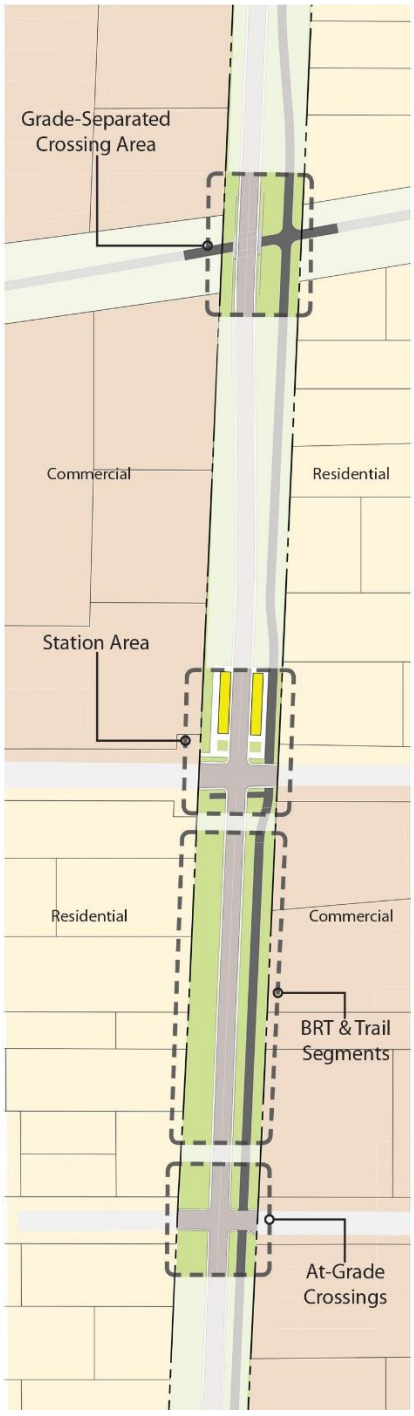
Lighting within the right-of-way should be used for safety and security and to enhance the overall user experience. Although Ramsey County and Metro Transit standards do not typically include continuous corridor lighting of trails or BRT routes, trail and guideway lighting were identified by some as a priority through public engagement activities. Incorporating lighting of the proper orientation and scale at appropriate locations should be considered to provide an environment for users to see and be seen.

TYPICAL APPLICATION AND LOCATIONS

Lighting elements to be considered will vary based on purpose and location in the right-of-way. Different lighting strategies apply for the following categories:

- Station areas: Light poles that are pedestrian-scale and spaced to provide an environment for users to see and be seen is a Metro Transit standard, and lighting will be provided in the area around each station. Uniform and even lighting levels should be a goal.
- At-grade crossings: The guideway and trail would cross local streets at grade in several locations. Lighting of the intersections would be scaled to provide visibility to pedestrians and drivers alike.
- Grade-separated crossings: The guideway is planned to be vertically separated to cross other roads and trails in some locations. These areas require visibility and access for pedestrians using the trail. Appropriate lighting would be used along the trail approach and through the underpass structures, which are proposed at the Gateway State Trail, by Weaver Elementary School and at a local trail connection between Fitch Road and Barclay Street.
- Directional changes: Locations where the trail turns abruptly should include pedestrian-scale lighting to indicate the change in direction to trail users.
- BRT and trail segments: Lighting is not currently planned for any segments of the guideway and trail that do not fall within the categories listed above. This would allow for minimal light encroachment to surrounding properties and reduce light pollution as expressed during public engagement. However, considering low-level

Figure 47: Typical Lighting Application Areas



[23] References: *Station and Support Facility Design Guidelines User Guide*, Metropolitan Council.

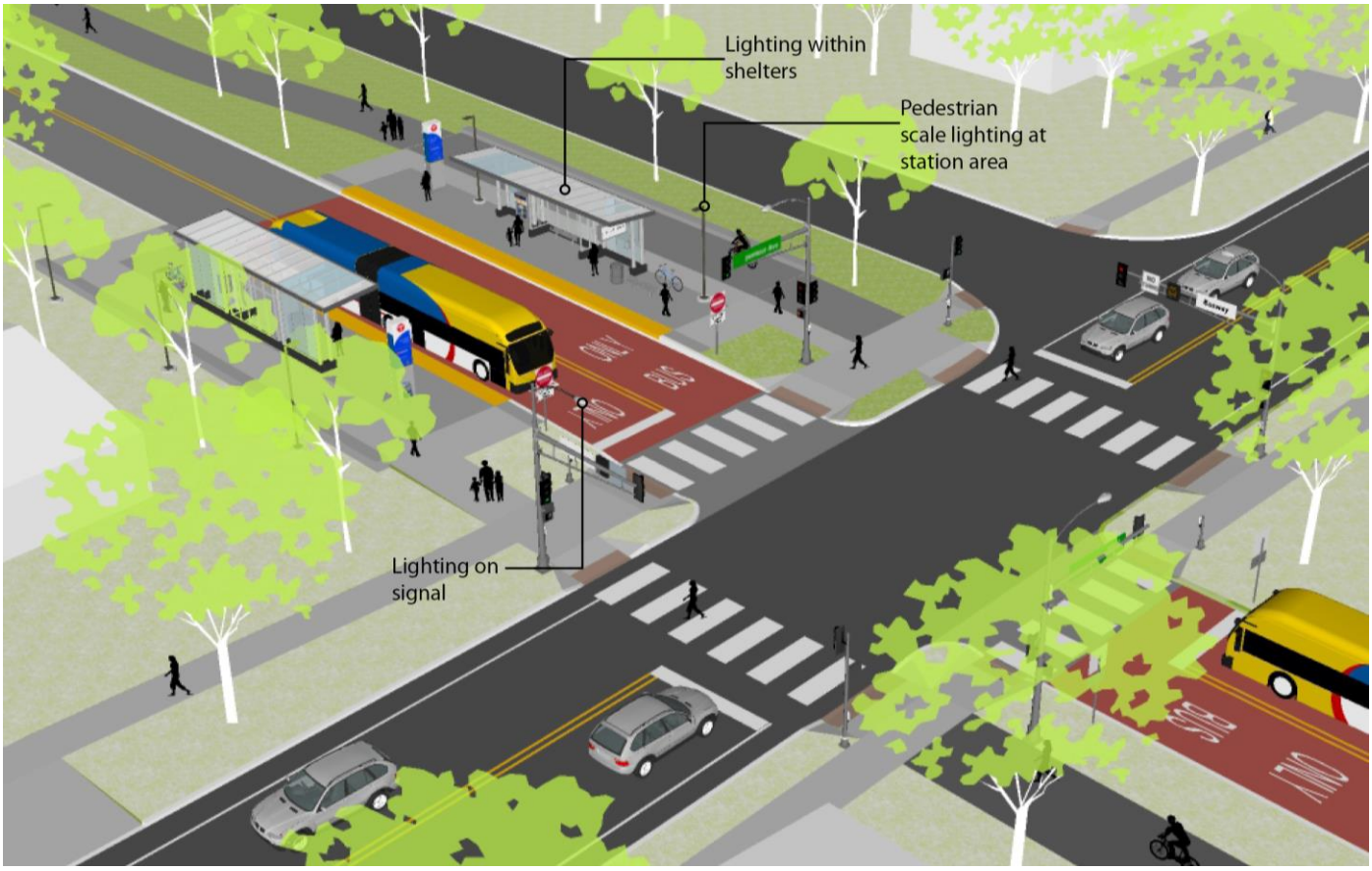
lighting as a public preference will need further study with Saint Paul and Ramsey County Parks & Recreation. In addition, lighting the BRT corridor as a possible operational safety measure will include further coordination with Metro Transit.

The location and type of lighting within the project is guided by the specific lighting strategy areas above.

DESIGN FEATURES

- Limiting light pollution and the impact to surrounding properties is a priority. Pedestrian-scale poles at stations and along trails would be shielded in consistency with dark sky strategies and would have a backlighting shield to block light from casting onto adjacent properties.
- Light fixtures should use LED light sources for their long life and energy efficiency. LED bulbs should be warm in temperature to provide a natural rendering and comfortable environment for trail and BRT users.
- Light poles should be a dark earth tone color to maintain the natural aesthetic of the trail.
- All pedestrian light poles should be appropriately scaled at approximately 12 to 16 feet in height.
- Light poles should be offset from the trail edge at a minimum of 2 feet to meet trail design clearance standards.
- With the exception of lighting at station areas that would be maintained by Metro Transit, any additional lighting within Saint Paul that would be maintained by the city of Saint Paul should match the current city standards.

Figure 48: Potential Intersection Lighting Strategy



FURTHER CONSIDERATIONS

- The aesthetic quality of lighting should be consistent throughout the right-of-way and with other furnishings and fencing.
- Lighting offers a branding opportunity for the BRT route.
- The selection of lighting types and heights should consider the application.

Figure 49: Potential Underpass Lighting Strategy

MAINTENANCE

- Ongoing inspections and replacement of light fixtures and sources are necessary to provide a safe and comfortable environment.
- Light poles should be repaired as required due to vandalism and for general upkeep.

5.2.3. Signage[24]

GENERAL DESIGN PRACTICES

Whether signage is intended to confirm a sense of direction or enforce rules and regulations, it is a necessary component of safety along a trail. Signage includes trailhead wayfinding, informational kiosks, mile markers, intermittent directional signs and regulatory signage.

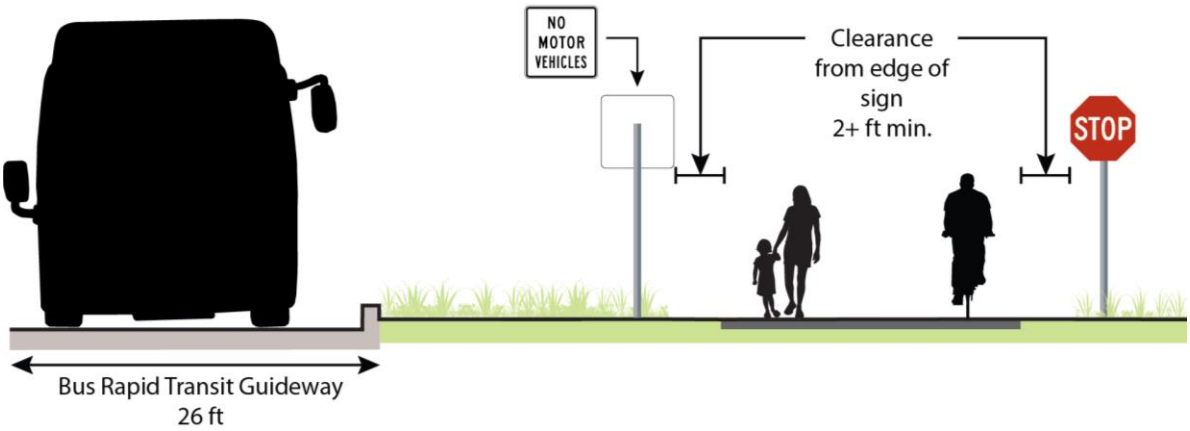
TYPICAL APPLICATION AND LOCATIONS

Different types of signs typically have rhythmic placement along a trail system. At trailheads and street crossings, regulatory signage is prominent and wayfinding signage is often necessary for comfort and ease of direction. Kiosks often display a map that is pertinent to the user's location along with information on trail rules. Mile markers and directional signs along the corridor are key for keeping

[24] Reference: *Standard Specifications for Construction*, 2018 edition, Minnesota Department of Transportation.

users aware of their location and destination, which instills confidence and comfort. Roadway/BRT, trail and other signage is required for the entire project area.

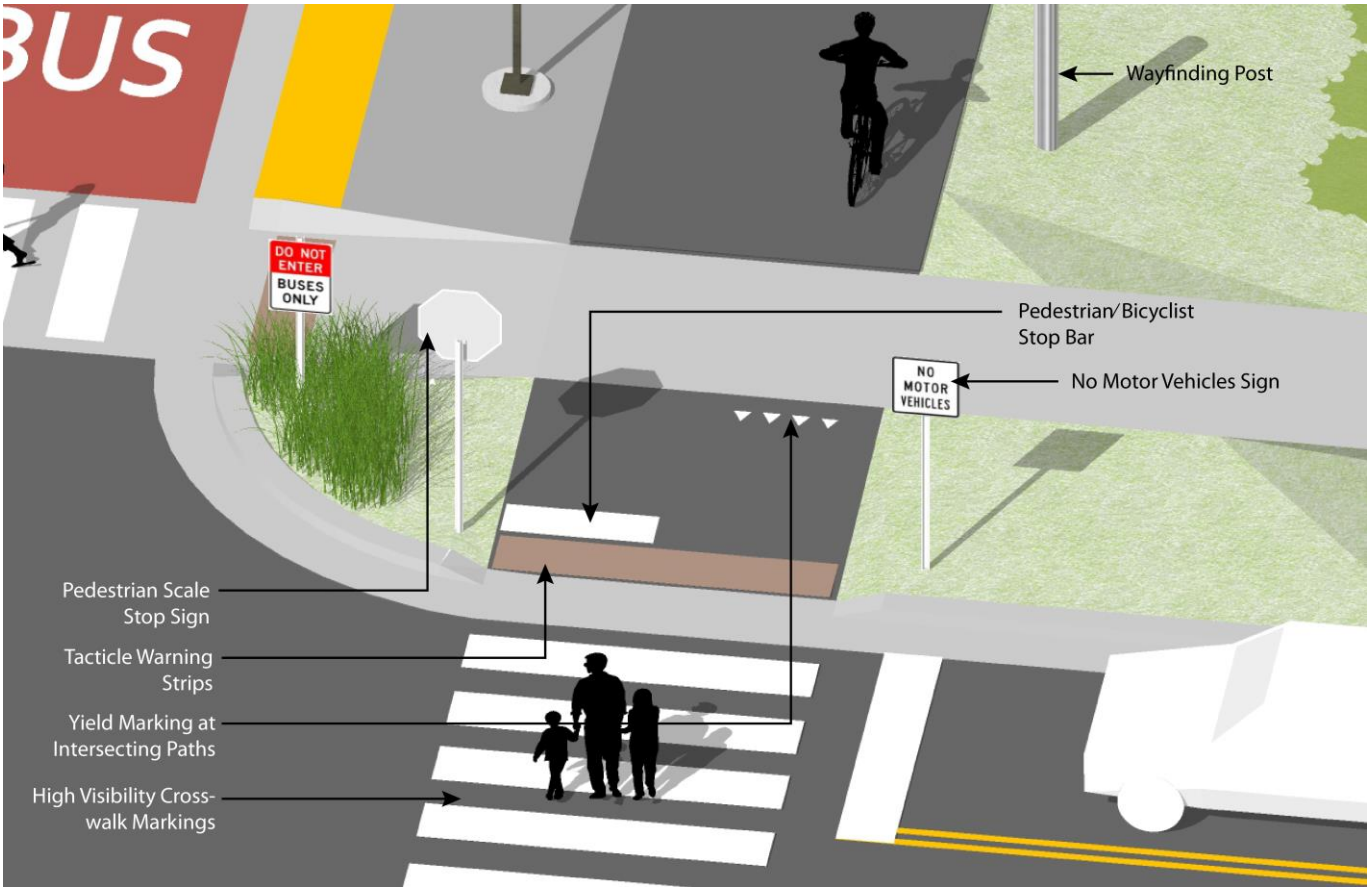
Figure 50: Typical Signage at Roadway Crossings



DESIGN FEATURES

- Use 18-inch path-scale stop signs at each roadway crossing. Vehicular traffic would follow the direction of yield signs, stop signs or traffic signals, depending on the volume of the roadway.
- Have motorized vehicle restriction signs at the trail, facing the roadway, at every street intersection.
- Post trail rules and notices to help with overall trail safety and maintenance. Information could include trail etiquette and “yielding” information, encouragement to hydrate and bring water, and the enforcement of pet leash laws.
- Figure 51 illustrates potential signage and striping at a roadway crossing. The design and implementation of the elements shown will require further evaluation and coordination with partner agencies.

Figure 51: Typical Signage and Markings at Roadway Crossings



FURTHER CONSIDERATIONS

After incorporating rules and regulations, it is important to ensure these safety measures are enforced. Proactive law enforcement sets a positive standard for the community and should deter unwanted behavior.

MAINTENANCE

Signs must be clearly legible at all times. Any vegetation must be pruned away from the sign face, and any sign vandalism must be cleaned, repaired or replaced.

5.3. ENVIRONMENT

Limiting environmental impact during construction and operations requires intentional design. The Ramsey County Rail Right-of-Way Design Guide seeks to preserve existing quality landscapes and enhance the corridor with ecologically beneficial, resilient and low maintenance vegetation. This section discusses specific resilience and sustainability strategies for the design guide area.

5.3.1. Character and Landscape Impacts[25]

GENERAL DESIGN PRACTICES

As design advances, minimizing impacts to existing vegetation and the soils that sustain them should be given special consideration. Grading could disturb large areas of understory vegetation but protecting larger tree clusters and/or specimen and high-value trees should be a priority.

Additionally, the existing right-of-way is dense with vegetation, and it passes through parks and undeveloped public open spaces that would remain natural and dense, providing cover and food for wildlife. This section gives guidance for vegetation preservation, providing for and mitigating wildlife crossings and interactions, and reestablishment of potential habitat loss.

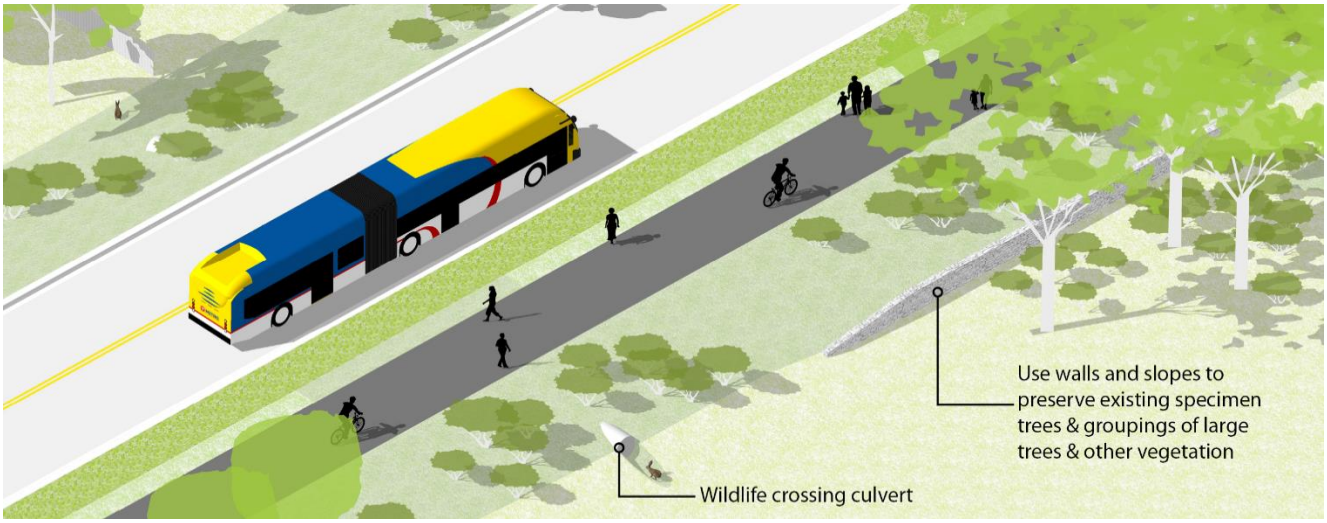
TYPICAL APPLICATION AND LOCATIONS

- Preserving existing vegetation: The protection of existing trees and understory has benefits that include environmental sensitivity, goodwill and maintaining existing character. Adjustments to the alignment of the dedicated guideway and trail within the Ramsey County rail right-of-way at specific locations could reduce vegetation impacts, specifically to specimen trees.
- Wildlife crossings and interactions: The dedicated guideway and trail would pass by areas of dense vegetation outside of the right-of-way that would remain undisturbed. It is assumed that wildlife would reestablish patterns of movement after construction and would need to cross the dedicated guideway and trail to access food and shelter.
- Habitat reestablishment: Replanting the disturbed right-of-way is required functionally to reduce runoff and control erosion.

The guidance of this section primarily applies to the Ramsey County rail right-of-way segment north of Johnson Parkway; however, principles of existing vegetation preservation and habitat reestablishment should be considered for the segment south of Johnson Parkway.

[25] References: *American Standard for Nursery Stock*, American Horticulture Industry Association, 2014; Sections 2571 and 2575 of the *Standard Specifications for Construction*, 2018 edition, Minnesota Department of Transportation; *Station and Support Facility Design Guidelines User Guide*, Metropolitan Council.

Figure 52: Wildlife Crossing and Tree Preservation Strategies



DESIGN FEATURES

- Preserving existing vegetation: Use existing survey data to help guide adjustments to the alignment of the trail and dedicated guideway to avoid large groupings of significant trees and/or specimen trees. Also consider walls and/or engineered slopes to reduce cut and fill at the root zones of desirable trees. As feasible, reduce wall construction and disturbance within the drip line of the trees.
- All existing ash trees within the potential area of disturbance should be removed.
- Wildlife crossings and interactions: Fencing to deter wildlife crossings may be necessary, or wildlife crossings could be rerouted to safer locations to avoid BRT and trail user interactions. For smaller animals and reptiles, culverts placed under the pavement sections may help reduce at-grade interactions and conflicts.
- Habitat reestablishment: Choosing groundcover, ornamentals, understory plantings and trees that provide cover, shelter and food sources would provide added benefits to habitat restoration, a priority expressed at public engagement activities.

Figure 53: Natural Landscape and Habitat Reestablishment Examples[26]

FURTHER CONSIDERATIONS

- Priority should be given to the preservation of existing vegetation when adjacent to residential properties, especially those properties with limited existing vegetation.
- Existing soils that have sustained plant growth within the Ramsey County rail right-of-way can be a valuable resource in the revegetation process. If feasible, organic soils in areas of disturbance should be removed and stockpiled for reuse as growing medium for new plantings.
- Consider including local garden clubs, master gardener organizations and other interested community members in the design and upkeep of vegetation in the right-of-way to help ensure its long-term success.
- Additional landscape guidance is provided in Section 5.1.

MAINTENANCE

- Preserving existing groups of trees and specimen trees could require additional maintenance such as applying growth regulators before, during and after construction activities, supplemental watering and limb pruning to protect the public and constructed improvements from damage. Additional practices may be needed as identified by local and agency standards.
- Crossing deterrents and protected crossing devices should be monitored and adjusted as needed to locations where crossings tend to occur.

[26] Sources: National Wildlife Federation, https://www.nwf.org/News-and-Magazines/National-Wildlife/Gardening/Archives/2010/Native-Plants-forPollinators.aspx; National Wild Turkey Federation, https://www.nwtf.org/conservation/article/nwtf-helps-reestablish-open-woodland-areas-illinois.

5.3.2. Stormwater Treatment[27]

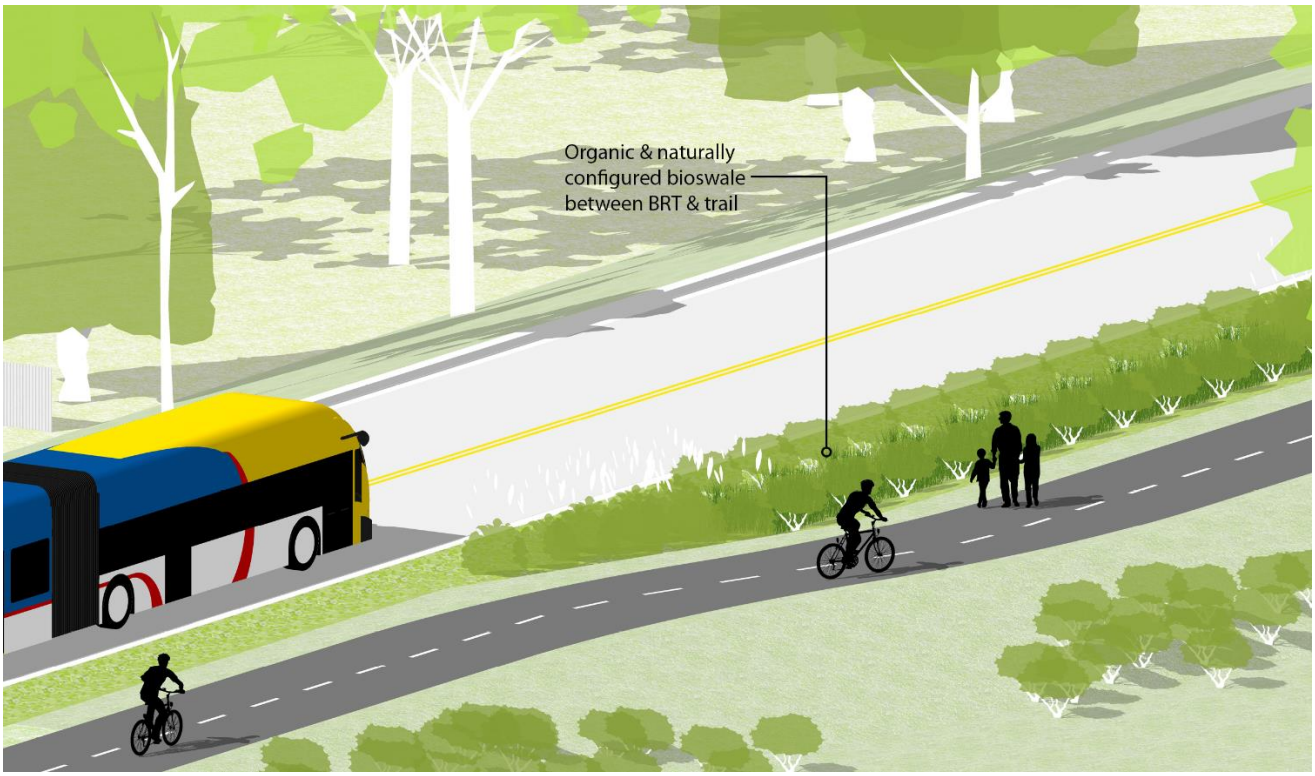
GENERAL DESIGN PRACTICES

The design and management of facilities that convey, collect and treat stormwater runoff is both a challenge and an opportunity to create innovative and context-sensitive stormwater solutions. Wet and dry retention ponds, filtration and treatment basins, bioswales, tree trenches, permeable pavements and rain gardens are the common methods for managing rainfall and runoff.

TYPICAL APPLICATION AND LOCATIONS

A range of options have been identified for managing stormwater, including wet and dry ponds, treatment basins, bioswales and rain gardens. Larger ponds and basins are generally planned for open space areas outside of the right-of-way. However, to reduce piping distance and size, smaller scale and more localized facilities should be considered within the right-of-way. While locations of proposed stormwater facilities are preliminarily established, the guidance in this section will be considered for the entire project area as stormwater mitigation is needed.

Figure 54: Linear Bioswale Used as Separation Element Between the Dedicated Guideway and Trail



[27] References: Ramsey-Washington Metro Watershed District Rules; *Minnesota Stormwater Manual,* Minnesota Pollution Control Agency; *Station and Support Facility Design Guidelines User Guide*, Metropolitan Council.

DESIGN FEATURES

Narrow and naturally-shaped open bioswales are an effective way to manage localized stormwater and should be designed as an integral feature contributing to the right-of-way's character and safety. Located between the dedicated guideway and trail, they would:

- Convey, store and treat runoff from the paved dedicated guideway and trail surfaces.
- Serve as a buffer and crossing deterrent between the dedicated guideway and trail.
- Provide an opportunity for wet location plant varieties, which would expand the diversity of plant materials, including pollinators for healthy bee and butterfly populations.

Rain gardens serve a similar function but are typically more maintained and ornamental in their design. Rain gardens could be considered for areas adjacent to the stations, prominent intersection areas or at larger trail amenity areas. Bioswales and rain gardens can require additional maintenance. Resolving stormwater management and the incorporation of bioswales and rain gardens will require further study to understand the balance between maintenance and effectiveness of these systems.

Figure 55: Bioswale and Rain Garden Examples[28]

FURTHER CONSIDERATIONS

Consider including local garden clubs, master gardener organizations and other interested community members in the design and upkeep of bioswales or rain gardens.

MAINTENANCE

Bioswales and rain gardens require periodic maintenance to be effective. This includes removal of accumulated sediment, debris and litter on an annual basis to maintain the infiltration capacity of the soil. More significant maintenance is needed when the facility no longer fully infiltrates the runoff over a period of several days.

[28] Sources: Green Infrastructure Digest, https://hpigreen.com/tag/urban-design/; Aaron Volkening (Flickr CC).

5.3.3. Trail Amenities[29]

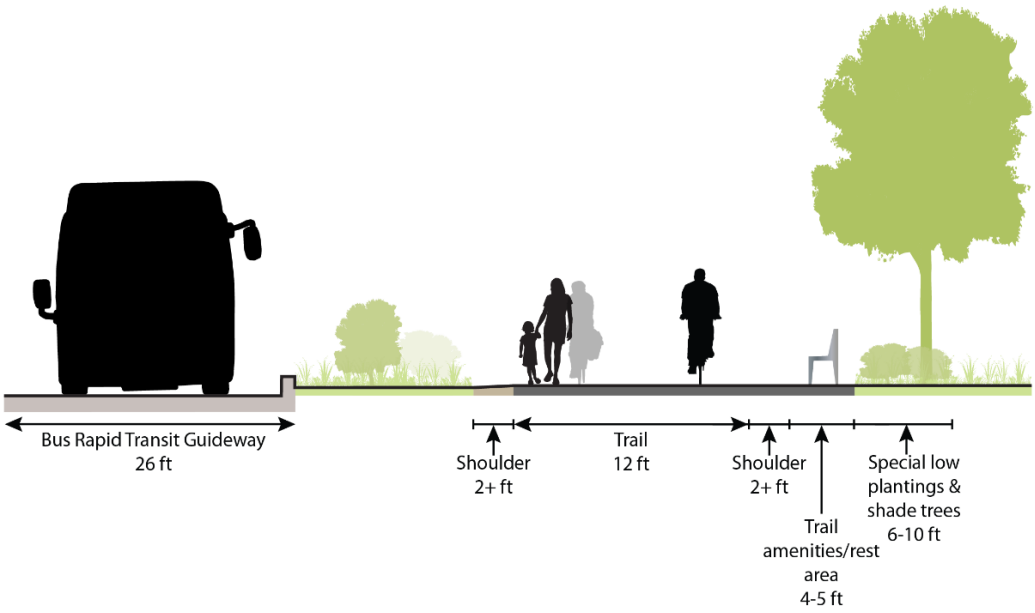
GENERAL DESIGN PRACTICES

Studies indicate trail usage increases when adequate and well-maintained amenities are provided for comfort, rest and interest. The Bruce Vento Trail north of Larpenteur Avenue is a regional trail within the Ramsey County trails system, and south of Larpenteur Avenue it is a regional trail within the Saint Paul Parks & Recreation trails system. Amenities for both jurisdiction's regional trails are generally uniform and consistent within the system. Input from public engagement activities indicated a strong desire for amenities to be included within the right-of-way, suggesting that the standard quantity, type and location of trail amenities will need to be coordinated with the two parks jurisdictions, which may require evaluation.

TYPICAL APPLICATION AND LOCATIONS

The location of amenities within the Ramsey County and Saint Paul trail systems are based on systemwide consistency and specific trail needs and usage. Since the Bruce Vento Trail would share the right-of-way with the dedicated guideway, any amenities should be consistent with the operations and maintenance standards of the maintaining agency. The locations and types of amenities would be specific in their placement, but assessment will include the entire design guide area where trails are included.

Figure 56: Trail Amenity/Rest Area



DESIGN FEATURES

Maintaining uniformity of amenities within the Ramsey County trail system is desired as it provides visual consistency, aids wayfinding and is easier to maintain. Current Ramsey County Parks &

[29] References: *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials, 2012; *Master Plan for Burlington Northern Regional Trail Corridor*, City of Saint Paul Division of Parks & Recreation and Ramsey County Department of Parks & Recreation, 1993.

Recreation standards should apply, which govern style, size, material and location of trail amenities, including:

- Benches.
- Trash receptacles and recycling containers.
- Bicycle repair stations.
- Dog waste pick-up stations.
- Trail route maps and informational kiosks.

Figure 57: Trailhead Amenity Examples[30]

FURTHER CONSIDERATIONS

Layout of trail amenities should correlate with other elements within the right-of-way. Strategies include locating benches near shade trees for shade and comfort, providing sufficient buffers between the trail and dedicated guideway for kiosks and signage, and locating stormwater treatments with specific considerations for plants and wildlife.

Additional facilities should be considered if higher volumes of trail users are anticipated, including:

- Drinking fountains and dog watering facilities.
- Picnic tables.
- Shelters and wayside rests.

MAINTENANCE

Maintaining the trail and amenities would be the responsibility of Saint Paul Parks & Recreation for the trail segment south of Larpenteur Avenue and Ramsey County Parks & Recreation for the trail segment north of Larpenteur Avenue, who will be integral to the decision-making process to determine type, location and quantity of amenities included. They should be consulted on details of mounting pads and posts, anti-theft attachments and graffiti deterrents.

[30] Sources: Green Infrastructure Digest, https://hpigreen.com/tag/urban-design/; Huntco Site Furnishings https://huntco.com/deluxe-public-work-stand.

5.3.4. Wayfinding[31]

GENERAL DESIGN PRACTICES

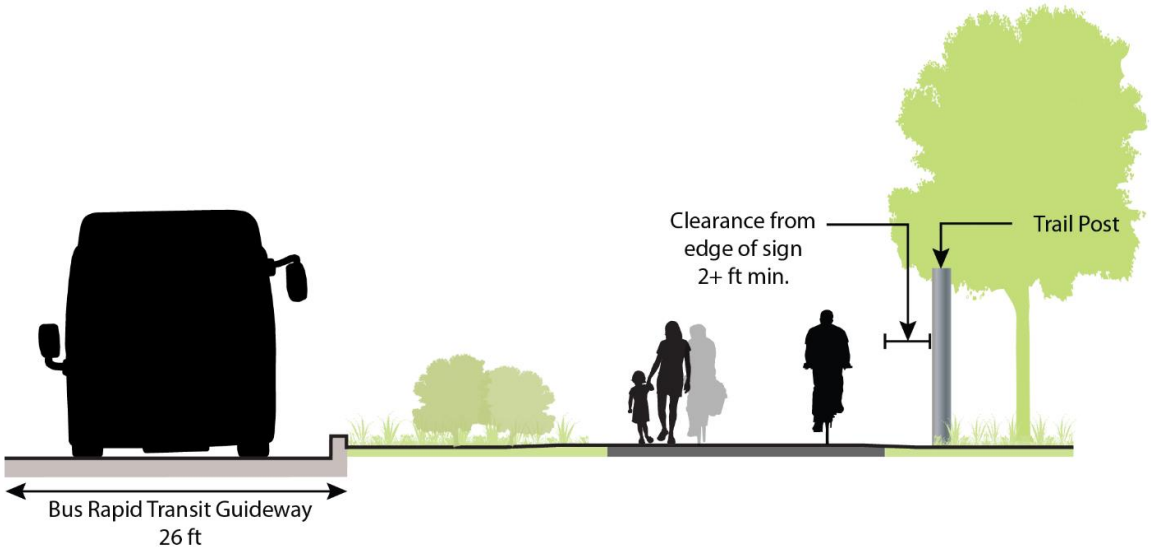
Wayfinding systems are implemented to safely guide users to their destinations along preferred routes. Per the Ramsey County Parks & Recreation Department's *Wayfinding Master Plan*, the two types of wayfinding signs that would be used along the trail in the Ramsey County rail right-of-way are secondary map kiosks and trail posts.

TYPICAL APPLICATION AND LOCATIONS

Map kiosks should be placed within a plaza located near the trail or adjacent to the trail. The trail posts provide directions to destinations along the trail. They should be placed at critical junctions but may also be placed intermittently along the trail to reestablish trail identity and provide confirmation for trail users where there are few destinations. Consult Ramsey County's *Wayfinding Master Plan* and Saint Paul Parks & Recreation signage design criteria for signage type and location guidance. The locations and types of wayfinding elements would be specific in their placement, but assessment will include the entire design guide area where trails are included.

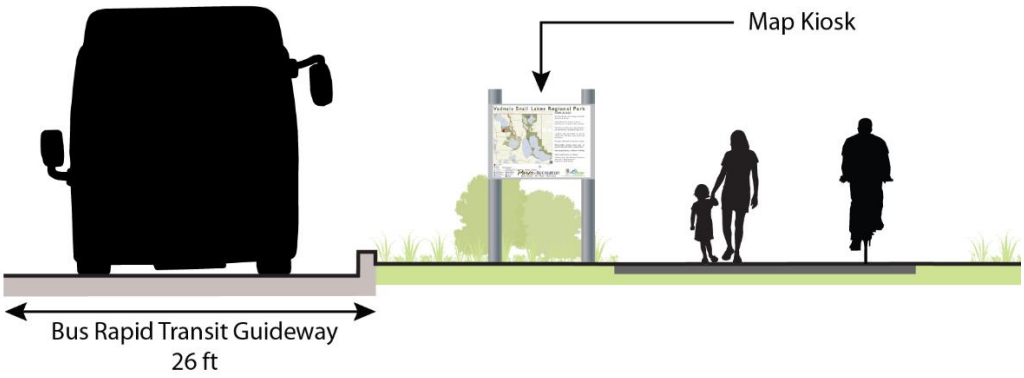
Street signs should be installed at each intersection, including at grade-separated crossings.

Figure 58: Typical Trail Post



[31] Reference: *Wayfinding Master Plan,* Ramsey County Parks & Recreation Department, 2011.

Figure 59: Typical Map Kiosk



DESIGN FEATURES

- The edge of the map kiosks or posts should be placed at least 2 feet away from the trail edge.
- There should be one Trail Etiquette and Rules/Regulations sign accompanying every map kiosk installed.
- Trail posts would include arrows and pictographs.

FURTHER CONSIDERATIONS

Continued coordination with Ramsey County Parks & Recreation will be needed as design advances. Consult Ramsey County's *Wayfinding Master Plan* for kiosk and post specifications and graphic standards.

MAINTENANCE

Signs must always be clearly legible. Any vegetation must be pruned away from the sign face and any sign vandalism must be cleaned, repaired or replaced in a timely manner.

5.3.5. Grade Separation[32]

GENERAL DESIGN PRACTICES

Providing grade separation may be necessary due to topographic conditions or may be desired to intentionally separate uses and deter lateral movements. Graded slopes are typically the most cost-effective method. However, walls can be used to reduce the extents of grading and embankment limits and to protect existing natural features as needed.

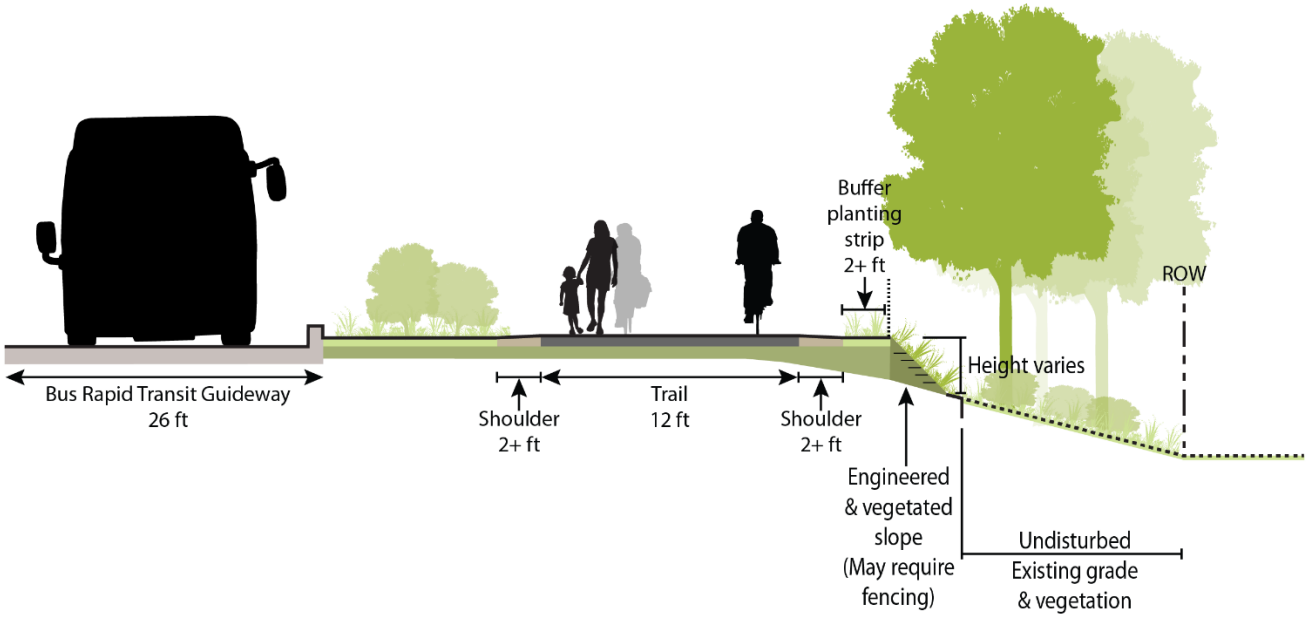
TYPICAL APPLICATION AND LOCATIONS

The existing historic railroad roadway bed is generally elevated throughout the Ramsey County rail right-of-way. As currently proposed, the dedicated guideway and trail would be located on top of this railroad roadway bed, requiring grading and the creation of a wider and more level area. This means that the slope would move outward, causing disturbance to vegetation. Preliminary design plans

[32] References: Uniform Building Code; Minnesota State Building Code; *Standard Specifications for Construction*, 2018 edition, Minnesota Department of Transportation.

indicate the current and specific location of grade separation that may be required. As the design advances these locations may vary.

Figure 60: Engineering and Vegetative Slope Strategy



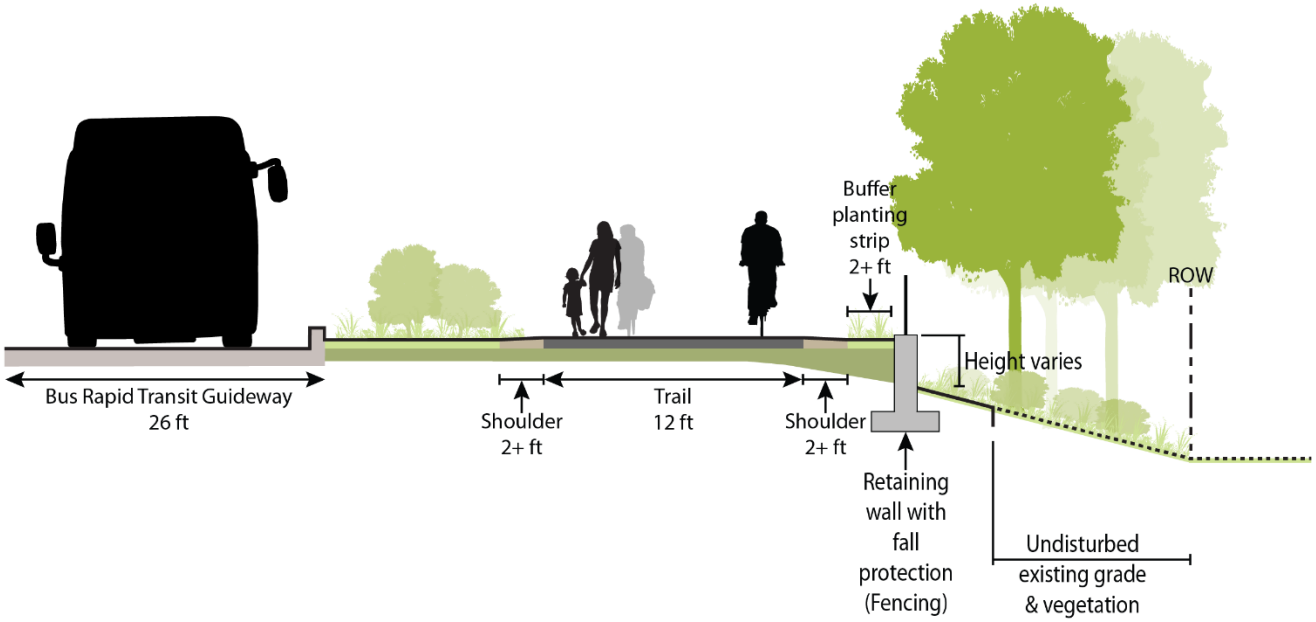
DESIGN FEATURES

Design considerations and methods of construction related to resolving the issue of expanded grading limits and potential disturbance within and outside the right-of-way include:

- Dedicated guideway and trail alignment: The Ramsey County rail right-of-way is generally 100-feet wide. Along with future design studies of the trail and dedicated guideway separation, alignment adjustments should be considered to balance the need for grading and slope mitigation. This strategy should also be used to help protect and preserve existing specimen trees and vegetation as needed for screening and for preserving the sense of linear pathway that is a character-defining feature of the historic railroad corridor.
- Dedicated guideway and trail profile: Consider varying the elevation of the dedicated guideway and trail facilities to further help with slope mitigation at the right-of-way. Slopes and/or walls can be used as grade separation methods.
- Retaining walls: Retaining wall materials and colors should reflect the natural character of the right-of-way, whether the wall is between the dedicated guideway and the trail or at the edge of the right-of-way. Walls should also be contextually appropriate in their appearance and scale as they will be facing the adjacent residential properties.
- Steep embankments: Typically, inclines no steeper than 3:1 slopes are recommended when reestablishing grades, meaning for every 3 feet of horizontal distance, the vertical distance increases or decreases by 1 foot. Using steeper embankments, such as 2:1 slopes (1 foot of vertical change for every 2 feet of horizontal distance), is possible but would require additional vegetation or other techniques to prevent erosion.

- Engineered slopes: Identified through public engagement activities as the favored method for mitigating steep slopes, engineered vertical slopes or “green walls” using geotextiles covered with dense groundcover vegetation should be considered.

Figure 61: Retaining Wall Strategy



FURTHER CONSIDERATIONS

- For walls taller than 30 inches, building and public safety guidance requires 42-inch tall fencing to be mounted just behind or on top of the wall as fall protection.
- Constructed walls should be textured rather than smooth to reduce the potential for graffiti.
- Retaining wall design will consider historic elements.
- Bridge and retaining wall designs will be established through a visual quality inventory and design process as part of the project, documented within a visual quality manual. In addition, these recommendations will be reviewed and potentially adjusted through the Section 106 consultation process.

Figure 62: Engineered Slope and Retaining Wall Examples[33]

MAINTENANCE

- Steeper slopes (greater than 3:1) may have additional costs for erosion control and maintenance.
- Retaining walls would require periodic repainting or coating and may require covering graffiti.

5.3.6. Fencing or Crossing Deterrents[34]

GENERAL DESIGN PRACTICES

Construction of the Rush Line BRT Project has the potential to impact the existing screening and buffering for residents on properties adjacent to the Ramsey County rail right-of-way. Public input received indicates that both screening between the right-of-way and adjacent properties and a traversable visual buffer between the dedicated guideway and trail are highly preferred. Fencing or crossing deterrents between the dedicated guideway and trail could also be used to create a physical barrier between trail users and the dedicated guideway, providing a safer environment for pedestrians.

TYPICAL APPLICATION AND LOCATIONS

Where necessary and where space is limited, fencing or crossing deterrents can be used to establish separation. This may occur primarily in the following circumstances:

- Station areas: Fencing should be used at station areas to separate customers standing on the platform from trail users. Some stations may benefit from additional fencing to separate some areas of the platform and platform access walkways from the dedicated guideway.
- Crossings: Fencing should be considered at locations where the dedicated guideway and/or trail cross intersecting roadways to provide clear delineation for safe crossing.
- Right-of-way buffer: Providing fencing between the right-of-way and adjacent properties is an approach to buffering and creating separation where spatial limitations prevent the use of a vegetative buffer at specific locations. While not preferred, this and other methods of providing a buffer will require further review and design.

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[33] Source: Walt Tools, https://www.walttools.com/product-categories/category/wall-liners.
[34] References: *Station and Support Facility Design Guidelines User Guide*, Metropolitan Council.

- Dedicated guideway: Fencing or crossing deterrents may be considered to deter pedestrian crossings throughout the corridor in areas not included in the three locations above.

The location of fencing or crossing deterrent is guided by the area descriptions above, considering the entire rail right-of-way. As the project advances, the need for, type and location of fencing or crossing deterrent from and operational safety perspective will include further coordination with Metro Transit.

Figure 63: Potential Intersection Fencing Strategy

DESIGN FEATURES

- The aesthetic quality of fencing at station areas and crossings should be consistent throughout the right-of-way and with other furnishings and light poles.
- Fencing or crossing deterrents at the right-of-way or along the dedicated guideway should be limited in size, mass and visibility, and should consider the natural aesthetic of the right-of-way.
- Fencing should also be consistent throughout the right-of-way to help limit maintenance activities.
- The fencing material should maintain the natural aesthetic of the right-of-way by using dark metal earth tones and a minimal metal design.

Figure 64:Fencing or Crossing Deterrent Examples[35]

FURTHER CONSIDERATIONS

- Fencing offers a branding opportunity for the Rush Line.
- The selection of fence materials should consider the application and requirements. Right-of-way fencing may need to be taller to deter entry, while crossing deterrents between the trail and dedicated guideway only need to be tall enough to discourage crossing potential.
- Fencing may also be required to serve as fall protection at the top of steep slopes and retaining walls.

MAINTENANCE

Repair fencing or crossing deterrent as required due to vandalism and for general upkeep.

[35] Sources: Aeropaca, https://www.aeropaca.org/; Jacksons Fencing, https://www.jacksons-security.co.uk/SR1-Fencing.aspx; Wrought Iron & Railing Contractors, http://ironweldingandrailing.com/.

6. NEXT STEPS

Guide for Furthering Design: As the project advances, the guiding principles will be used to inform the design work and ensure the collective input received through the public engagement activities is incorporated. The recommendations will be used to develop both preliminary and final plans for the project.

Section 106 Process: Because the Lake Superior & Mississippi Railroad corridor is eligible for the National Register of Historic Places, the Federal Transit Administration is required to consider the effects of the Rush Line BRT Project on the corridor in accordance with Section 106 of the National Historic Preservation Act. Local governments are entitled to participate in the Section 106 process as consulting parties, along with the State Historic Preservation Office, Indian tribes and other interested organizations and individuals. The Ramsey County Rail Right-of-Way Design Guide will be used to inform the consultation process and how potential effects on the Lake Superior & Mississippi Railroad corridor will be avoided, minimized or mitigated.

Guide Relevance Beyond Design: This design guide will remain relevant beyond design and construction into the facilities' operation and maintenance. As part of the Rush Line BRT Project's environmental analysis phase, Ramsey County, the Minnesota Department of Transportation, Metro Transit and the project area municipalities will develop a framework for ownership and maintenance responsibilities based on infrastructure types. Details of ownership and maintenance responsibilities will be determined in future project phases.

APPENDIX A

PUBLIC ENGAGEMENT SUMMARY

VISIONING FRAMEWORK PUBLIC ENGAGEMENT SUMMARY

AUGUST 20, 2019

INTRODUCTION

The Rush Line Bus Rapid Transit (BRT) Project is a future 14-mile transit route with stops between Union Depot in Lowertown Saint Paul and downtown White Bear Lake. A portion of Rush Line BRT will operate in right-of-way owned by Ramsey County. In the 1990s, after freight railroads stopped using the corridor, Ramsey County acquired this right-of-way to preserve it for future investment in high-quality transit serving the east metro. Along the segment of the route operating in the Ramsey County rail right-of-way, the BRT guideway will be co-located with a reconstructed Bruce Vento Trail.

Ramsey County is developing a Visioning Framework that will guide the design of the Ramsey County rail right-of-way and the Bruce Vento Trail area. The goal of the Visioning Framework is to develop a safe and context-sensitive BRT guideway and shared-use trail plan incorporating relevant user, stakeholder and public guidance within the Ramsey County rail right-of-way.

In January 2019, Ramsey County adopted the Parks & Recreation System Plan, which identifies community priorities and system gaps, opportunities for development and redevelopment, planned system enhancements and expansions, and natural areas requiring proactive management. The Bruce Vento Regional Trail section of the plan identified the need to adopt a master plan amendment later in 2019. This amendment is intended to identify the alignment for extending the Bruce Vento Regional Trail from Larpenteur Avenue to County Road J, accounting for the selected alignment of Rush Line BRT and continued active use of the railway. The amendment will also address other changes to the corridor such as trailhead development, improvements throughout the corridor to address changing trends and demographics, and increased recreational opportunities.

Public engagement regarding the Visioning Framework and the framework document itself are intended to be complementary to the Bruce Vento Regional Trail amendment process. Rush Line BRT Project staff distributed flyers about the future extension of the Bruce Vento Regional Rail north of Buerkle Road at each public engagement event and collected comments regarding the extension on behalf of Ramsey County Parks and Recreation, which is leading the master plan amendment and trail extension project.

PUBLIC ENGAGEMENT

On March 27, 2019, Rush Line BRT Project staff hosted a workshop to introduce the Ramsey County rail right-of-way Visioning Framework and solicit initial feedback on a variety of guideway and trail aspects. Attendees included representatives from the Policy Advisory Committee, Technical Advisory Committee and Community Advisory Committee as well as other stakeholders with an interest in the Visioning Framework process. Project staff provided a virtual tour of the Visioning Framework area and sought input using a visual preference survey. The visual preference survey addressed:

- Trail/BRT separation.

Tuesdays on the Trail, June 18

- Grade separation.
- Landscaping.
- Stormwater treatment.
- Fencing.
- Buffer/screening.
- Trail lighting.
- Trailhead.
- Amenities.

The most popular survey options were used in subsequent public engagement materials. Options that elicited a negative response from workshop attendees were eliminated from consideration. A full summary of the workshop, including detailed information regarding the visual preference survey and responses, can be found in the appendix.

Figure 1: Tuesdays on the Trail locations

Throughout June 2019, Rush Line BRT Project staff facilitated public engagement events to solicit input from stakeholders and inform the creation of the Visioning Framework. This included a series of four planned “Tuesdays on the Trail” pop-up events in which staff set up boards with project information and visual preference surveys at various locations along the Bruce Vento Trail, shown in Figure 1. Project staff sent informational mailings to residents and property owners within approximately one-quarter mile of the right-of-way to promote these events. At these events, project staff spoke with more than 90 residents, trail users and other people with interest in future changes to the trail. At each of these events, project staff also provided information about the Bruce Vento Trail Extension project.

In addition to the “Tuesdays on the Trail” series, project staff hosted pop-up meetings at locations and community events near the right-of-way including the local grocery store Sun World Supermarket and WaterFest, an annual event held in Phalen Regional Park. To gather feedback from members of the Hmong community who live near the right-of-way, project staff hosted an open house-style meeting. Project staff specifically invited members of this community with a mailing and collaborated with related organizations, such as Hmong American Partnership, to distribute promotional materials for the meeting to the community.

Project staff created an online survey seeking input on the same aspects of the right-of-way as the boards presented during the in-person events described above. This survey was promoted on social media, in the mailing and in the project newsletter, and was available throughout the month of June for people to take at their leisure. The survey garnered 37 responses. The following summary accounts for input received both at in-person events and through the online survey.

PUBLIC INPUT

Project staff solicited feedback on the following aspects of the Bruce Vento Trail and Ramsey County rail right-of-way:

- Most important right-of-way elements.
- How people plan to use the Ramsey County rail right-of-way after Rush Line BRT is constructed.
- Design of the Bruce Vento Trail and BRT guideway.
- Trail amenities.

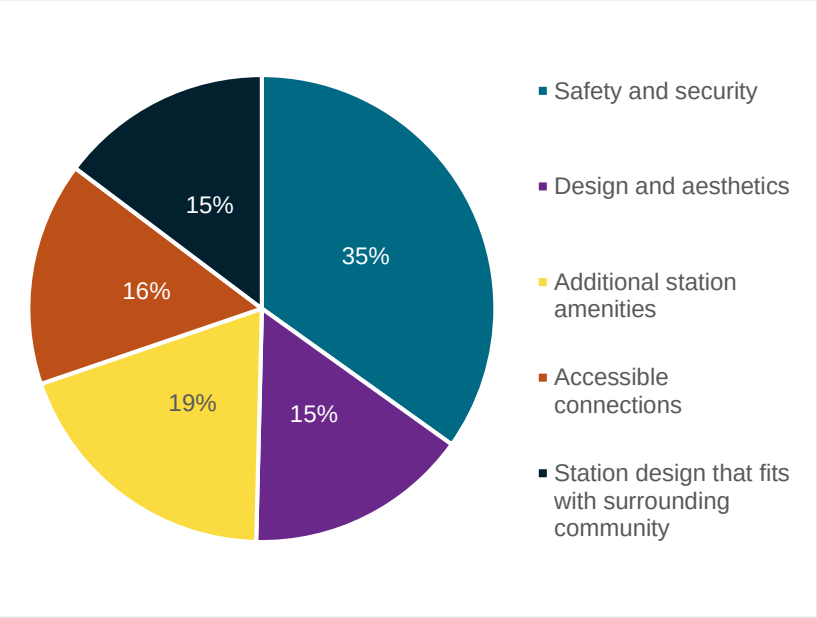
The boards used at each in-person event and replicated in the online survey are included in the appendix for reference.

Right-of-Way Elements

Project staff requested input on which of the following right-of-way elements were most important to consider in the design of the Bruce Vento Trail:

- Safety and security.
- Design and aesthetics.
- Additional station amenities (landscaping, public art, wayfinding signage, etc.).
- Accessible connections.
- Station design that fits with the surrounding community.

Figure 2: Priority Right-of-Way Elements for Consideration

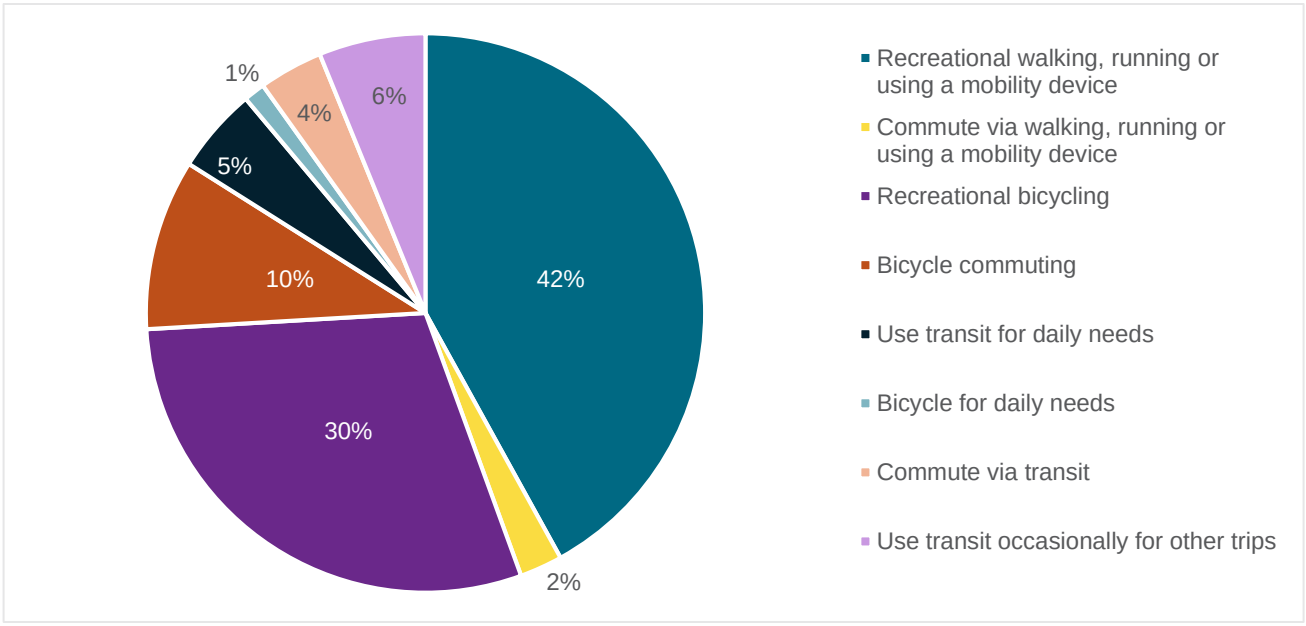


Respondents' top priority was safety and security, which received approximately twice as many votes as any other right-of-way elements for consideration, as shown in Figure 2. Those who indicated a desire for additional amenities suggested low- or mid-level lighting, low or no lights after midnight and increased wayfinding signage at stations.

Use of Ramsey County Rail Right-of-Way

Project staff asked how people would use the right-of-way once Rush Line BRT is constructed to learn more about user needs. Respondents primarily indicated that they would continue using the right-of-way for recreational walking, running or using a mobility device, as well as bicycling for recreational purposes and for their commute, as shown in Figure 3. Some expressed that they would sometimes use transit for their commute, other daily needs and for other trips. Few people indicated that they would walk, run or use a mobility device for a commute in the right-of-way.

Figure 3: Future Right-of-Way Use



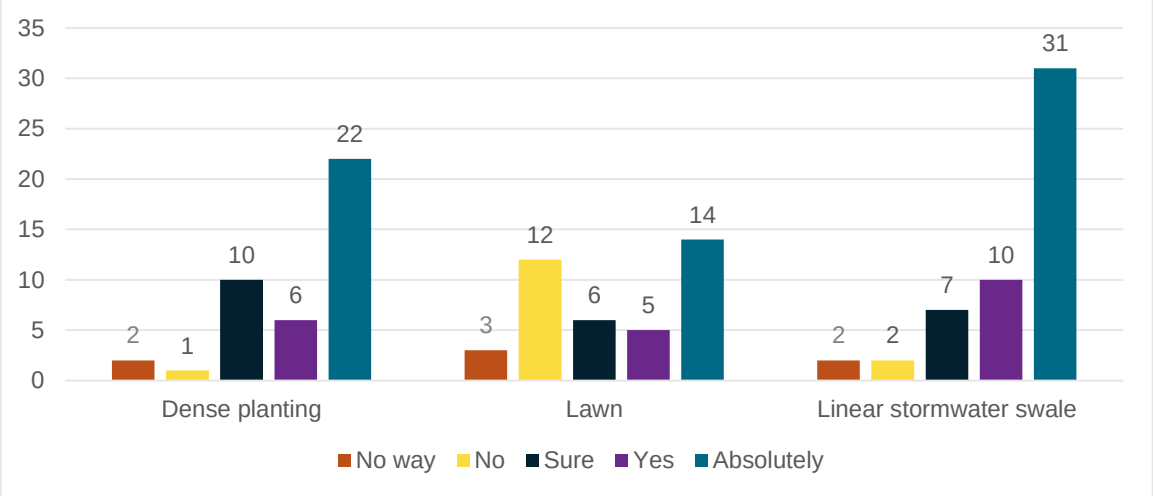
Cross Section

The Ramsey County right-of-way, where the Rush Line BRT guideway will be co-located with the Bruce Vento Trail, is generally 100 feet wide, allowing for a 28-foot-wide BRT guideway and 12-foot-wide trail while leaving space for buffers, plantings and other features. Project staff solicited input on various aspects of the typical cross section for this area, including the separation between the guideway and the trail; landscape buffer between the trail or the guideway and the edge of the right-of-way; the buffer between the edge of the right-of-way and the surrounding area; and vertical structures where grade separation is required. The visual preference survey boards used to collect this input are included in the appendix.

Separation between BRT and Trail

For the area between the BRT guideway and the Bruce Vento Trail, project staff asked respondents which of the following separation treatments they would prefer: dense planting, lawn or linear stormwater swale. A swale is a shallow channel used to manage stormwater; vegetation within a swale slows the movement of water and aids in removing pollutants. Respondents generally favored the linear stormwater swale and had a positive but less enthusiastic reaction to the lawn option, as shown in Figure 4. Those who preferred the swale cited reasons including aesthetic considerations, support for pollinator-friendly habitat and preference for an option they perceived as low-maintenance. Some people who preferred dense planting stated a desire to see a mixture of coniferous and deciduous trees. People who responded ambivalently or negatively to the lawn options expressed concern about environmental sustainability and maintenance of grass.

Figure 4: Preference for Separation between BRT and Trail

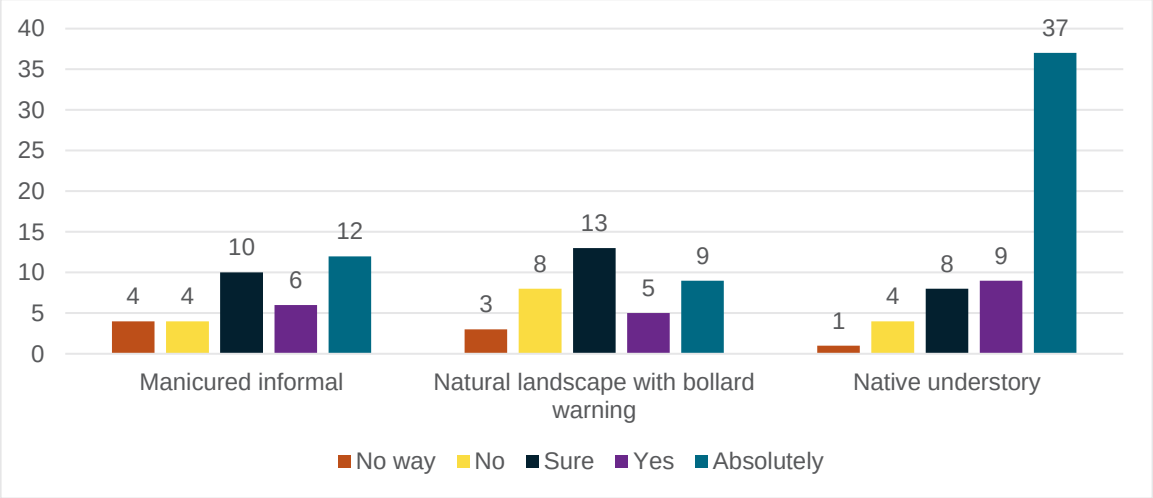


Landscape Buffer

Project staff asked which landscape buffer people would prefer between the trail or guideway and the edge of the right-of-way: a manicured informal landscape, a natural landscape with bollard warning, or native understory. Respondents overwhelmingly selected native understory as their preferred option, though the response to all three options was generally positive, as shown in Figure 5. People who voted in favor of native understory frequently expressed a desire to maintain the existing tree canopy to the greatest extent possible and a perception that it would better contribute to a healthy ecosystem than other options. Reasons for preferring the “natural landscape with bollard warning” included

concern about visibility of the trail from the guideway if other options were implemented. Some respondents cited concerns about the design of the bollard detracting from the aesthetic quality of the trail. Though most respondents were comfortable with the manicured informal landscape option, comments on this treatment primarily focused on concerns about its environmental sustainability and ease of maintenance.

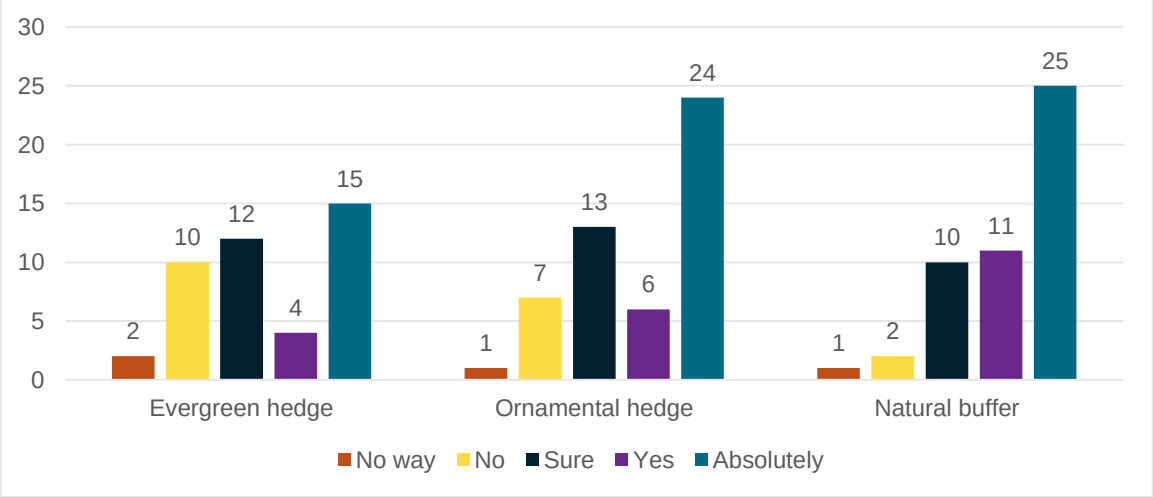
Figure 5: Preference for Landscape Buffer Treatment



Buffer/Edge

Project staff asked which treatment people prefer for the edge between the right-of-way and adjacent properties. The following options were presented: evergreen hedge, ornamental hedge and natural buffer. All three options were well-received overall, and the ornamental hedge and the natural buffer options were particularly popular, as shown in Figure 6. Comments on each option primarily focused on maintaining visibility and safety for trail users and traffic crossing the right-of-way. Comments for each option also focused on selecting plants that are native and easy to maintain.

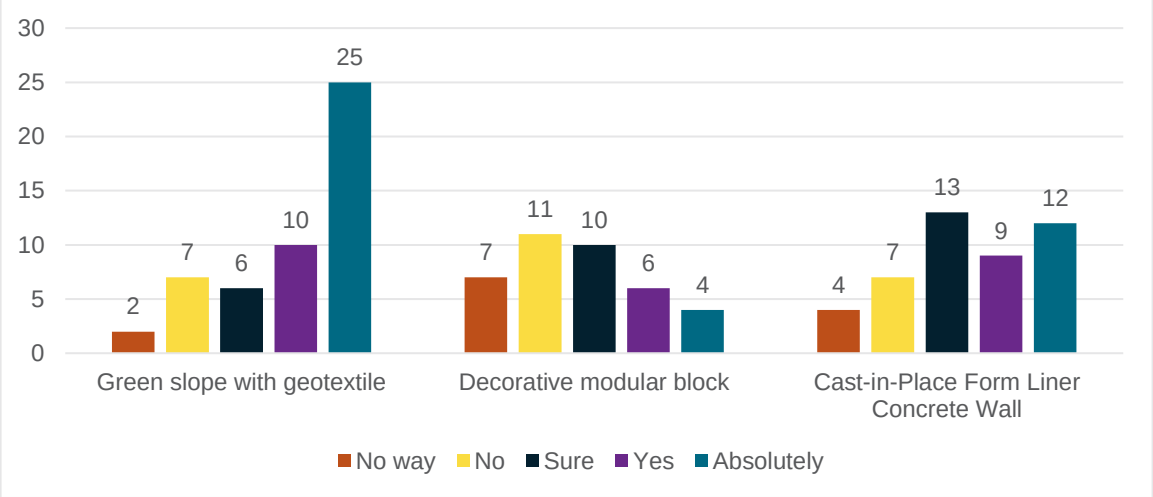
Figure 6: Preference for Buffer/Edge Treatment



Grade Separation

Project staff asked whether people would prefer a green slope with geotextile, decorative modular block, or cast-in-place form liner concrete wall in areas where engineered structures will be necessary for both the guideway and trail to fit within the right-of-way. The green slope with geotextile was the most preferred option by a large margin. Respondents were generally neutral to positive about the cast-in-place form liner concrete wall; the decorative modular block received some positive feedback, though responses were more ambivalent or negative overall, as shown in Figure 7. People who preferred the green slope option stated reasons including a general preference for plants over concrete when possible, though some believed a green slope may be less sturdy than the other two options. People who commented on the two concrete options stated a general distaste for the appearance and expressed concerns about graffiti.

Figure 7: Preference for Grade Separation Treatments



Other Input

In addition to indicating their preference for these treatment options, several respondents provided comments on other aspects of the right-of-way that they found important. These comments addressed the following:

- Desire to maximize distance between the guideway and the trail, even if the width of the landscape buffer must be reduced to achieve this.
- Desire to vertically separate the guideway and the trail as much as possible.
- Question about the necessity of an additional parking facility at Highway 36 Station with the Maplewood Mall Transit Center nearby.
- Desire to preserve trees and wildlife habitat.
- Concern about increased crime and people experiencing homelessness around the trail.
- Concern about increased noise.

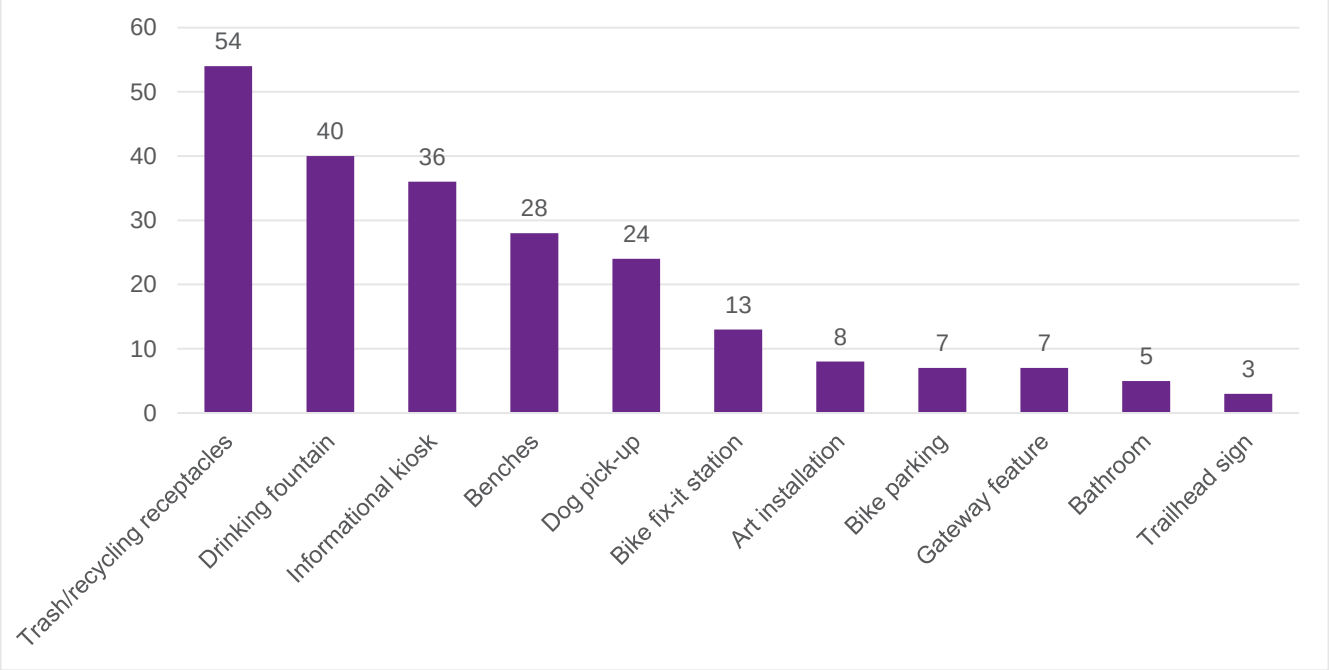
Amenities

Project staff asked which four amenities people would most like to have on the trail from the following list:

- Trash/recycling receptacles.
- Informational kiosk.
- Bike parking.
- Dog pick-up bags.
- Benches.
- Trailhead sign.
- Gateway feature.
- Bike fix-it station.
- Art installation.
- Drinking fountain.
- Additional amenities (write-in option).

The most-desired amenity was trash and recycling receptacles, as shown in Figure 8, with drinking fountains and informational kiosks not far behind. Benches and dog pick-up bags were also popular, while there was relatively little desire for an art installation, gateway feature, trailhead sign or bike parking. Six respondents wrote in public restrooms as a desired amenity and two requested shelters with picnic tables.

Figure 8: Preferred Trail Amenities



RESPONDENTS

Project staff aimed to solicit input from a diverse group of residents, trail users and other interested people throughout the first round of public engagement regarding the Visioning Framework. People who attended the “Tuesdays on the Trail” events appeared to be primarily white homeowners aged 45 and up who live in the area. Most of these attendees also indicated they use the Bruce Vento Trail “sometimes” or “often.” Survey respondents who filled out their demographic information were also predominantly white homeowners age 45 and older who live adjacent to or near the right-of-way., but unlike “Tuesdays on the Trail” attendees, half of the survey respondents indicated that they rarely use

the trail. Project staff gathered input from more diverse groups at WaterFest, the Sun Foods pop-up and the Hmong community gathering.

NEXT STEPS

The input gathered through this public engagement will be used to inform the creation of a draft Visioning Framework, which is anticipated to be available for public review in September 2019. Project staff will seek feedback on the draft through additional public engagement, which may include pop-up meetings, presentations to community organizations and an open house. Input received during this time will be used to refine the Visioning Framework before it is formally approved and incorporated into the project definition in late 2019.

APPENDIX

Figure 1: Board displaying Ramsey County rail right-of-way history and plans

Ramsey County rail right-of way: past, present and future

Rush Line BRT

PAST

The Ramsey County rail right-of-way was once the Lake Superior & Mississippi Rail Corridor. Constructed between 1867 and 1870, the corridor was the first direct rail connection between Saint Paul and the Great Lakes Port of Duluth. Because of its historic transportation significance, the corridor is eligible for the National Register of Historic Places. Potential impacts as well as mitigation measures being evaluated as part of the Rush Line BRT Project.

PRESENT

The Ramsey County rail right-of-way currently hosts the Bruce Vento Trail.

FUTURE

The Ramsey County rail right-of-way will host the Rush Line BRT guideway and stations, along with the Bruce Vento Trail. It is a priority of Ramsey County that the Bruce Vento Trail remain a community asset and that there are safe crossings with existing roadways.

Sign up for email updates. Provide comments. Ask questions. Learn more.

rushline.org info@rushline.org 651-266-2760 facebook.com/rushline @rushlinetransit

Figure 2: Board seeking input on right-of-way treatments

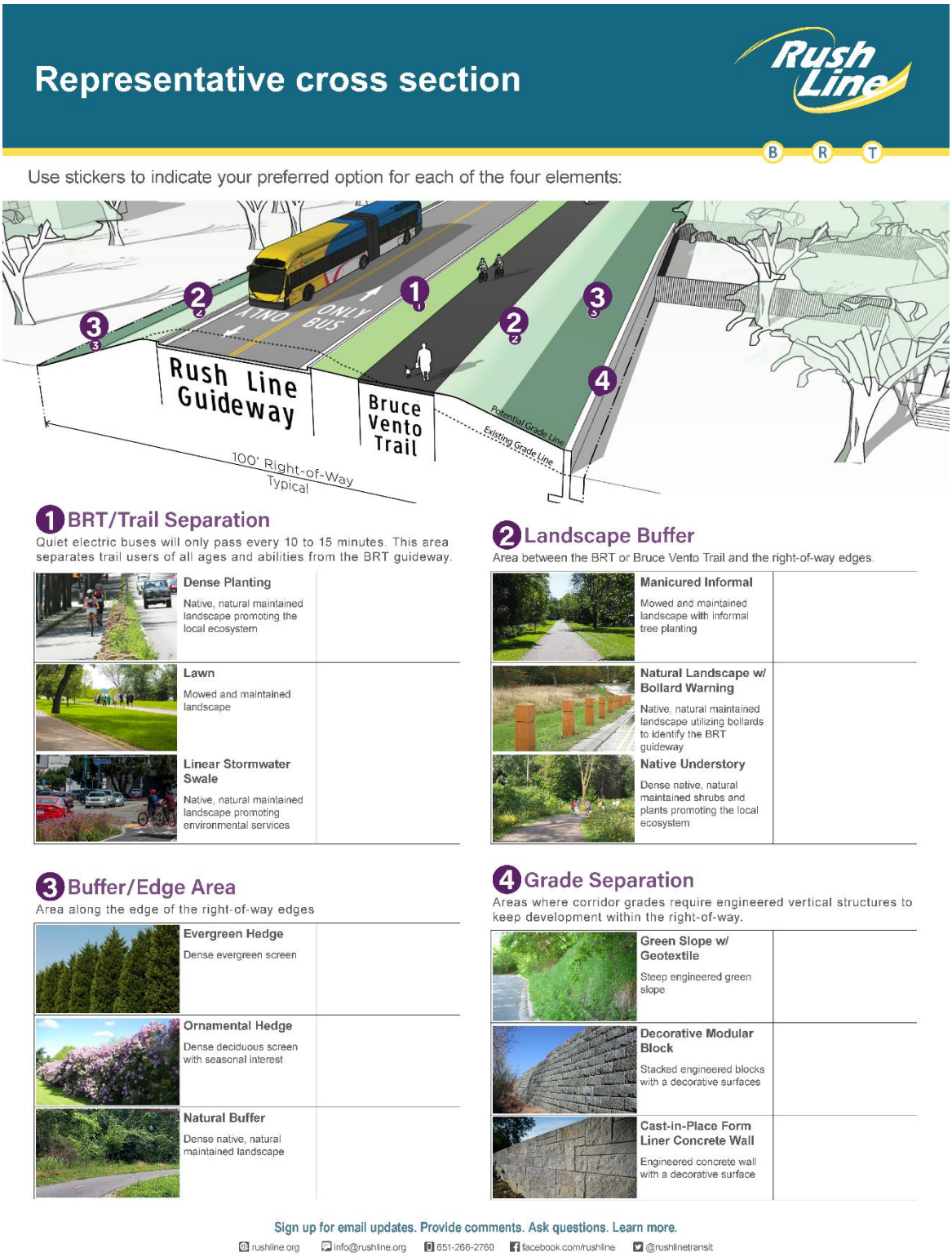


Figure 3: Board seeking input on priority right-of-way elements

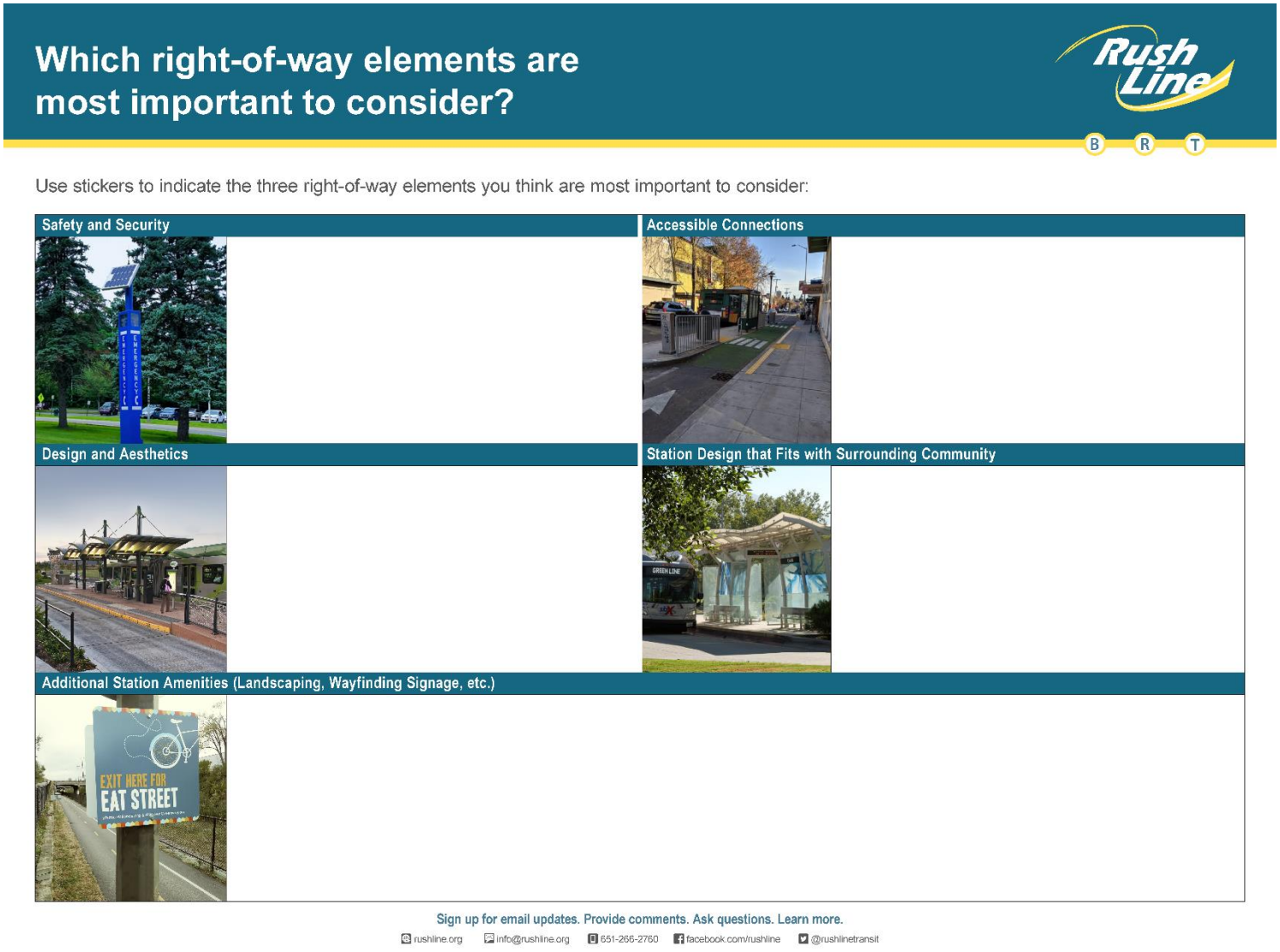


Figure 4: Board seeking input on how people plan to use the right-of-way

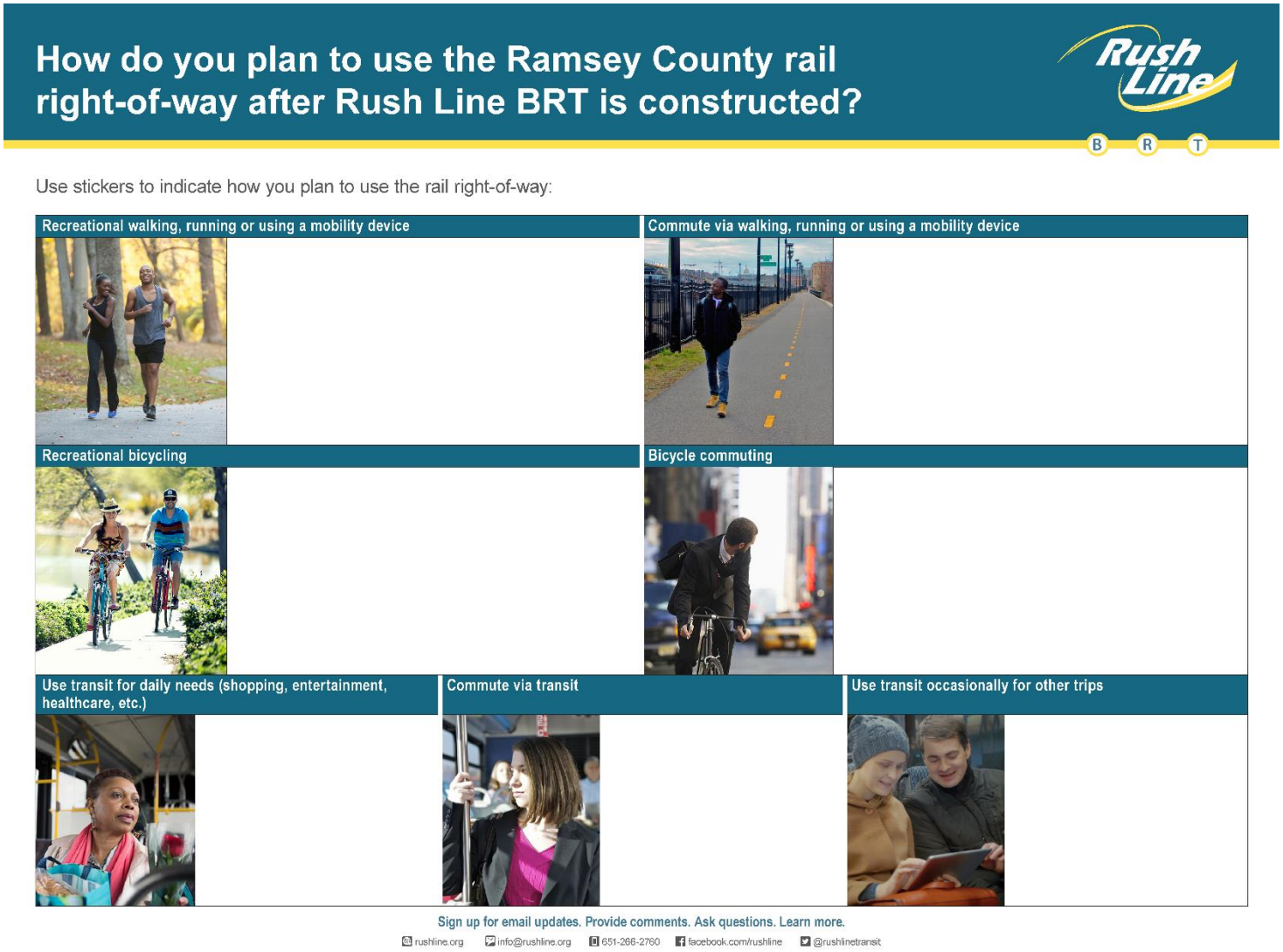


Figure 5: Board seeking input on trail amenities

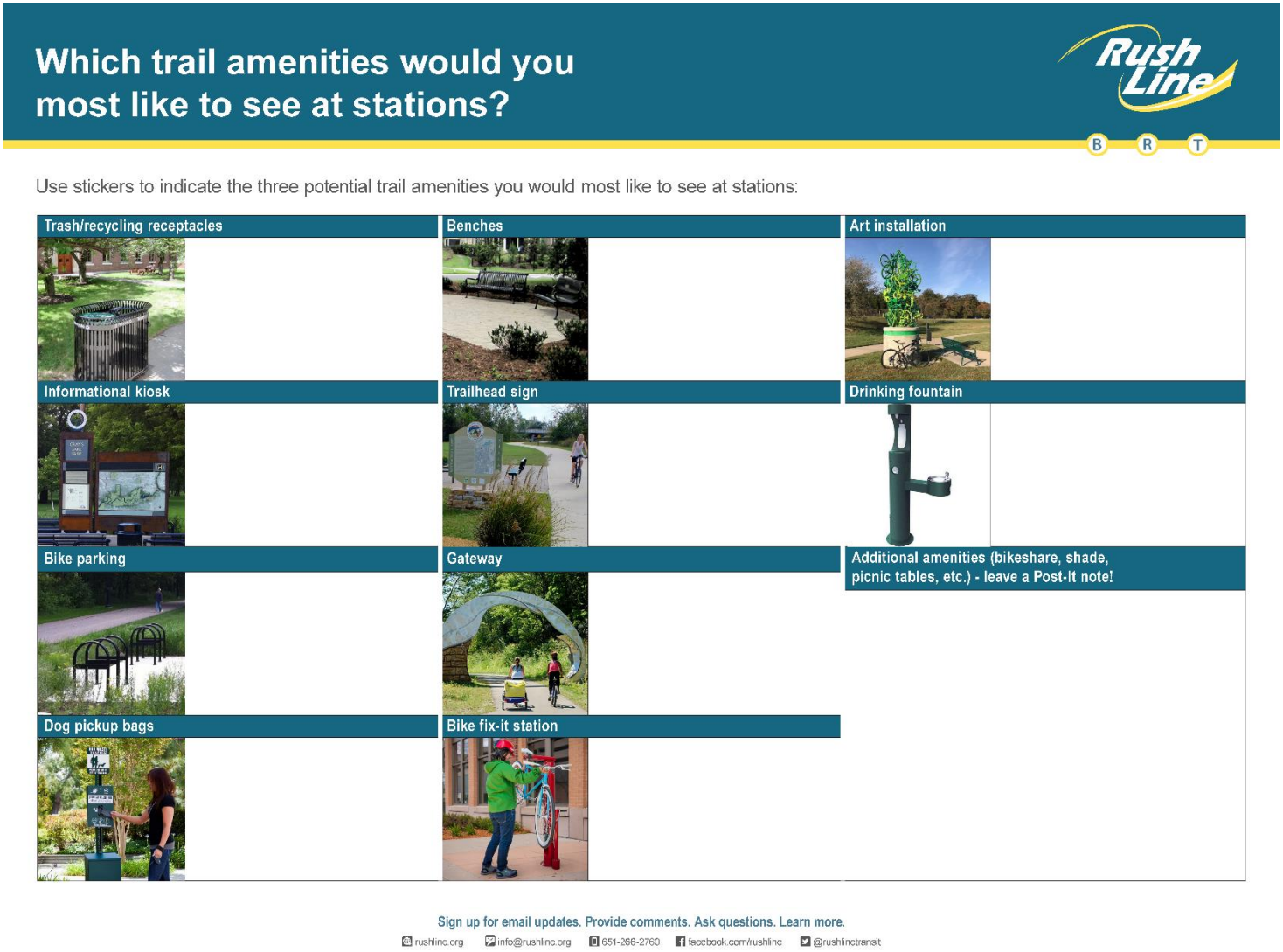


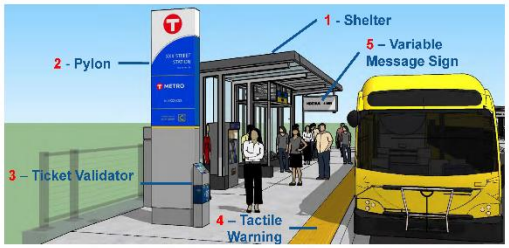
Figure 6: Board providing an overview of station design

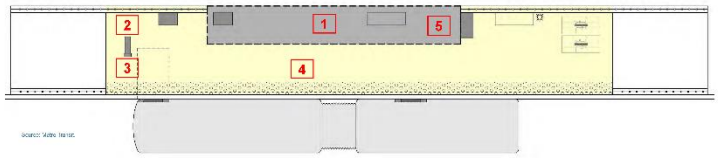
Station Design

Rush Line BRT

SEVERAL STANDARD FEATURES ARE INCLUDED AT EVERY STATION:

- NexTrip real-time departure signs.
  - Raised platforms.
  - Maps.
  - Benches.
  - Heat.
  - Lighting.
  - Bike racks.
  - Trash and recycling bins.
  - Ticket machines.
- Station design and additional amenities may vary from station to station based on community input, surrounding physical environment, etc.
- Station design is further refined in project development and final engineering phases.





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